

# **Pennsylvania Act 129 - Phase IV Energy Efficiency and Peak Demand Reduction Market Potential Study Report**

**Prepared for  
Pennsylvania Public Utility Commission**



**By Pennsylvania Statewide Evaluation Team**

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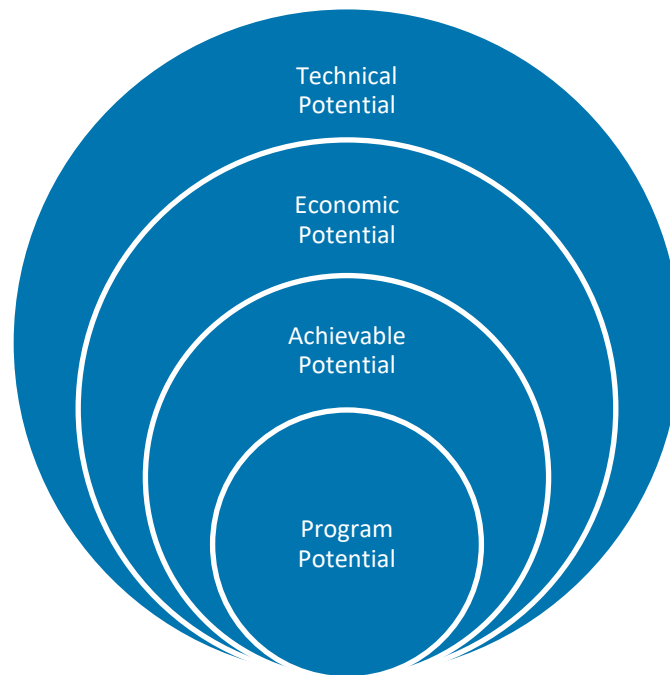
## DEFINITIONS & ACRONYMS

### IMPORTANT DEFINITIONS

The four standard types of energy efficiency (EE) potential are shown in Figure 1. This study defines the first three levels, Technical Potential, Economic Potential, and Achievable Potential, according to industry-standard definitions. For Program Potential, the SWE team was directed to account for the specific budget constraints that Act 129 requires and which limit the potential of EE, peak demand reduction (PDR), and dispatchable demand response (DDR) opportunities. This requirement necessitates precision in this study's definitions, as described below.

We modeled two budget-constrained Program Potential scenarios. Both scenarios have an overall budget constraint applied, and each optimizes the results of a comprehensive portfolio of measures. The first is referred to as *Program Potential*. The second accounts for additional specific details of Act 129 requirements, including matching exact nominal dollar amounts as set in Act 129; this is referred to as *Act 129 Potential*.

**Figure 1 | The four standard efficiency potential scenarios.**



#### **Technical Potential**

The SWE team used *Technical Potential* in its generally understood meaning, according to industry standards: It is an estimate of the potential for EE savings, using all available and feasible technology and ignoring all barriers to adoption. Within the EE model and results, Technical Potential is treated as a step toward Economic Potential, and is not reported. Technical Potential is, however, reported for CHP, because methodological differences pertain in deriving savings.

## **Economic Potential**

The SWE team used *Economic Potential* in the way the term is used in the industry. It involves the total, technically feasible and cost-effective efficiency available in the state. The Economic Potential scenario ignores all barriers to adoption and assumes all customers adopt all efficiency opportunities, as appropriate.

## **Achievable Potential**

The SWE team also defined *Achievable Potential* per industry standards, as the subset of Economic Potential expected to be achievable, recognizing real-world barriers. This scenario assumes aggressive and well-designed, marketed, and implemented programs that cover 100 percent of incremental costs of all efficiency measures.

## **Program Potential**

The SWE team defined *Program Potential* according to industry standards, as the subset of the estimated Achievable Potential that efficiency programs can deliver, providing incentives that eliminate market barriers. The only distinction from standard definitions of *Program Potential* is that this scenario is constrained by Act 129 Phase IV budgets, and optimized for achieving savings from a comprehensive portfolio of EE measures. Most reported results in the *Results* section of this report are from this scenario, and exclude any additional potential from CHP and DDR programs.

## **Act 129 Potential**

The team defined *Act 129 Potential* as the Program Potential results adjusted to meet precise Act 129 budget requirements, with further model calibrations that allocate 1 percent of total budget to CHP, and 99 percent to EE, with no allocation to DDR. Act 129 Potential is based on, but differs somewhat from, the modeling of Program Potential. The full Program Potential modeling resulted in savings potential for 5-year budgets close to, but not exactly equal to, the Phase IV Act 129 EDC spending constraints. In contrast, the Act 129 Potential precisely matched the 5-year budgets. Therefore, the detailed modeling outputs for Program Potential provided much more granular data on how savings break out by segment, market, end use, and measure, whereas the Act 129 Potential results were simply a calibration of those overall savings levels to the available EDC budgets.



## ACRONYMS AND ABBREVIATIONS

ACEEE	American Council for an Energy-Efficient Economy
BCR	Benefit-cost ratio
BTU	British thermal unit
CBECS	Commercial Buildings Energy Consumption Survey (U.S. Energy Information Administration)
CHP	Combined heat and power
C&I	Commercial and industrial (utility market sector)
DDR	Dispatchable demand response
DOE	U.S. Department of Energy
Duquesne Light	Duquesne Light Company
EDC	Electric distribution companies in Pennsylvania subject to Act 129: Duquesne Light, Met-Ed, PECO, Penelec, Penn Power, PPL, West Penn Power (see FE)
EE	Energy efficiency
EE&C	Energy efficiency and conservation
EIA	U.S. Energy Information Administration
EISA	Energy Independence and Security Act of 2007 (U.S. Congress)
EPA	U.S. Environmental Protection Agency
FE	FirstEnergy Corporation, the parent company of four of the EDCs: Met-Ed, Penelec, Penn Power, and West Penn Power
GNI	Government, non-profit, and institutional utility customers
GSL	General service lamp
HER	Home energy report
IC	Internal combustion
KW	Kilowatt
KWh	Kilowatt-hour
LED	Light-emitting diode
MECS	Manufacturing Energy Consumption Survey (EIA)
Met-Ed	Metropolitan Edison Company (FirstEnergy Corporation)
MPS	Market potential study
MW	Megawatt
MWh	Megawatt-hour
NGDC	Natural gas distribution companies
NPV	Net present value
NRDC	Natural Resources Defense Council
NTG	Net-to-gross
O&M	Operations and maintenance
PDR	Peak Demand Reduction
PECO	PECO Energy Company (Exelon)
Penelec	Pennsylvania Electric Company (FirstEnergy Corporation)
Penn Power	Pennsylvania Power Company (FirstEnergy Corporation)
PJM	Regional transmission organization serving Pennsylvania, New Jersey, and Maryland

PPL	PPL Electric Utilities Corporation
PUC	Pennsylvania Public Utility Commission
PVNB	Present value of net benefits
PY	Program Year (June 1 to May 31)
RECS	Residential Energy Consumption Survey (EIA)
SWE	Statewide Evaluator (Act 129 monitoring and verification body for electric distribution companies' Energy Efficiency and Conservation Plans)
T&D	Transmission and distribution
TRC	Total Resource Cost
TRM	Technical Reference Manual characterizing many variables of energy efficiency measures, assisting jurisdictions in setting avoided-cost rates, determining cost effectiveness of measures, and other metrics for use in evaluation, measurement, and verification of an energy efficiency program's performance in Pennsylvania
TUS	Bureau of Technical Utility Services (Pennsylvania Public Utility Commission)
West Penn Power	West Penn Power (FirstEnergy Corporation)

## EXECUTIVE SUMMARY

The Pennsylvania Public Utility Commission (PUC or Commission) contracted with the Act 129 Statewide Evaluator (SWE) to provide audit and planning consulting services for Phase III of the Commonwealth’s Act 129 Energy Efficiency and Conservation (EE&C) programs. To prepare for a potential Phase IV of Act 129, the SWE team performed an energy efficiency and peak demand reduction market potential study (EEPDR MPS). The purpose of this study was to determine what cost-effective electric energy efficiency (EE) and associated peak demand reduction savings are feasible for the seven electricity distribution companies (EDCs) subject to Act 129.<sup>1</sup> This study is limited to *electric* efficiency measures, since Act 129 applies only to electrical energy efficiency, combined heat and power (CHP) generation, and opportunities associated with fuel-switching away from electric resistance space and water heating to fossil fuel space- and water-heating measures.

This EEPDR MPS informs the Commission’s plans for a possible Phase IV of Act 129 programs. The Commission can use the results of the EEPDR MPS to determine if a Phase IV of Act 129 will be cost effective. If it is, the Commission can also use the results to establish performance targets for the EDCs and to direct additional cost-effective programming. Because legislated budget caps on investments in efficiency services constrain such EDC programming, this EEPDR MPS has estimated energy savings potential commensurate with these budgets. The budget constraints are shown in Table 1.

**Table 1: EDC-specific budget constraints, 2021-2025 (nominal dollars)**

EDC	Total Phase IV budget
PECO	\$427,385,830
PPL	\$307,506,880
Duquesne Light	\$97,729,760
FE: Met-Ed	\$124,334,470
FE: Penelec	\$114,873,710
FE: Penn Power	\$33,298,945
FE: West Penn Power	\$117,813,010
<b>Statewide</b>	<b>\$1,222,942,605</b>

*Note: Statewide refers to the combined results for all seven EDCs subject to Act 129.*

The SWE team modeled energy efficiency and CHP potential separately but then integrated them into high-level results. This decision was in part because CHP projects have unique attributes (for example, CHP system size, sporadic adoption, site dependency, long lead times

<sup>1</sup> Act 129 applies to the seven EDCs with 100,000 or more customers: PECO Energy Company (PECO), PPL Electric Utilities Corporation (PPL), Duquesne Light Company (Duquesne Light) and the four FirstEnergy EDCs, Metropolitan Edison Company (FE: Met-Ed), Pennsylvania Electric Company (FE: Penelec), Pennsylvania Power Company (FE: Penn Power), and West Penn Power (FE: West Penn Power). Phase III is scheduled to end May 31, 2021, and Phase IV, if implemented, would begin June 1, 2021.

from design to operation, etc.) that required more rigorous assessment. Thus, the team assessed CHP separately and blended in a 1 percent spending allocation to CHP, drawn proportionally from all EE sectors, to derive the overall Act 129 Potential. This derived Act 129 Potential constitutes the central results of this study. The value balances the historically mixed performance in Pennsylvania for acquiring CHP savings in Act 129 EE programs with the fact that our modeling results showed CHP savings were available in all EDC territories. In addition, this study complements the companion Pennsylvania Demand Response Potential Study,<sup>2</sup> and includes the treatment of the tradeoffs associated with allocating Act 129 funding to dispatchable demand response (DDR) programs.

## HIGH-LEVEL RESULTS SUMMARY

In the tables below, and throughout this report, the team refers to calendar years 2021-2025 for concision, specifically June 1, 2021, through May 31, 2026, consistent with the cycle for Phase IV. The full study also analyzed a period continuing through 2030 to assess longer-term potential.

Table 2 summarizes the key economic findings for the three primary EE scenarios. Note that these results reflected the economics affecting the entire Pennsylvania economy based on a Total Resource Cost (TRC) test, and did not reflect program budgets nor the cost-effectiveness on the electric utility system alone. As can be seen, there remains substantial cost-effective efficiency potential.

**Table 2: Efficiency benefits and costs, 2021-2025 (real 2021 dollars)**

EDC	Economic Potential			Achievable Potential			Program Potential		
	Costs (\$MM)	Benefits (\$MM)	TRC benefit-cost ratio (X:1)	Costs (\$MM)	Benefits (\$MM)	TRC benefit-cost ratio (X:1)	Costs (\$MM)	Benefits (\$MM)	TRC benefit-cost ratio (X:1)
PECO	\$1,866	\$4,689	2.51	\$1,609	\$1,917	1.19	\$603	\$975	1.62
PPL	\$1,558	\$4,070	2.61	\$1,359	\$1,734	1.28	\$488	\$885	1.81
Duquesne Light	\$388	\$898	2.31	\$296	\$366	1.24	\$132	\$193	1.47
FE: Met-Ed	\$551	\$1,357	2.46	\$483	\$571	1.18	\$181	\$291	1.61
FE: Penelec	\$545	\$1,327	2.43	\$468	\$571	1.22	\$178	\$293	1.64
FE: Penn Power	\$133	\$298	2.24	\$102	\$119	1.17	\$44	\$63	1.44
FE: West Penn Power	\$552	\$1,289	2.34	\$436	\$526	1.21	\$172	\$269	1.57
<b>Statewide</b>	<b>\$5,593</b>	<b>\$13,927</b>	<b>2.49</b>	<b>\$4,753</b>	<b>\$5,803</b>	<b>1.22</b>	<b>\$1,798</b>	<b>\$2,970</b>	<b>1.65</b>

Table 3 shows the estimated Act 129 Potential in Pennsylvania consistent with Act 129 spending caps. As can be seen, the SWE team estimated an overall utility program acquisition

<sup>2</sup> Accessible at [http://www.puc.state.pa.us/filing\\_resources/issues\\_laws\\_regulations/act\\_129\\_information/act\\_129\\_statewide\\_evaluator\\_swe.aspx](http://www.puc.state.pa.us/filing_resources/issues_laws_regulations/act_129_information/act_129_statewide_evaluator_swe.aspx).

cost of \$271/MWh. Full capture of this Act 129 Potential would result in total incremental annual savings of 4,513 GWh and 878 MW of peak demand savings.

**Table 3: Act 129 Potential, 2021-2025**

EDC	Acquisition cost (\$/MWh)	Budget (\$MM)	TRC costs (\$MM)	TRC benefits (\$MM)	Net TRC benefits (\$MM)	TRC benefit - cost ratio (X:1)	GWh	Peak MW
PECO	\$309.51	\$427	\$639	\$1,019	\$379	1.59	1,381	276
PPL	\$245.97	\$308	\$513	\$912	\$399	1.78	1,250	244
Duquesne Light	\$281.57	\$98	\$137	\$197	\$60	1.44	347	67
FE: Met-Ed	\$268.42	\$124	\$190	\$301	\$110	1.58	463	85
FE: Penelec	\$262.46	\$115	\$188	\$303	\$115	1.61	438	91
FE: Penn Power	\$258.31	\$33	\$46	\$65	\$19	1.42	129	22
FE: West Penn Power	\$233.32	\$118	\$180	\$277	\$97	1.54	505	95
<b>Statewide</b>	<b>\$271.01</b>	<b>\$1,223</b>	<b>\$1,894</b>	<b>\$3,073</b>	<b>\$1,179</b>	<b>1.62</b>	<b>4,513</b>	<b>878</b>

*Note: Budgets and acquisition costs are in nominal dollars. Benefits, costs, and net benefits are in real (2021) dollars. GWh and peak MW are the sum of first-year incremental annual savings from 2021 through 2025. Peak demand impacts are reported in MW intentionally for ease of comparison to the DR MPS.*

Table 4 shows Act 129 Potential as GWh savings and as a percent of 2009/2010 load, assuming that savings are captured evenly across Phase IV. This results in annual savings equivalent to about 0.62 percent of 2009/2010 load forecast. Table 5 shows Act 129 Potential's coincident peak demand savings, in MW and as a percent of 2007/2008 peak demand, again under the assumption that coincident peak savings are captured evenly across Phase IV.<sup>3</sup> This resulted in approximately 0.66 percent peak demand reduction each year from 2007/2008 peak load levels.

**Table 4: Act 129 Potential GWh savings**

EDC	2021	2022	2023	2024	2025	Total
PECO	276	276	276	276	276	1,381
PPL	250	250	250	250	250	1,250
Duquesne Light	69	69	69	69	69	347
FE: Met-Ed	93	93	93	93	93	463
FE: Penelec	88	88	88	88	88	438
FE: Penn Power	26	26	26	26	26	129
FE: West Penn Power	101	101	101	101	101	505
<b>Statewide</b>	<b>903</b>	<b>903</b>	<b>903</b>	<b>903</b>	<b>903</b>	<b>4,513</b>
<b>% of 2009/2010 load forecast</b>	<b>0.62%</b>	<b>0.62%</b>	<b>0.62%</b>	<b>0.62%</b>	<b>0.62%</b>	<b>3.08%</b>

<sup>3</sup> The reference years of 2009/2010 for energy and 2007/2008 for demand are established practice in Act 129 documents.

**Table 5: Act 129 Potential MW peak demand savings**

EDC	2021	2022	2023	2024	2025	Total
PECO	55	55	55	55	55	276
PPL	49	49	49	49	49	244
Duquesne Light	13	13	13	13	13	67
FE: Met-Ed	17	17	17	17	17	85
FE: Penelec	18	18	18	18	18	91
FE: Penn Power	4	4	4	4	4	22
FE: West Penn Power	19	19	19	19	19	95
<b>Statewide</b>	<b>176</b>	<b>176</b>	<b>176</b>	<b>176</b>	<b>176</b>	<b>878</b>
<b>% of 2007/2008 load</b>	<b>0.66%</b>	<b>0.66%</b>	<b>0.66%</b>	<b>0.66%</b>	<b>0.66%</b>	<b>3.31%</b>

## CONCLUSION

There is significant potential for EE savings in Pennsylvania, and a comprehensive portfolio of measures can cost-effectively capture a subset of those potential savings within the budget constraints set forth in Act 129. The full study provides the estimated Program Potential for EE and associated peak demand reductions, analyzes additional potential for CHP, and assesses the tradeoff between DDR and EEPDR + CHP funding. The addition of DDR and CHP to the portfolio lowers the Total Resource Cost, although the addition of CHP can provide value to the Commonwealth through increased electric energy savings. The Act 129 Potential reflects actual estimated savings when limiting budgets to the Act 129 spending limits, including EE and associated peak demand reductions, as well as CHP for each EDC and statewide.

## SECTION 1: INTRODUCTION

The PUC contracted with the Act 129 SWE team to provide audit and planning consulting services for Phase III of the Commonwealth's Act 129 EE&C programs. To prepare for a potential Phase IV of Act 129, the SWE team performed this EEPDR MPS. The purpose of this study was to determine what cost-effective electric EE and peak demand reduction savings would be achievable for the seven EDCs subject to Act 129.

Act 129 requires the PUC to establish an EE&C program, including the following characteristics:

- Adopt an “[EE&C] program to require [EDCs] to adopt and implement cost-effective energy efficiency and conservation plans to reduce energy peak demand and consumption within the service territory of each [EDC] in this commonwealth.”<sup>4</sup>
- Adopt additional incremental reductions in consumption if the benefits of the EE&C program exceed its costs.<sup>5</sup>
- Evaluate the costs and benefits of the Act 129 EE&C programs in Pennsylvania by November 30, 2013, and every five years thereafter.<sup>6</sup>
- Ensure that the EE&C Program contains “an evaluation process, including a process to monitor and verify data collection, quality assurance, and results of each plan and the program.”<sup>7</sup>

This EEPDR MPS informs the Commission's plans for a potential Phase IV of Act 129 programs. The Commission can use the results of the EEPDR MPS to determine if a Phase IV of Act 129 is cost-effective, and if so, to inform performance targets for the EDCs and to direct additional cost-effective programming. The Commission's goals include ensuring that EE investments make best use of ratepayer funds with the highest return. This study presents details about Program Potential and Act 129 Potential. Appendix A presents the modeling results from the Economic Potential and Achievable Potential scenarios, statewide and for individual EDCs. For full definitions of these potential scenarios, please see the *Important Definitions* section of this report.

This study estimated the potential for Phase IV EE and associated peak demand reductions, and has provided discussions of the separately conducted studies that estimated CHP and DDR potential. Section 2 describes the methods for estimating EE potential under a scenario that considers the constraints from the current legislated caps on EE investment. Section 3 provides the results of that estimation. Section 4 describes the methods for estimating the potential for

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<sup>4</sup> House Bill No. 2200 of the General Assembly of Pennsylvania, An Act Amending Title 66 (Public Utilities) of the Pennsylvania Consolidated Statutes, October 7, 2008: 50. [http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129\\_Bill.pdf](http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129_Bill.pdf).

<sup>5</sup> House Bill No. 2200, October 7, 2008: 55. [http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129\\_Bill.pdf](http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129_Bill.pdf).

<sup>6</sup> House Bill No. 2200, October 7, 2008: 55. [http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129\\_Bill.pdf](http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129_Bill.pdf).

<sup>7</sup> House Bill No. 2200, October 7, 2008: 51. [http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129\\_Bill.pdf](http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129_Bill.pdf).

CHP, and Section 5 contains the CHP estimation results. Section 6 examines the results of the DDR potential study in combination with the EEPDR potential study. Section 7 summarizes the results of this study and offers conclusions from these results, including the results of the Act 129 Potential scenario for each EDC for Phase IV of Act 129.

## SCOPE

This study estimated the EE, CHP, and associated peak demand reduction potential in Pennsylvania. The results in Section 3 contain estimated statewide potential, and individual potential estimates for each EDC. The study assessed the potential across 10 years (June 2021 through May 2031), although the report emphasizes results for the first five years, aligned with EDC planning and goal setting.<sup>8</sup> The calendar years 2021-2025, used for concision, refer to the timeframe of June 1, 2021, through May 31, 2026.

Act 129 Potential can most directly inform efficiency savings for the EDCs corresponding to the Act 129 Phase IV funding levels. To build toward those results, the SWE team modeled the Program Potential scenario with the assumption that 100 percent of Phase IV budgets were allocated to EE. The team modeled a low-income spending carve-out consistent with historical EDC levels in the low-income sector: approximately 13 percent of EE budgets.

In modeling energy savings, the SWE team considered all electric efficiency saving measures other than non-CHP fuel switching and fuel switching opportunities that replace electric heating with fossil fuels. Although the SWE team has estimated CHP potential in Sections 4 and 5, it modeled CHP separately. The SWE team recognized that CHP projects can be very large, but also very sporadic and site dependent. These projects also require long lead times from design to operation. Thus, we assessed CHP separately and blended in a 1 percent spending allocation to that category, drawing proportionally from all EE sectors. This value balances the historically mixed performance in Pennsylvania for acquiring CHP savings in Act 129 EE programs with the fact that low-cost savings are available in all EDC territories—according to our modeling results. It is these results with CHP blended in, and budgets calibrated precisely to Act 129 budget caps, that have constituted the Act 129 Potential.

## HIGH-LEVEL RESULTS SUMMARY

Table 6 summarizes the key economic findings for the three primary scenarios. The table clearly shows, across all scenarios and all EDCs, that EE is a substantial and cost-effective resource. The Economic Potential scenario results, consistent with standard industry practice, do not include any non-measure program costs. That is, this scenario aims to quantify the potential from the cost and benefits of the efficiency measures themselves, without assuming any program intervention. Consequently, non-measure program costs are first incorporated in the Achievable Potential scenario. This is why costs do not fall in similar proportion to benefits when moving from Economic Potential to Achievable Potential. In addition, because the Program Potential scenario is budget constrained, it was not surprising to find an increase in the benefit-cost ratio

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<sup>8</sup> Appendix A contains results for the full 10-year time horizon for the Program Potential.



(BCR) compared to the Achievable Potential scenario, as the latter captured significant savings, even for only marginally cost-effective measures, which were a smaller share in the latter.

Overall, if Pennsylvania were to pursue all cost-effective achievable potential per the Achievable Potential scenario, the SWE team estimated it would provide \$5.80 billion in present value benefits to the economy, at a present-value cost of \$4.75 billion. In other words, on average at full scale, for every dollar invested in efficiency, Pennsylvania would accrue \$1.22 in economic benefits.

**Table 6: Scenario benefits, costs, and TRC benefit-cost ratios, 2021-2025 (real 2021 \$)**

EDC	Economic Potential			Achievable Potential			Program Potential		
	Costs (\$MM)	Benefits (\$MM)	TRC benefit-cost ratio (X:1)	Costs (\$MM)	Benefits (\$MM)	TRC benefit-cost ratio (X:1)	Costs (\$MM)	Benefits (\$MM)	TRC benefit-cost ratio (X:1)
PECO	\$1,866	\$4,689	2.51	\$1,609	\$1,917	1.19	\$603	\$975	1.62
PPL	\$1,558	\$4,070	2.61	\$1,359	\$1,734	1.28	\$488	\$885	1.81
Duquesne Light	\$388	\$898	2.31	\$296	\$366	1.24	\$132	\$193	1.47
FE: Met-Ed	\$551	\$1,357	2.46	\$483	\$571	1.18	\$181	\$291	1.61
FE: Penelec	\$545	\$1,327	2.43	\$468	\$571	1.22	\$178	\$293	1.64
FE: Penn Power	\$133	\$298	2.24	\$102	\$119	1.17	\$44	\$63	1.44
FE: West Penn Power	\$552	\$1,289	2.34	\$436	\$526	1.21	\$172	\$269	1.57
<b>Statewide</b>	<b>\$5,593</b>	<b>\$13,927</b>	<b>2.49</b>	<b>\$4,753</b>	<b>\$5,803</b>	<b>1.22</b>	<b>\$1,798</b>	<b>\$2,970</b>	<b>1.65</b>

The SWE team estimated the Act 129 Potential statewide at 4,513 GWh for Phase IV. This figure is the sum of incremental annual savings from 2021 to 2025 for all EDCs. These savings are associated with total 2021 to 2025 budget spending of \$1.22 billion. As modeled, these savings and spending levels would generate \$1.18 billion in present value net benefits (PVNB) and correspond to a benefit-cost ratio (BCR) of 1.62:1.<sup>9</sup> These results indicated that such Phase IV programs would be highly cost-effective based on the standard TRC Test, as specified in the Commission’s 2021 TRC Test Final Order.<sup>10</sup> These results are shown in Table 7, which also illustrates how these top-level results break out among the seven Act 129 EDCs. EDC-specific BCRs are consistently favorable and range from 1.42:1 to 1.78:1.

<sup>9</sup> All cost and benefits are presented in real 2021 dollars.

<sup>10</sup> See the 2021 TRC Test Final Order, Docket No. M-2019-3006868 at <http://www.puc.pa.gov/pcdocs/1648126.docx>. All cost and benefits are presented in real 2021 dollars.

**Table 7: Summary costs, savings, and outcomes for Act 129 Potential, 2021-2025**

EDC	Acquisition cost (\$/MWh)	Budget (\$MM)	TRC costs (\$MM)	TRC benefits (\$MM)	Net TRC benefits (\$MM)	TRC benefit-cost ratio (X:1)	GWh	Peak MW
PECO	\$309.51	\$427	\$639	\$1,019	\$379	1.59	1,381	276
PPL	\$245.97	\$308	\$513	\$912	\$399	1.78	1,250	244
Duquesne Light	\$281.57	\$98	\$137	\$197	\$60	1.44	347	67
FE: Met-Ed	\$268.42	\$124	\$190	\$301	\$110	1.58	463	85
FE: Penelec	\$262.46	\$115	\$188	\$303	\$115	1.61	438	91
FE: Penn Power	\$258.31	\$33	\$46	\$65	\$19	1.42	129	22
FE: West Penn Power	\$233.32	\$118	\$180	\$277	\$97	1.54	505	95
<b>Statewide</b>	<b>\$271.01</b>	<b>\$1,223</b>	<b>\$1,894</b>	<b>\$3,073</b>	<b>\$1,179</b>	<b>1.62</b>	<b>4,513</b>	<b>878</b>

*Note: Budgets and acquisition costs are in nominal dollars. Benefits, costs, and net benefits are in real (2021) dollars. GWh and peak MW are the sum of first-year incremental annual savings from 2021 through 2025.*

The Act 129 Potential reflects total portfolio savings the SWE team believed were appropriate, given the available budget. These generally reflected some increase in acquisition costs (\$/MWh) compared to historical EDC spending. That increase has been primarily driven by the loss of residential lighting opportunities that were some of the least expensive savings. It also indicated levels that the SWE team believed would allow the EDCs to develop balanced plans that address all markets equitably. These levels would then also ensure a comprehensive portfolio of measures with appropriate investments in some of the longer-lived, but more expensive, efficiency resources. The more granular Program Potential results showed a specific breakout of spending and savings between sectors. However, the SWE team does not suggest that actual EDC plans will necessarily reflect those specific breakouts. Beyond providing a comprehensive portfolio of measures, the Program Potential results did not account for policy objectives and appropriate planning decisions. The one area where we believe the Program Potential allocations are appropriate is for the carve-out of low-income sector spending and savings, consistent with Pennsylvania policy.

## SECTION 2: METHODS

### OVERVIEW

This study modeled the potential achievable EE in Pennsylvania's EDCs' territories, fully considering legislated investment constraints. The primary goal for the study was to estimate the Program Potential scenario and its corollary, the Act 129 Potential scenario. For full definitions of these and other modeled scenarios upon which they depend, please see the *Important Definitions* section of this report.

The SWE team analyzed the entire electric EE potential in buildings and industry for all retail customers in each EDC territory.<sup>11</sup> We addressed all customer classes: residential (including low-income customers), and commercial and industrial (C&I). Separately, we assessed small and large C&I subsectors and low-income and non-low-income residential sectors. This study addressed only electric efficiency. Although the SWE team recognized there were ancillary fossil fuel savings from electric efficiency measures (in assessing measure cost-effectiveness), the team did not consider measures that primarily addressed fossil fuel efficiency, nor did it report on fossil fuel impacts. The team also did not consider fuel-switching measures other than CHP (addressed in Sections 4 and 5) and electric-to-fossil-fuel switching.

The SWE team analyzed the EE potential for 10 years (June 2021 through May 2030), to coincide with Year 1 of the Act 129 Phase IV EDC planning cycle. The report refers to each program year by the calendar year in which it begins. Note that because the primary interest is on the Program Potential scenarios for the 5-year Phase IV planning period, the SWE team addressed those 5-year results in Section 3 and throughout this report.

In addition, the SWE team received clear guidance regarding several specific requirements for this EEPDR MPS, which differed from a standard study design for program potential:

- Modeling a comprehensive mix of measures rather than a mix that represents past programs (as in analysis of a program plan)
- Modeling the low-income sector by carving out a spending allocation consistent with historical Act 129 spending proportions within Act 129 EE programs in Pennsylvania (12.7 percent)
- Modeling an achievable share of CHP savings and incorporating those savings into the EE results (1 percent CHP spending carve-out)
- Modeling EE within expected Phase IV budget levels; although tolerance bounds were set at +/-10 percent, actual results were optimized to within +/-1 percent, after which modeled acquisition costs were used to scale to precise budgets
- Assessing the funding tradeoff between EEPDR (inclusive of CHP) and DDR

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<sup>11</sup> This study did not address any electric transportation efficiency, nor did it assess any additional efficiency that could offset privately owned distributed electric generation. The SWE team deemed those measures not to sufficiently affect EDC retail loads to alter the results.

The SWE team kept CHP as a stand-alone analysis because the cost-effective achievable potential for CHP was generally quite large. However, because it can come from a few very large systems that cannot be assumed to be captured in any given program year, the team treated this analysis differently from other EE resources. Consequently, and to maintain full transparency regarding these two different savings opportunities, Section 3 addresses results from the EE models, whereas Section 5 presents results for CHP. However, when fundamental results and conclusions are presented in Section 7, the team integrated efficiency and CHP results. In Section 7, the SWE team incorporated CHP potential into the EE results as a 1 percent spending carve-out, drawn proportionally from all EE sector budgets.

This study has significantly benefited from the associated baseline studies that collected large amounts of primary data on the types of buildings found in the EDCs, their construction practices, the existing penetration of energy-consuming technologies, the typical operational characteristics, and the electric loads associated with end uses.<sup>12,13</sup> This granular breakdown of primary data allowed the SWE team to segment the major sectors into different building types. For the low- and non-low-income residential sector, the team modeled single-family and multifamily buildings separately. For the C&I sector, the team disaggregated the loads and efficiency potential by the building types shown in Table 8, consistent with the sampling plan developed for the baseline study.

**Table 8: C&I building types in the EEPDR MPS**

Small C&I	Large C&I
Small office	Large office
Small retail	Large retail
Small education - college / university	Large education - college / university
Small education - other	Large education - other
Small grocery	Large grocery
Small health - hospital	Large health - hospital
Small health - other	Large health - other
Small industrial manufacturing	Large industrial manufacturing
Small institutional / public services	Large institutional / public services
Small lodging	Large lodging
Small miscellaneous / other	Large miscellaneous / other
Small warehouse	Large warehouse
Small restaurant	Large restaurant

To determine the cost-effectiveness of the EE measures, the SWE team relied on the widely accepted Total Resource Cost (TRC) Test as the screening criterion, consistent with Pennsylvania practice, as described in the 2021 TRC Test Order. The TRC Test considers the full costs and

<sup>12</sup> See the 2018 Residential Baseline Study, Docket No. M-2019-3006866, at [http://www.puc.pa.gov/Electric/pdf/Act129/SWE-Phase3\\_Res\\_Baseline\\_Study\\_Rpt021219.pdf](http://www.puc.pa.gov/Electric/pdf/Act129/SWE-Phase3_Res_Baseline_Study_Rpt021219.pdf).

<sup>13</sup> See the 2018 Non-Residential Baseline Study, Docket No. M-2019-3006866, at [http://www.puc.pa.gov/Electric/pdf/Act129/SWE-Phase3\\_NonRes\\_Baseline\\_Study\\_Rpt021219.pdf](http://www.puc.pa.gov/Electric/pdf/Act129/SWE-Phase3_NonRes_Baseline_Study_Rpt021219.pdf)

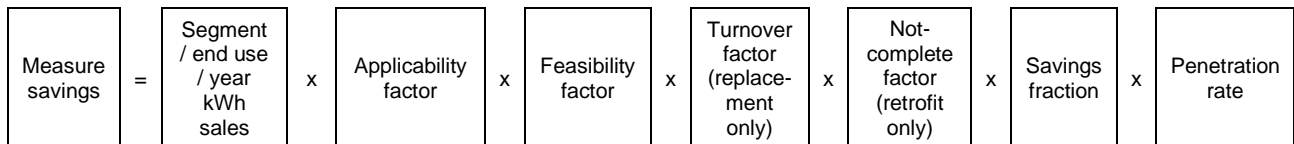
benefits of efficiency measures from the perspective of the Pennsylvania economy.<sup>14</sup> The primary costs comprised the incremental cost of the efficiency measures and the non-measure-related program delivery costs incurred by the EDCs. The primary benefits were from electric energy savings across measure lifetimes, with values based on the societal avoided costs of generation, transmission, and distribution. The SWE team has accounted for all of these impacts in the estimation of a measure’s costs and benefits across its lifetime, or for a maximum of 15 years, the longest measure life allowed under Act 129.<sup>15</sup> The team has also provided all costs and benefits in terms of net present value (NPV), in 2021 real dollars, of the current and future costs and benefits. The next subsection offers a description of the methods and some of the major assumptions related to cost-effectiveness screening.

## COMBINED TOP-DOWN / BOTTOM-UP METHOD

The general approach for this study, in all market sectors, was to begin with a top-down method. This approach ensured that all results were calibrated to the actual electric loads and forecasts for each EDC. In general terms, the top-down approach started with the energy sales forecast and disaggregated it first into new and existing construction, then into separate loads for each building type or market segment, and then into each major end use within each building type. From this information, the team determined the percentage of the applicable end use energy that might be offset by the installation of a given efficiency measure in each year, applying actual measure level savings. The approach merged the top-down estimates of applicable energy use to individual bottom-up measure-level estimates of incremental costs, savings, lifetimes, and other measure-level parameters. Appendix B contains energy forecasts used in the analysis. Appendix C provides energy sales disaggregation data.

Figure 2 offers the central equation for estimating measure savings potential.

**Figure 2 | Equation for deriving measure savings.**



For Figure 2, the team applied the following definitions:

- **Applicability** is the fraction of the end use electric load for each building type and year attributable to a particular final load to which a high-efficiency

<sup>14</sup> This study contains only direct energy benefits, with no direct non-energy costs and benefits beyond water savings and fossil fuel impacts, although many measures offer non-energy benefits to efficiency program participants. Also not included are indirect costs and benefits, such as demand reduction-induced energy price effects, impacts on price elasticities, environmental externalities, and economic multiplier effects from increased participant spending capacity or changes in utility spending patterns connected to efficiency programming.

<sup>15</sup> Pennsylvania’s Act 129 caps measure life at 15 years. See [http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129\\_Bill.pdf](http://www.puc.pa.gov/electric/pdf/Act129/HB2200-Act129_Bill.pdf). Act 129 defines a TRC test as “a standard test that is met if, over the effective life of each plan not to exceed 15 years, the NPV of the avoided monetary cost of supplying electricity is greater than the NPV of the monetary cost of [EE] conservation measures.” 66 Pa. C.S. § 2806.1(m).

measure can be applied. For example, for replacing office interior linear fluorescent lighting with higher-efficiency LED technology, the team used the portion of the office building's total interior lighting electrical load attributable to linear fluorescent lighting.

- **Feasibility** is the fraction of applicable end use sales for which it is technically feasible to apply an efficiency measure. Numbers below 100 percent reflect engineering or other technical barriers that would preclude adoption of the measure. Feasibility was not reduced for economic or behavioral barriers that would reduce penetration estimates. Rather, it reflects technical or physical constraints that would make measure adoption impossible or ill-advised. An example might be an efficient lighting technology that cannot be used in certain low-temperature applications.
- **Turnover** is the percentage of existing equipment that will be naturally replaced each year, due to failure, remodeling, or renovation. This applies only to natural replacement (replacement upon failure) and renovation market opportunities. In general, turnover factors are assumed to be 1 divided by the baseline equipment measure life (for example, assuming that 10 percent or 1/10 of existing stock of equipment is replaced each year for a measure with a 10-year estimated life).
- **Not-complete** is the percentage of existing equipment that does not already represent the high-efficiency option. This applies only to retrofit (early retirement or other time-independent efficiency opportunities) markets. For example, if 30 percent of current single-family homes already have WiFi-connected thermostats, then the not-complete factor for that efficiency measure would be 70 percent ( $1.0 - 0.3$ ), indicating that only 70 percent of the total potential from thermostats remains.
- **Savings fraction** represents the percent savings of the high-efficiency technology, compared to the energy use from either existing stock or new baseline equipment for retrofit and non-retrofit markets, respectively. Savings fractions are based on individual measure data and assumptions about existing stock efficiency, standard practice for new purchases, and high-efficiency options. Note that for some measures, this savings fraction could change over the life of the measure, if early replacements of baseline equipment are assumed to be replaced with new standard efficiency equipment at some point prior to the end of the efficiency measure lifetime.
- **Annual penetrations** are the measure penetrations (adoption rate) as a percentage of the total efficiency measure opportunity remaining in any given year.

The product of these factors is the total energy-saving potential for each measure. The SWE team then derived the costs by applying the average cost per energy unit saved for each measure to the total potential for that measure. Note that the SWE sometimes modeled additional future costs in subsequent years to account for impacts on operations and maintenance (O&M) costs (for example, replacement lamps over a fixture's lifetime).

Appendices D, E, and F present all factors. The next subsection offers details on how the SWE team developed the individual factors and other model inputs.

## EFFICIENCY MEASURES

The SWE team analyzed nearly 300 efficiency technologies, and separately assessed each technology across all applicable permutations of market and building type or segment, and building end use application (for example, buildings with electric resistance heating, heat pumps, or gas furnaces), resulting in more than 6,000 efficiency measures. The SWE team then ran separate models for each scenario and EDC. Measures addressed all sectors and major end use categories. Separately assessing measures for different markets was important because the same measure typically has different costs and savings depending on the market application. The SWE team defined the market characteristics as follows:

- **Market-driven measures, often referred to as *replace on burnout***, occur when natural market forces are driving an investment in a new piece of equipment. For example, the replacement of an air-conditioning unit that has failed or the planned remodeling of interior lighting are points at which investments in equipment are made and become opportunities for more efficient investment. These measures are time dependent, and the efficiency opportunity exists only at the time of this natural investment. If it is not adopted in one of these moments, the savings from that measure are typically lost for the life of the piece of equipment. For these measures, the applicable baseline is the standard efficiency of new equipment or practices, rather than the efficiency of the existing equipment. Correspondingly, the incremental cost of the measure is the difference in cost between the efficient equipment and newer standard efficiency equipment. Where applicable, the SWE team estimated all standard new efficiencies consistent with the 2021 *Technical Reference Manual* (TRM).<sup>16</sup> These often reflect the minimum allowable efficiency by building code or federal standard, to the extent that they exist.
- **Retrofit measures, also referred to as *early replacement measures***, happen when there is no natural market planned investment. An example of this is the addition of controls to an existing boiler, or the retirement of an efficient chiller before the end of its useful life, only for reasons of improving efficiency performance. Retrofit measures are not time dependent, and therefore exist as efficiency opportunities throughout the study period—until captured or eliminated as a stock adjustment from an assumed market-driven turnover. For retrofit measures, since the counterfactual condition is no action, the initial incremental cost is the full installed cost of the measure, including equipment and labor. The savings assume a baseline of the existing equipment or practice. In the counterfactual case, for early equipment replacement measures, there is

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<sup>16</sup> For residential measures, see the 2021 TRM, Volume 2, at <http://www.puc.pa.gov/pcdocs/1630968.docx>. For commercial and industrial measures, see the 2021 TRM, Volume 3, at <http://www.puc.pa.gov/pcdocs/1630969.docx>.

a time in the future when the existing equipment would have failed and needed replacement, anyway. Thus, the entire replacement capital investment cycle is permanently shifted. This results in present-value cost savings, but also a shift in savings, because the baseline shifts to an assumed, more efficient piece of equipment that would have been installed before the end of the retrofit measure lifetime.

- **New construction measures** occur as new buildings are under construction or a major renovation project is under way. These are really a type of market-driven measure, since market forces drive new construction activity. However, the SWE team separately modeled these measures because, rather than being triggered by a turnover rate, they are driven by the new construction forecast. In addition, we have considered some new construction-specific measures, such as integrated building design and commissioning. These apply only to new construction.

## ENERGY FORECASTS

### Electricity Forecast

The SWE team based the annual electric sales forecasts on each EDC's most current forecast. In consultation with the Commission and the EDCs, the SWE team assessed the underlying methods and assumptions in the forecasts to understand how much, if any, assumed future efficiency program savings were embedded in them. For years in which any measure might still be providing savings, based on its lifetime and not covered by any forecasts, the SWE team extrapolated future years' impacts from the average annual growth rate for the initial forecast period.

### Forecast Disaggregation by Building Vintage, Segment, and End Use

The SWE team initially disaggregated the forecasts into estimated load associated with new construction and existing buildings. The entire stock of existing buildings presents efficiency opportunities in every year, whereas new construction efficiency opportunities are tied only to the buildings that complete construction in that year. The EDCs' data were not disaggregated to the necessary level of granularity, so the SWE team complemented these data with information from the Act 129 SWE baseline studies, as well as from other sources of regional data where gaps persisted. The team segmented residential loads into low-income and non-low-income categories, using data from the American Community Survey (U.S. Census).

The SWE team then broke down forecasts, by building type, into major end uses (for example, heating and cooling) using the U.S. Energy Information Administration's 2015 Residential Energy Consumption Survey (RECS), Commercial Building Energy Consumption Survey (CBECS), and Manufacturing Energy Consumption Survey (MECS) for the Mid-Atlantic region.

Appendix C presents the final 2021 electric load disaggregation.



## MEASURE CHARACTERIZATION

In addition to all the measure-specific factors defined from the top-down method, we defined the following attributes for each measure:

- Measure lifetime (both baseline and high-efficiency options, if different, or if retrofit accounting for future cost and savings shifts), capped at 15 years
- Measure savings (all energy sources when applicable)
- Measure incremental cost
- O&M impacts, if applicable (relative to baseline equipment)
- Water use impacts, if applicable (relative to baseline equipment)

### Energy Savings

For each technology, the SWE team estimated the energy use of baseline and high-efficiency measures. Where applicable, the team maintained consistency with the 2021 TRM estimates.<sup>17</sup> For measures not in the TRM, the SWE team estimated savings via recent studies from other nearby jurisdictions and other data sources, as needed. For retrofit measures relying on existing conditions, or where the TRM requires customer-specific inputs, the team relied primarily on the new baseline data, supplemented with secondary research or standard engineering analyses.

### Costs

The Pennsylvania measure costs were drawn from the Pennsylvania Incremental Cost Database,<sup>18</sup> supplemented with secondary research where necessary.

### Lifetimes

Where possible, the team adopted measure lives from the 2021 TRM. Where unavailable, the SWE team used other available resources for measure lifetime information, relying primarily on recent studies conducted in nearby jurisdictions, primarily New York and New Jersey. These data are generally based on other primary research studies and TRMs, as well as manufacturer-published estimates. As required by TRC Order practices, the team capped measure lifetimes at 15 years for this study, even for measures that typically have longer useful lifetimes.

### Operations and Maintenance Impacts

O&M impacts are benefits unrelated to energy costs of operations. They represent, for example, replacement lamp purchases for new high-efficiency fixtures, or changes in labor time and costs for servicing high-efficiency versus standard-efficiency measures. High-efficiency

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<sup>17</sup> Pennsylvania Public Utility Commission, n.d. *Technical Reference Manual*, containing the TRM volumes and appendices, Phase IV 2021 TRM Final Order, and other relevant documents. See [http://www.puc.pa.gov/filing\\_resources/issues\\_laws\\_regulations/act\\_129\\_information/technical\\_reference\\_manual.aspx](http://www.puc.pa.gov/filing_resources/issues_laws_regulations/act_129_information/technical_reference_manual.aspx).

<sup>18</sup> The Incremental Cost Database has been developed by the SWE team, beginning with the 2013 TRC Test Order. See the 2013 TRC Test Order [for Phase II], Docket No. M-2012-2300653, pg. 25 at <http://www.puc.pa.gov/pdocs/1190750.docx>. Since the initial development of the Incremental Cost Database, the SWE team has updated cost assumptions for various measures. In the 2021 TRC Test Final Order, the Commission directed the Phase III SWE to update the Incremental Cost Database by July 1, 2020. See the 2021 TRC Test Final Order, Docket No. M-2019-3006868, pg. 77, at <http://www.puc.pa.gov/pdocs/1648126.docx>.

equipment can often reduce O&M costs because of higher-quality components that require less-frequent servicing. On the other hand, some high-efficiency technologies require enhanced servicing, or have expensive components that need to be replaced prior to the end of the measures' lifetimes. For most measures, O&M impacts are very minimal, because many efficient and baseline technologies have the same O&M costs over time. Where they are significant, the SWE team has included them, basing estimates on the SWE team's engineering and cost analyses, information in the 2021 TRM, and other relevant data.

### Special Considerations for Lighting

Because general service lamps (GSLs) have historically played a large role in EE programs, the regulatory environment surrounding these measures and this study's treatment of them warrant discussion.

The U.S. Energy Independence and Security Act of 2007 (EISA) established lighting EE standards for GSLs. The initial standards were phased in from 2012 to 2014, were dependent on lumen output, and were roughly equivalent to the performance of halogen bulbs. EISA also established a backstop efficacy requirement of 45 lumens per Watt, scheduled to take effect in 2020 if certain conditions were not satisfied. Further, in January 2017, the U.S. Department of Energy (DOE), through two final rules, revised the definition of GSLs to include reflectors, candelabras, globes, and other bulb types. It also expanded the defined lumen range. In October 2019, DOE withdrew these final rules, effectively narrowing the definition of GSLs once again.<sup>19</sup> Finally, on December 20, 2019, DOE announced a final determination that the current standards for incandescent light bulbs will not be amended, effectively sidestepping the requirements for implementing a minimum efficacy backstop as required by EISA.<sup>20</sup>

As discussed with and approved by the TUS, this study assumed that both the original EISA backstop provision and the 2017 expanded definition of GSLs will hold, and eventually lead to limited lighting potential in the residential sector—and, to a much lesser extent, the C&I sector. This study does not include any potential from GSLs as defined by EISA and amended by the January 2017 final rules.

There are several considerations that support this approach. First, market transformation in lighting technology is already under way. The SWE team expects this to continue between now and the beginning of Phase IV in 2021. It is not a good use of program resources to offer incentives for this type of market, especially given low net-to-gross (NTG) ratios and gross first-year savings

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<sup>19</sup> The definition was finalized in September 2019. See U.S. Department of Energy, 2019. "Energy Conservation Program: Definition for General Service Lamps." In: *The Federal Register*. A Rule by the Energy Department, September 5. <https://www.federalregister.gov/documents/2019/09/05/2019-18940/energy-conservation-program-definition-for-general-service-lamps>.

<sup>20</sup> The subsequent determination about GSLs occurred in December. See U.S. Department of Energy, 2019. "Department of Energy Issues Final Determination for General Service Incandescent Lamps, Finds More Stringent Standards Are More Costly to the American People and Not Economically Justified." DOE news release, December 20. <https://www.energy.gov/articles/department-energy-issues-final-determination-general-service-incandescent-lamps-finds-more>.

as the key compliance metrics. The 2018 Residential Baseline Study<sup>21</sup> collected detailed lighting inventory in 289 Pennsylvania homes and found that 57 percent of standard lamps in Pennsylvania homes are efficient (that is, they are either compact fluorescent [CFLs] or light-emitting diode [LEDs] lamps). The same study showed that 26 percent of reflectors and 16 percent of specialty lamps are efficient.<sup>22</sup> Further, data from the National Electrical Manufacturers Association show that LEDs nationwide have made up approximately 70 percent of standard lamps shipped in 2019.<sup>23</sup>

Second, regulatory uncertainty persists. The rollback of the 2017 expanded definition of GSLs already faces significant legal challenges. The Natural Resources Defense Council (NRDC), Earthjustice (representing the Sierra Club, Consumer Federation of America, and Massachusetts Union of Public Housing Tenants), the U.S. Public Interest Research Group, and Environment America filed suit on November 4, 2019, challenging the backtracking on the range of bulbs covered by standards.<sup>24</sup> Fifteen states, led by New York and California, plus the city of New York and the District of Columbia, filed a separate lawsuit.<sup>25</sup> In addition, NRDC has already signaled that it is considering legal action to challenge DOE's effective elimination of the efficacy backstop. Contributing further uncertainty, a federal administration change in 2021 could result in a reversal of any action taken by the current administration.

Third, the proposed approach is consistent with other Act 129 documents, most significantly the TRM. Such consistency would be compromised if the study approach changed.

### Special Considerations for Home Energy Reports

Home Energy Report (HER) programs encourage conservation through greater awareness of consumption patterns and engagement with EDC resources to help reduce energy use and lower bills. HER program vendors provide participants with account-specific information that allows customers to view their energy use over time. Behavior reports compare energy use of recipient homes with clusters of similar homes and provide comparisons with other efficient and average homes. This so-called "neighbor" comparison is believed to create cognitive dissonance in participants and spur them to modify their energy use behaviors to be more energy efficient.

A growing list of evaluation studies, including analyses of HER persistence investigated by the Phase II and Phase III SWE teams, have observed energy savings among HER recipient households for two years after HER exposure was discontinued. Consequently, the 2021 TRM

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<sup>21</sup> See the 2018 Pennsylvania Statewide Act 129 Residential Baseline Study Docket No. M-2019-3006866, at [http://www.puc.pa.gov/Electric/pdf/Act129/SWE-Phase3\\_Res\\_Baseline\\_Study\\_Rpt021219.pdf](http://www.puc.pa.gov/Electric/pdf/Act129/SWE-Phase3_Res_Baseline_Study_Rpt021219.pdf).

<sup>22</sup> See the 2018 Pennsylvania Statewide Act 129 Residential Baseline Study, Docket No. M-2019-3006866, pg. 127, at [http://www.puc.pa.gov/Electric/pdf/Act129/SWE-Phase3\\_Res\\_Baseline\\_Study\\_Rpt021219.pdf](http://www.puc.pa.gov/Electric/pdf/Act129/SWE-Phase3_Res_Baseline_Study_Rpt021219.pdf).

<sup>23</sup> NEMA, n.d. "Lamp Indices." <https://www.nema.org/Intelligence/Pages/Lamp-Indices.aspx>.

<sup>24</sup> NRDC, 2019. "NRDC Sues Department of Energy Over Illegal Lighting Efficiency Standards Rollback." Press Release, November 4. <https://www.nrdc.org/media/2019/191104-1>.

<sup>25</sup> New York State Office of the Attorney General, 2019. "Attorney General James Sues Trump Administration for Rollback of Light Bulb Energy Efficiency Standards." Press release, November 4. <https://ag.ny.gov/press-release/2019/attorney-general-james-sues-trump-administration-rollback-light-bulb-energy>.

provides guidance to EDCs for calculating first-year incremental savings and lifetime savings from HER programs using a multi-year measure life with a “decay” perspective.

In summary, the 2021 TRM allows full, evaluated HER first-year incremental savings to be claimed for the first two years that HERs are continuously provided to the same households. Beyond this, an EDC may continue to implement a HER program and treat these same customers, but claimable incremental first-year savings drop precipitously, year over year.

This study assumed that an EDC would administer HERs to a treatment group for two consecutive years, and then cease implementation, to avoid diminishing returns on claimable savings. Consistent with the TRM, the SWE team estimated residual impacts that count toward lifetime savings and cost-effectiveness for the third through fifth year of the measure’s life (those in which treatment has ceased after two years of treatment), after which they essentially fall to zero. The SWE team further assumed that the applicable market for HERs was segmented into five treatment groups of equal size. HERs would be provided to the first group for Year 1 and Year 2, the second group for Year 2 and Year 3, and so on, until all homes are treated for two years.

## **COST-EFFECTIVENESS ANALYSIS**

The SWE team used the TRC Test consistent with the 2021 TRC Test Final Order. All cost-effectiveness analyses assessed the NPV of all expected costs and benefits across each measure’s lifetime. Costs were primarily the measure cost, and program non-measure costs (for example, marketing and administration).<sup>26</sup> Primary benefits were the savings in avoided costs of electric generation, transmission and distribution (T&D), avoided costs of natural gas and unregulated fuels, and any additional O&M benefits and / or impacts from replacement cycle deferrals.

The SWE team discounted all future costs and benefits to the present, using a real discount rate of 3 percent, consistent with the 2021 TRC Test Final Order. The discount rate assumed that initial measure costs would be incurred at the beginning of the year, whereas annual energy savings would be incurred halfway through the year, reflecting an even adoption of measures by participants over the entire year.

Electric avoided costs were specific to each EDC and came from the 2021 TRC Test Final Order’s Avoided Cost Calculator. The team also took natural gas and other fossil fuel avoided costs from the 2021 TRC Cost Test Final Order’s Avoided Cost Calculator, and were based on current Pennsylvania and regional data.

The SWE team provided electric avoided costs for six separate time periods (on-peak summer, off-peak winter, and so on). Further, electric capacity costs reflected the costs at the time of system peak. Therefore, it was necessary to apply electric energy load shapes to each measure, as well as coincidence factors reflecting the share of total connected load savings on average, expected during the system peak. Where applicable and available, the SWE team relied on load shapes and

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<sup>26</sup> For individual measure screening, the SWE team did not specify any non-measure program costs because adoption of an additional measure in a program rarely affects the non-measure costs. The SWE team considered program costs only for assessing overall cost-effectiveness of hypothetical programs capturing the Achievable Potential.

coincidence factors from the 2021 TRM. Where these were not available or applicable, the SWE team determined load shapes from hourly data for each building type and end use from simulation modeling of prototype buildings in northeastern climate conditions.

## ANALYSIS OF ECONOMIC POTENTIAL

These analyses allowed the SWE team to estimate a total Technical Potential for each of the measures included, and then the subset of those that passed the cost-effectiveness criteria, to arrive at the estimated Economic Potential. However, the total Economic Potential was significantly less than the sum of each separate measure potential on its own. This variance was because of interactions between measures and competition among measures. Interactions can result from installation of multiple measures in the same facility. For example, assume a building insulation project reduces the heating load. If a high-efficiency furnace is subsequently installed, savings from the furnace will be lower because the overall heating needs of the building have been reduced. As a result, interactions between measures would be taken into account to avoid double-counting energy savings. Because the economic potential assumes all possible measures are adopted, interactions assume every building installs all applicable measures. The SWE team accounted for interactions by grouping all measures that interact, and then for each measure, adjusting the potential savings opportunity to account for prior assumed measures in the grouping.

In general, the SWE applied measures in descending order of how many other measures they interact with. Therefore, whole-building measures such as integrated new building design, commissioning, and HERs tended to be ranked first, because all measures can theoretically interact. As a result, the whole-building measures that affect multiple end uses tended to show up as measures with a large share of the overall potential. Because programs cannot persuade all building owners to adopt all measures, the eventual mix in Pennsylvania programs was not likely to reflect the economic potential measure mix.

Measures that compete also needed adjustment, such as when two or more efficiency measures could be used in an application, but only one can be chosen. An example is choosing between installing an LED tube, an LED fixture retrofit kit, or a brand-new LED fixture in the same application. In this case, the total penetration for all competing measures is 100 percent, with priority given to the measures, ranked from highest savings to lowest savings. If the first measure was applicable in all situations, it would have 100 percent penetration and all other competing measures would show no potential. On the other hand, if the first measure could be installed in only 50 percent of opportunities, then the second measure would capture the remaining opportunities. To estimate the economic potential, the team generally assumed 100 percent installation of all eligible market-driven efficiency measure opportunities, spread evenly over the study period.

For all years except 2021, the SWE also performed stock adjustments to reflect any shifts in the theoretically eligible efficiency opportunities. For example, if 10 percent of office buildings were to do early-retirement retrofits of their air conditioners, then that share of existing air conditioners would be removed from turning over in the following years until the end of the air conditioners' measure life.

## ANALYSIS OF ACHIEVABLE POTENTIAL

The primary additional steps moving from the Economic Potential scenario to the Achievable Potential scenario were the inclusion of program non-measure costs and the application of penetration rates that reflected known barriers to adoption, which differed by measure. The Economic Potential scenario gave a good upper bound on the amount of potential available. However, in a practical sense, many market barriers limit the potential. Experience has shown that even when an efficiency program pays for 100 percent of the measure costs, not all customers are willing to adopt it, because of non-financial market barriers. Further, it will typically take time for a program to achieve its maximum adoption levels because of building implementation infrastructure and the cumulative impact of ongoing marketing campaigns.

Consequently, the SWE team modeled the Achievable Potential scenario with 100 percent incentive coverage of measures' incremental cost. The modeling also assumed higher spending on the non-measure side than in the Program Potential scenarios, to cover costs such as increased marketing, administration, and capacity building for critical jobs (carried out by implementation contractors). Achievable Potential is an estimate of what established, well-run efficiency programs with sizable budgets paying 100 percent incentives might be able to achieve.

## ANALYSIS OF PROGRAM POTENTIAL

One of the key features of Program Potential, as with Achievable Potential, is the specification of program penetration over time. Projecting program penetration is typically subjective and difficult to estimate. However, the SWE team applied a penetration model that considered factors related to the level of market barriers for a particular measure, as well as assumptions about overall awareness, and the cost-effectiveness to the participant of the measure. For the Achievable Potential scenario, the SWE assumed 100 percent program cost coverage, so that, in theory, the cost-effectiveness to the program participant had no effect on adoption rates.

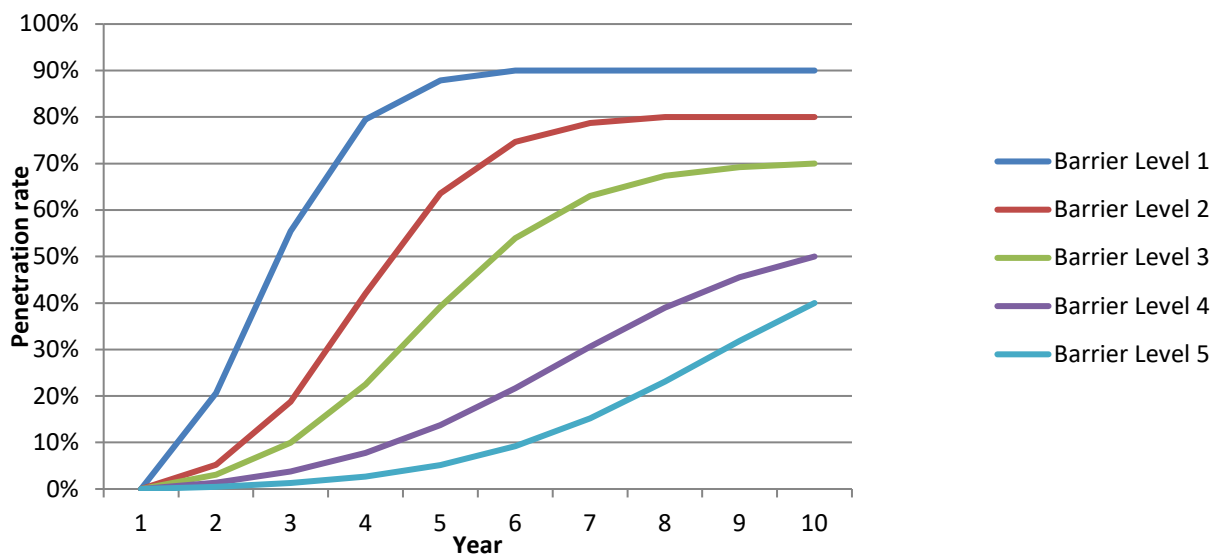
The potential study's Achievable Potential modeling recognized that, while in theory much more savings can be captured than the current Pennsylvania historical savings levels, this cannot happen overnight, and would require a ramp up over time to levels corresponding to more mature programs. The SWE team therefore modeled the Achievable Potential to recognize this, and developed a reasonable, though fairly aggressive, ramp up from current savings levels for the Achievable Potential scenario. When modeling Program Potential, the team constrained the budgets based on the overall 5-year total budgets available for each EDC. As a result, the Program Potential scenario results showed lower savings and spending in 2021, with a ramp up to 2025 that resulted in the appropriate 5-year cumulative spending and savings, due in part to its modeled derivation from the Achievable Potential. However, this should not be interpreted as indicating that higher levels of savings and spending in the early years were not feasible and reasonable. Since this was a budget-constrained analysis, the Program Potential results in any given year did not reflect the full savings that can be captured in that year. In addition to this, retrofit programs were one good example where program design choices could significantly impact savings patterns over time. Since retrofits are by their nature discretionary rather than market driven, shifting retrofit program spending patterns over time led to shifts in savings over time. This can be true in both budget-constrained programs and other program settings.

The SWE team therefore presented Act 129 Potential either evenly distributed across, or in aggregate for, Phase IV. This is because the actual distribution of savings over the five years of the Phase were assumed to be driven by EDCs’ specific program design choices, and their annual planning process in consultation with the Commission.

Curves indicating adoption over time in the team’s model are shown Figure 3, dependent on the level of barriers assumed for each measure. These specific curves reflected the maximum assumptions at 100 percent cost coverage and full customer awareness, from unconstrained and aggressive marketing campaigns. These curves reflected typical product adoption “S-curves” (from market adoption literature and EE program experience). They showed that early-on penetration was typically low because one mostly captures the early adopters—people who are particularly open to new products and ideas. It then reached rapid growth, where overall awareness and interest increased, and more mass-market adoption could be captured.

Finally, the penetration growth tailed off as one got closer to maximum adoption. The SWE team used these curves for market-driven measures to reflect the share of new purchasers who could be convinced to adopt efficiency at the appropriate time. For retrofit measures, adoption can also follow a similar trajectory, but is also most often affected by real-world constraints around work force, budget, and the pace one desires to capture efficiency. The choice of individual customer adoptions still followed the S-curve. But efficiency programs generally cannot market to and serve all willing customers in any given year. For example, low-income programs that pay all costs and directly install all efficiency measures for the participant have been operating around the United States since the 1970s. Nevertheless, many low-income households have yet to be reached.

**Figure 3 | Participant default adoption (penetration) rates for market-driven measures.**



Most measures started with some existing penetration, and Pennsylvania already implements programs that have resulted in the installation of efficiency measures. In this case, the curves were shifted to the left until the Year 1 value matched the estimated existing penetration. For the

Program Potential scenarios, where actual incentive levels will be less than 100 percent of the measure costs, the cost-effectiveness aspect of the penetration model came into play. To adjust the achievable penetration, the model considered the participant's BCR, based on average retail electric rates. Although BCRs influence penetrations in this model, extensive program experience has shown that simply the existence of a program and some rebate can result in significant penetration, compared to natural market practice, even when the actual cost-effectiveness is very poor.<sup>27</sup>

Our Program Potential analysis for this study was different from a typical potential study because there were three primary modeling constraints that needed to be adjusted:

- 1) The team modeled the Program Potential scenario as a modification of typical program potential, something that is more typically done in program design studies than in potential studies.
- 2) The SWE team modeled a comprehensive mix of measures, rather than drawing measures from historical programs.
- 3) The team optimized 14 different models, 2 for each EDC.
  - a. A low-income model with its own budget carve-out of about 13 percent of each EDC's specific budget, based on the EDCs' historical spending levels in the low-income sector
  - b. A non-low-income model for all remaining sectors, with the remaining 87 percent of budget used as the constraint

The SWE team accounted for these constraints through adjustments to the standard modeling approach, although the core principles described earlier in this section still accurately capture our underlying methods.

The SWE team's optimization tool extracted the overall spending resulting from each instance of the model and compared those results to the known EDC-specific budgets that would be available under a possible Phase IV of Act 129. By carefully specifying input ranges to explore, the team could iteratively execute many instances of the model, and select the specific instance that most closely matched EDCs' target budgets.

As with any optimization tool of this sort, it is extremely unlikely for any specific model instance to perfectly match a target result. The SWE team determined that any model instance within 10 percent of the target budget for that model would be acceptably close, after which precise calibration could be done linearly, based on that model instance's portfolio-level acquisition cost. Throughout the presentation of results in Section 3, we show the actual results of these model instances. However, for the final estimates of specific targets, we certainly recognize that a 10 percent difference could be significant. Consequently, the SWE used the portfolio-level acquisition cost from these optimized models to calculate a savings target in megawatt-hours that is precisely aligned with the expected budgets for Phase IV. In addition, results were in fact within 1 percent of target budgets, so these calibrations were quite minor.

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<sup>27</sup> An example of this is the fact that many customers are willing to install new windows and residential solar photovoltaics, despite generally very poor or no net economic gains.



It is important to emphasize here that the linear scaling approach the team used to precisely calibrate to expected Phase IV budgets did *not* result in targets that exceeded available savings or required significantly higher costs to achieve. Because the model results were in a budget-constrained framework, significant efficiency savings were available at similar costs beyond those obtainable within the budget constraints. The final calibration step simply determined the precise MWh amount that the existing budget could achieve, which the team knew to be below the total achievable potential if budget constraints were removed.

The team also modified the approach to measure interactions and mutual exclusivity among measures. Because the SWE team modeled relatively low levels of efficiency capture due to the Act 129 budget constraints, it did not assume all customers would adopt all measures. Rather, the team recognized that in current practice, many participating customers would simply adopt a single measure. Even when the customer might adopt multiple interacting measures, if the savings were based on the 2021 TRM, any interactions would not likely be considered in the estimated program-tracked savings. Therefore, the team reduced the assumptions around measure interactions, as appropriate, for certain measures in the budget-constrained scenarios.

For measures that are mutually exclusive, the team selected the share of total potential penetration that could be expected to be captured, based on historical program experience. The team did not simply assume the measure with the highest savings would capture all the potential—as would be the case for determining economic potential. For example, new LED fixtures with integrated advanced network controls will save the most energy and lifetime costs, but most current efficiency programs capture much higher adoption of the alternative LED tubes because of the much lower barriers to adoption and lower first costs.

Again, all Program Potential scenarios contain non-measure program costs to estimate program budgets as well as program and portfolio cost-effectiveness. The SWE team applied these as a percentage of the incentive costs in the model, based on the types of programs discussed earlier.<sup>28</sup> These non-measure cost percentages were based on the historical actual program spending for the EDCs, and on information from programs in other states. Because many of the EDC cost categories did not fully line up with the program categories, the team considered the relationship of different programs in other jurisdictions to create these estimates.

As mentioned above, the Achievable Potential scenario costs included both the costs of the measures adopted, but also all other programmatic costs necessary to actually capture measure adoption. These might involve general marketing, data tracking, technical assistance services, planning and evaluation, program staff, and general administration costs. Although the potential study is not intended to actually plan for and model a specific portfolio of programs, the SWE team developed reasonable estimates of these other costs by major market and / or program delivery category, such as C&I new construction and low-income retrofit. To estimate these non-measure program costs, the team relied on a review of the historical spending of the EDCs, supplemented by some additional data on other leading jurisdictions in the Northeast. The SWE team expected individual EDCs would develop and file plans that reflect more EDC-specific

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<sup>28</sup> Note that because the SWE team did not model specific EDC program plans, measures are bundled into programs tied to broad market categories, such as low-income retrofit, small commercial retrofit, and C&I new construction.

portfolios and specific challenges and opportunities in their territories that will likely differ somewhat from these pro forma estimates. Table 9 shows the modeled breakouts for measure and non-measure costs.

**Table 9: Incentive and non-measure cost breakout**

<b>Program category</b>	<b>Incentives (% program costs)</b>	<b>Non-incentives (% program costs)</b>
Non-low-income residential new construction	43.3%	56.7%
Non-low-income residential equipment replacement	47.0%	53.0%
Non-low-income residential retrofit	37.1%	62.9%
Low-income residential new construction	42.8%	57.2%
Low-income residential equipment replacement	42.8%	57.2%
Low-income residential retrofit	44.7%	55.3%
Small C&I new construction	56.3%	43.7%
Small C&I equipment replacement	56.3%	43.7%
Small C&I retrofit	64.3%	35.7%
Large C&I new construction	38.6%	61.4%
Large C&I equipment replacement	64.8%	35.2%
Large C&I retrofit	47.7%	52.3%
<b>Overall</b>	<b>47.3%</b>	<b>52.7%</b>

## SECTION 3: EFFICIENCY PROGRAM POTENTIAL RESULTS

This section provides detailed EE results for the Program Potential scenario, as defined in the *Important Definitions* section of this report. Full detailed results for the Economic and the Achievable Potential scenarios are contained in Appendix A. The study looked at savings opportunities from electric energy efficiency over a 10-year horizon, although the report provides data from the first five years of that time horizon, which correspond to the anticipated duration of Act 129 Phase IV. Appendix A contains results for the full 10-year horizon for the Program Potential scenario as well. In addition, throughout this section, we show incremental annual first-year savings, as this is the metric used for Act 129 target-setting.

### STATEWIDE AND PORTFOLIO-LEVEL RESULTS

Table 10 shows, for the Program Potential scenario, each EDC's portfolio-level savings estimates for each of the five years as well as the total, for the anticipated period of Phase IV of Act 129 efficiency programs. Overall, the model estimates 4,375.4 GWh of savings for Phase IV.

**Table 10: Program Potential incremental annual efficiency (GWh)**

EDC	2021	2022	2023	2024	2025	Total
PECO	160.4	237.9	286.8	319.9	325.1	1,330.1
PPL	144.5	220.1	264.2	292.4	292.7	1,214.0
Duquesne Light	41.8	61.2	72.4	81.4	83.0	339.8
FE: Met-Ed	53.2	82.0	98.5	108.8	108.7	451.1
FE: Penelec	51.5	76.0	91.4	101.5	102.7	423.0
FE: Penn Power	15.0	22.7	26.8	30.4	30.5	125.3
FE: West Penn Power	59.7	89.6	105.7	118.5	118.5	492.0
<b>Statewide</b>	<b>526.1</b>	<b>789.5</b>	<b>946.0</b>	<b>1,052.8</b>	<b>1,061.1</b>	<b>4,375.4</b>

Table 11 shows acquisition costs for non-low-income residential, low-income residential, small C&I, and large C&I sectors from the Program Potential scenario. As can be seen, acquisition costs are broadly similar across the small C&I (\$261/MWh), and large C&I (\$286/MWh) sectors, with low-income (\$530/MWh) clearly showing higher acquisition costs. The non-low-income residential acquisition cost (\$218/MWh) is somewhat lower than the C&I sectors. The statewide overall residential sector acquisition cost covering both non-low-income and low-income (\$287/MWh) is somewhat higher than the overall C&I acquisition cost (\$275/MWh).

**Table 11: Program Potential sector spending, savings, and acquisition costs, 2021-2025**

EDC	Non-low-income residential			Low-income residential		
	Budget (\$MM)	Incremental savings (GWh)	Acquisition cost (\$/MWh)	Budget (\$MM)	Incremental savings (GWh)	Acquisition cost (\$/MWh)
PECO	\$77.20	291	\$265.29	\$54.8	81	\$678.81
PPL	\$56.80	293	\$193.86	\$39.4	79	\$498.16
Duquesne Light	\$17.00	75	\$226.67	\$12.5	27	\$470.41
FE: Met-Ed	\$23.50	112	\$209.82	\$15.9	33	\$476.34
FE: Penelec	\$18.50	90	\$205.56	\$14.7	29	\$503.93
FE: Penn Power	\$6.80	36	\$188.89	\$4.2	12	\$348.03
FE: West Penn Power	\$27.80	144	\$193.06	\$15.1	35	\$436.34
<b>Statewide</b>	<b>\$227.60</b>	<b>1,042</b>	<b>\$218.43</b>	<b>\$156.7</b>	<b>296</b>	<b>\$529.65</b>
	Large C&I			Small C&I		
	Budget (\$MM)	Incremental savings (GWh)	Acquisition cost (\$/MWh)	Budget (\$MM)	Incremental savings (GWh)	Acquisition cost (\$/MWh)
PECO	\$197.1	618	\$318.91	\$96.2	340	\$282.85
PPL	\$109.7	417	\$262.80	\$99.8	425	\$234.94
Duquesne Light	\$37.2	137	\$272.34	\$31.7	101	\$314.28
FE: Met-Ed	\$52.9	187	\$282.92	\$32.1	119	\$269.85
FE: Penelec	\$35.6	126	\$282.04	\$45.2	178	\$254.50
FE: Penn Power	\$10.5	35	\$300.51	\$11.7	43	\$275.60
FE: West Penn Power	\$38.8	167	\$232.12	\$35.6	145	\$245.02
<b>Statewide</b>	<b>\$481.7</b>	<b>1,687</b>	<b>\$285.53</b>	<b>\$352.3</b>	<b>1,350</b>	<b>\$260.95</b>
	Portfolio					
	Budget (\$MM)	Incremental savings (GWh)	Acquisition cost (\$/MWh)			
PECO	\$425.3	1,330	\$319.73			
PPL	\$305.7	1,214	\$251.85			
Duquesne Light	\$98.5	340	\$289.73			
FE: Met-Ed	\$124.4	451	\$275.68			
FE: Penelec	\$113.9	423	\$269.35			
FE: Penn Power	\$33.2	125	\$264.93			
FE: West Penn Power	\$117.3	492	\$238.46			
<b>Statewide</b>	<b>\$1,218.3</b>	<b>4,375</b>	<b>\$278.44</b>			

Note: Budgets and acquisition costs are in nominal dollars. MWh are the sum of first-year incremental annual savings from 2021 through 2025.

## RESIDENTIAL RESULTS

Tables 12 through 16 show results for the overall residential sector. Table 12 shows incremental annual electric energy savings from efficiency for years 2021 to 2025, for each EDC and statewide. These numbers include both low-income savings and non-low-income savings and show strong savings levels for each EDC over time in the residential sector.

**Table 12: Program Potential residential incremental annual GWh savings**

EDC	2021	2022	2023	2024	2025	Total
PECO	44.7	73.7	82.2	91.9	79.7	372.2
PPL	45.5	75.5	83.4	90.9	76.5	371.8
Duquesne Light	12.7	20.7	22.9	24.8	21.1	102.3
FE: Met-Ed	17.5	29.3	32.6	35.7	30.2	145.4
FE: Penelec	14.4	24.0	26.7	29.3	24.9	119.4
FE: Penn Power	5.7	9.7	10.7	11.8	9.9	47.8
FE: West Penn Power	22.1	36.7	40.4	43.8	36.3	179.4
<b>Statewide</b>	<b>162.6</b>	<b>269.7</b>	<b>299.0</b>	<b>328.3</b>	<b>278.7</b>	<b>1,338.3</b>

Table 13 shows the key economic values associated with Program Potential residential savings. It is worth noting that the residential sector TRC BCRs are consistently lower than the portfolio-level BCRs, indicating that these savings are more expensive from a lifecycle cost perspective than average. This is in part due to the influence of the low-income sector, and in part due to the loss of lighting in residential sectors, though other sector-level differences are certainly present as well.

**Table 13: Program Potential residential sector costs, benefits, and TRC benefit-cost ratios**

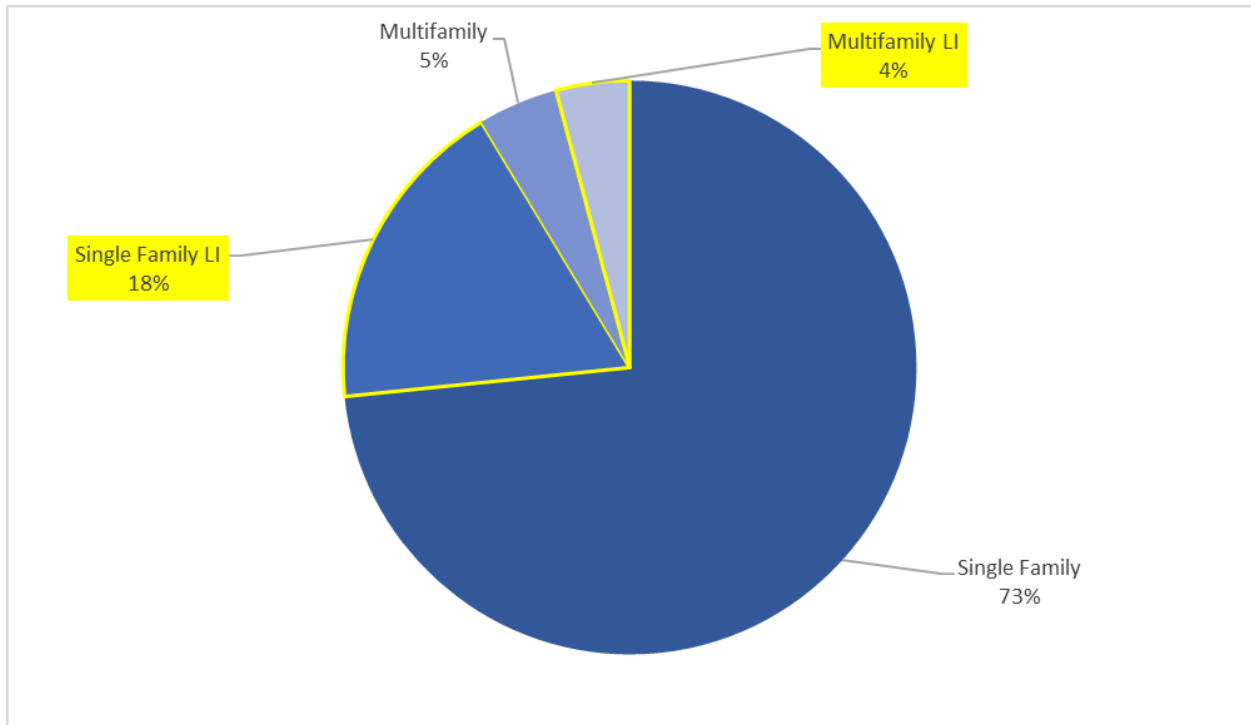
EDC	Costs (\$MM)	Benefits (\$MM)	Net benefits (\$MM)	Benefit-cost ratio (X:1)
PECO	\$145.6	\$163.5	\$17.9	1.12
PPL	\$108.6	\$144.4	\$35.9	1.33
Duquesne Light	\$31.8	\$30.9	\$(0.9)	0.97
FE: Met-Ed	\$42.7	\$52.7	\$10.0	1.23
FE: Penelec	\$36.4	\$42.6	\$6.3	1.17
FE: Penn Power	\$11.7	\$12.6	\$1.0	1.08
FE: West Penn Power	\$49.1	\$52.1	\$3.0	1.06
<b>Statewide</b>	<b>\$425.8</b>	<b>\$498.8</b>	<b>\$73.0</b>	<b>1.17</b>

Table 14 shows residential savings broken out among the four residential building types modeled in this study: single-family, multifamily, single-family low-income, and multifamily low-income. As is frequently the case, the SWE team found greater potential in single-family building types than in multifamily. Figure 4 shows the same data graphically, and clearly demonstrates the importance of the single-family building type in the portfolio of residential savings captured by this study.

**Table 14: Program Potential residential incremental annual GWh savings**

Building type	PECO	PPL	Du-quesne Light	FE: Met-Ed	FE: Pen-elec	FE: Penn Power	FE: West Penn Power	State-wide
Single-family (SF)	270.1	276.2	69.2	107.3	86.3	34.3	138.7	<b>982.1</b>
SF low-income	64.9	64.3	18.8	28.6	24.2	10.4	29.0	<b>240.3</b>
Multifamily	21.3	16.5	6.5	4.7	4.0	1.3	6.1	<b>60.4</b>
Multifamily low-income	15.8	14.8	7.8	4.8	4.9	1.8	5.6	<b>55.5</b>
<b>Total</b>	<b>372.2</b>	<b>371.8</b>	<b>102.3</b>	<b>145.4</b>	<b>119.4</b>	<b>47.8</b>	<b>179.4</b>	<b>1,338.3</b>

**Figure 4 | Program Potential residential incremental annual savings.**



*Note: Yellow-highlighted data in the chart above correspond to the low-income building types.*

Table 15 and Figure 5 show these same residential results broken out by electric energy end use rather than building type. In this case, the data indicate that the whole building end use, which is composed of whole-building and envelope measures among others, is the largest end use in terms of efficiency savings potential in the residential sector. It is important to note that this result relates to the way the SWE team modeled interactions among measures, which treats many whole-building measures as the first measures to produce savings from an engineering perspective and often captures at least some reductions in energy use in end uses like space and water heating, as well as the impact of Home Energy Reports. Beyond the total electric end use, top-saving end uses are water and space heating, cooling, and refrigeration.

**Table 15: Program Potential residential incremental annual GWh savings**

End use	PECO	PPL	Du-quesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	State-wide
Appliances	22.1	22.0	7.1	8.2	6.9	2.8	10.1	<b>79.2</b>
Cooling	35.1	21.1	6.3	8.1	6.8	1.5	9.9	<b>88.9</b>
Exterior lighting	0.4	0.4	0.1	0.1	0.1	0.1	0.2	<b>1.3</b>
Interior lighting	0.5	0.5	0.2	0.2	0.2	0.1	0.2	<b>1.7</b>
Other	4.3	4.5	0.3	1.8	1.5	0.1	0.5	<b>12.9</b>
Refrigeration	50.2	52.2	14.5	20.5	16.9	7.0	25.2	<b>186.7</b>
Space heating	61.3	63.1	18.2	24.6	20.4	8.5	30.2	<b>226.2</b>
Water heating	36.9	37.4	11.5	14.4	12.0	5.0	17.7	<b>134.8</b>
Whole building	161.4	170.7	44.2	67.5	54.7	22.8	85.4	<b>606.5</b>
<b>Total</b>	<b>372.2</b>	<b>371.8</b>	<b>102.3</b>	<b>145.4</b>	<b>119.4</b>	<b>47.8</b>	<b>179.4</b>	<b>1,338.3</b>

**Figure 5 | Program Potential residential incremental annual savings.**

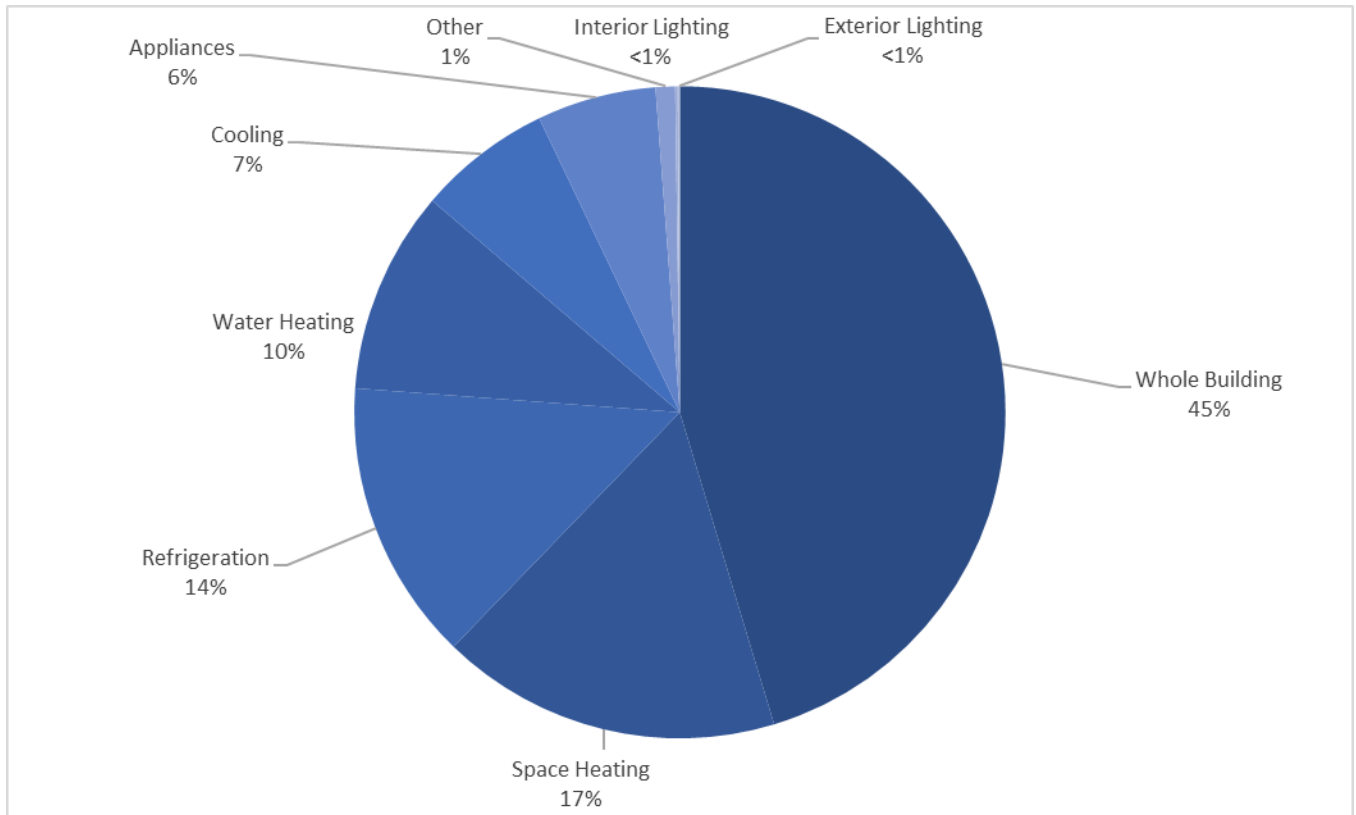


Table 16 shows the savings results for each EDC for the low-income sector. As expected, these savings are more costly to attain, and so constitute only about 7 percent of portfolio savings, despite being allocated nearly 13 percent of portfolio budgets. As with the overall residential

sector, the single-family savings opportunities are larger than multifamily when examining the low-income sector in isolation, a finding which is consistent with historical low-income programming in EE.

**Table 16: Program Potential low-income incremental annual GWh savings**

EDCEDC	Single family low-income	Multifamily low-income	Low-income total	% of total residential savings
PECO	64.9	15.8	80.7	21.7%
PPL	64.3	14.8	79.1	21.3%
Duquesne Light	18.8	7.8	26.6	26.0%
FE: Met-Ed	28.6	4.8	33.5	23.0%
FE: Penelec	24.2	4.9	29.1	24.4%
FE: Penn Power	10.4	1.8	12.2	25.5%
FE: West Penn Power	29.0	5.6	34.6	19.3%
<b>Statewide</b>	<b>240.3</b>	<b>55.5</b>	<b>295.8</b>	<b>22.1%</b>

## SMALL C&I RESULTS

In the following tables, the SWE team presents Program Potential results for the small C&I sector, which are differentiated from the large C&I sector by utility rate class. Table 17 shows incremental annual electric energy savings from efficiency for years 2021 to 2025, for each EDC and statewide.

**Table 17: Program Potential small C&I incremental annual GWh savings**

EDC	2021	2022	2023	2024	2025	Total
PECO	41.9	58.2	72.1	80.8	87.0	340.0
PPL	51.3	72.3	90.1	101.5	109.5	424.8
Duquesne Light	12.4	17.1	20.9	24.0	26.4	100.9
FE: Met-Ed	14.4	20.2	25.2	28.3	30.7	118.8
FE: Penelec	21.6	30.0	37.6	42.4	46.0	177.6
FE: Penn Power	4.9	7.0	8.8	10.3	11.5	42.5
FE: West Penn Power	17.2	24.1	30.1	35.1	38.9	145.3
<b>Statewide</b>	<b>163.8</b>	<b>228.9</b>	<b>284.8</b>	<b>322.4</b>	<b>350.0</b>	<b>1,349.9</b>

Table 18 shows key economic results for this sector, with robust BCRs ranging from 1.69:1 to 2.24:1 across EDCs, resulting in a 2.04:1 sector-level statewide BCR.



**Table 18: Program Potential small C&I costs, benefits, and TRC benefit-cost ratios**

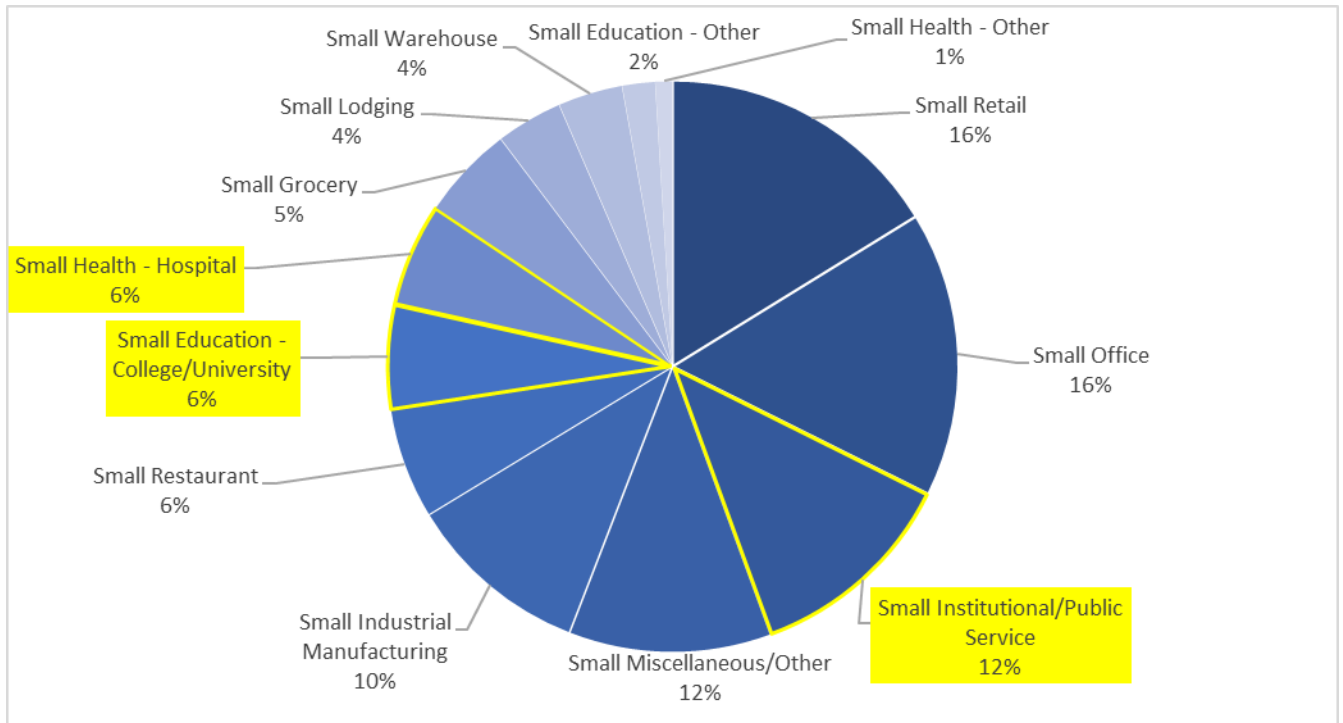
<b>EDC</b>	<b>Costs (\$MM)</b>	<b>Benefits (\$MM)</b>	<b>Net benefits (\$MM)</b>	<b>Benefit-cost ratio (X:1)</b>
PECO	\$157.3	\$315.7	\$158.4	2.01
PPL	\$188.0	\$421.6	\$233.5	2.24
Duquesne Light	\$47.1	\$82.7	\$35.6	1.76
FE: Met-Ed	\$54.1	\$112.0	\$57.9	2.07
FE: Penelec	\$81.0	\$158.2	\$77.2	1.95
FE: Penn Power	\$17.4	\$29.3	\$11.9	1.69
FE: West Penn Power	\$60.6	\$113.0	\$52.4	1.87
<b>Statewide</b>	<b>\$605.4</b>	<b>\$1,232.4</b>	<b>\$627.0</b>	<b>2.04</b>

Table 19 and Figure 6 respectively show the sum and proportion of the small C&I sector’s incremental annual savings between 2021 and 2025, broken out among building types. Small retail, small office, and small institutional / public service are the three highest saving building types, with small miscellaneous and small industrial rounding out the top five.

**Table 19: Program Potential small C&I incremental annual GWh savings**

Building type	PECO	PPL	Du-quesne Light	FE: Met-Ed	FE: Pen-elec	FE: Penn Power	FE: West Penn Power	State-wide
Small office	65.6	58.5	29.4	15.2	24.7	8.2	16.3	<b>217.8</b>
Small retail	53.0	67.7	13.5	22.0	28.3	7.2	27.3	<b>218.9</b>
Small education - college / university	17.8	24.8	6.6	6.2	12.1	2.3	10.1	<b>80.0</b>
Small education - other	5.6	7.9	2.0	2.0	3.8	0.7	3.2	<b>25.2</b>
Small grocery	11.5	28.6	3.5	5.5	13.7	2.5	6.6	<b>71.8</b>
Small health - hospital	17.5	27.5	5.8	5.9	11.7	2.3	8.7	<b>79.4</b>
Small health - other	3.0	4.5	1.0	1.0	1.9	0.4	1.5	<b>13.2</b>
Small industrial manufacturing	31.7	51.1	6.2	14.9	20.3	2.7	13.8	<b>140.8</b>
Small institutional / public service	63.0	35.6	11.1	10.4	22.3	3.6	16.7	<b>162.7</b>
Small lodging	7.3	19.3	2.0	4.3	6.9	2.1	9.1	<b>51.0</b>
Small misc. / other	35.8	51.0	11.8	14.5	17.4	5.2	19.4	<b>155.1</b>
Small restaurant	20.1	26.1	6.4	9.7	9.5	2.8	9.9	<b>84.5</b>
Small warehouse	8.3	22.2	1.7	7.3	5.0	2.6	2.6	<b>49.7</b>
<b>Statewide</b>	<b>340.0</b>	<b>424.8</b>	<b>100.9</b>	<b>118.8</b>	<b>177.6</b>	<b>42.5</b>	<b>145.3</b>	<b>1,349.9</b>

**Figure 6 | Program Potential small C&I incremental annual savings.**



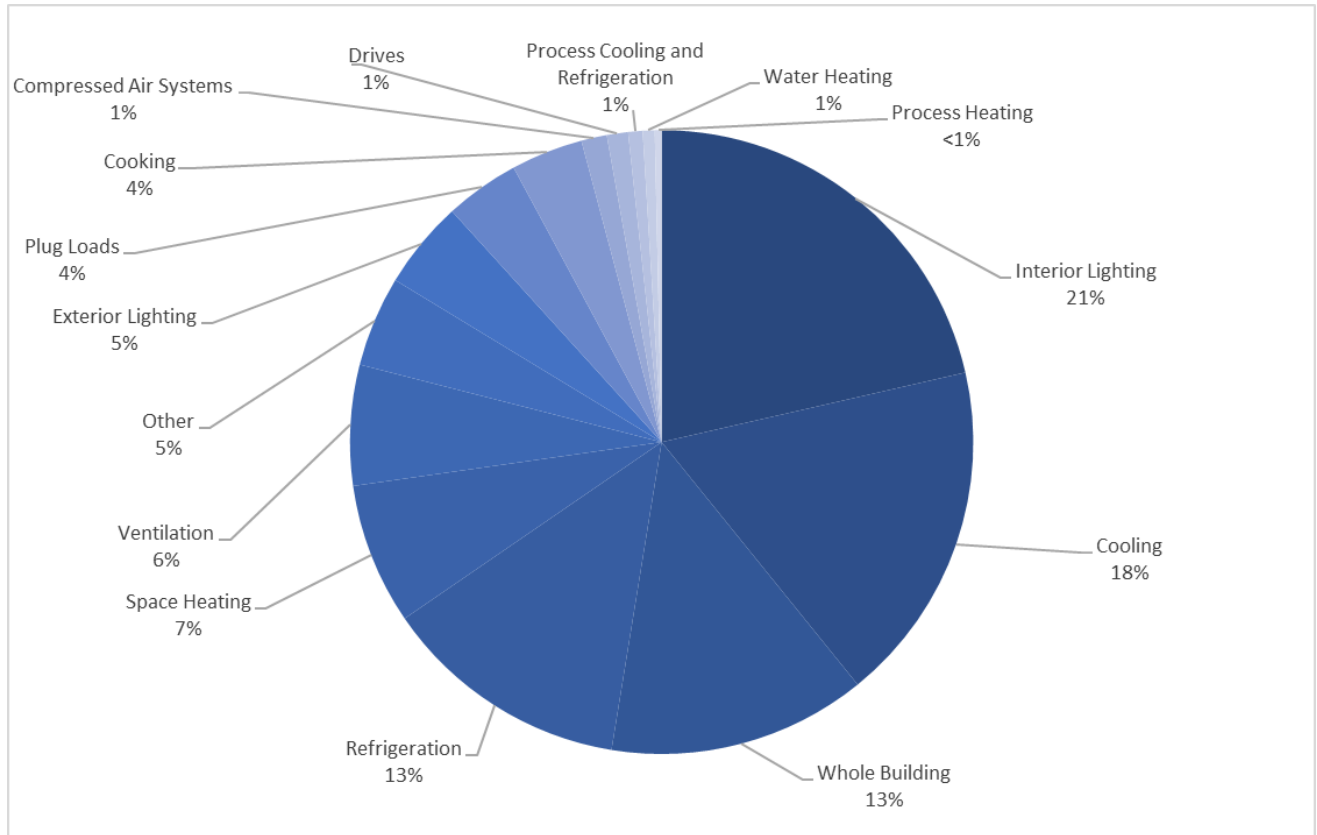
*Note: Yellow-highlighted data in the chart above correspond to the GNI building types.*

Table 20 and Figure 7 show how the small C&I savings break out by major end use. The largest end use is interior lighting. This is followed by cooling and whole building, which is fairly typical of small C&I buildings. It should be noted that the whole building end use is likely to include interior lighting, cooling, and ventilation savings as well.

**Table 20: Program Potential small C&I incremental annual savings**

End Use	PECO	PPL	Du-quesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	State-wide
Cooling	60.8	78.5	17.8	20.5	31.0	7.4	23.6	<b>239.7</b>
Exterior lighting	14.5	17.6	5.9	5.2	7.8	2.5	8.1	<b>61.7</b>
Interior lighting	79.0	94.4	16.4	27.1	41.1	7.0	24.1	<b>289.1</b>
Other	16.1	17.1	7.8	4.8	7.2	2.7	7.7	<b>63.3</b>
Plug loads	13.1	14.4	5.3	4.0	6.6	2.0	6.7	<b>52.2</b>
Refrigeration	40.4	53.6	12.5	15.8	23.6	6.3	21.5	<b>173.6</b>
Space heating	24.5	29.7	6.9	7.8	13.6	3.5	12.8	<b>98.9</b>
Water heating	1.8	2.6	0.7	0.7	1.0	0.3	1.2	<b>8.3</b>
Whole building	46.4	62.7	13.3	17.2	19.2	4.8	17.3	<b>180.9</b>
Cooking	12.5	14.9	3.9	4.6	6.6	1.7	6.1	<b>50.4</b>
Ventilation	21.2	23.7	7.9	6.8	10.8	3.2	10.8	<b>84.2</b>
Drives	3.7	5.9	-	1.8	3.5	-	-	<b>14.9</b>
Proc. cooling / refrig.	1.8	2.9	0.8	0.9	1.7	0.3	1.7	<b>10.1</b>
Process heating	0.9	1.4	0.4	0.4	0.8	0.2	0.8	<b>4.8</b>
Compressed air systems	3.2	5.2	1.4	1.5	3.0	0.6	3.0	<b>17.9</b>
<b>Total</b>	<b>340.0</b>	<b>424.8</b>	<b>100.9</b>	<b>118.8</b>	<b>177.6</b>	<b>42.5</b>	<b>145.3</b>	<b>1,349.9</b>

**Figure 7 | Program Potential small C&I incremental annual savings.**



## LARGE C&I RESULTS

In the following tables, the SWE team offers results for the Program Potential for the large C&I sector. Table 21 shows incremental annual electric energy savings from efficiency for years 2021 to 2025, for each EDC and statewide.

**Table 21: Program Potential large C&I incremental annual GWh savings**

EDC	2021	2022	2023	2024	2025	Total
PECO	73.7	106.0	132.5	147.3	158.4	617.9
PPL	47.7	72.3	90.7	100.0	106.7	417.5
Duquesne Light	16.7	23.4	28.6	32.5	35.5	136.6
FE: Met-Ed	21.3	32.4	40.7	44.7	47.8	186.9
FE: Penelec	15.5	21.9	27.1	29.7	31.8	126.1
FE: Penn Power	4.3	6.0	7.3	8.3	9.0	34.9
FE: West Penn Power	20.4	28.8	35.2	39.6	43.2	167.2
<b>Statewide</b>	<b>199.6</b>	<b>290.8</b>	<b>362.1</b>	<b>402.1</b>	<b>432.5</b>	<b>1,687.2</b>

Table 22 captures the large C&I sector’s economic results, with EDC-specific BCRs ranging from 1.44:1 to 1.67:1, and a statewide BCR for this sector of 1.61:1.

**Table 22: Program Potential large C&I costs, benefits, and TRC benefit-cost ratios**

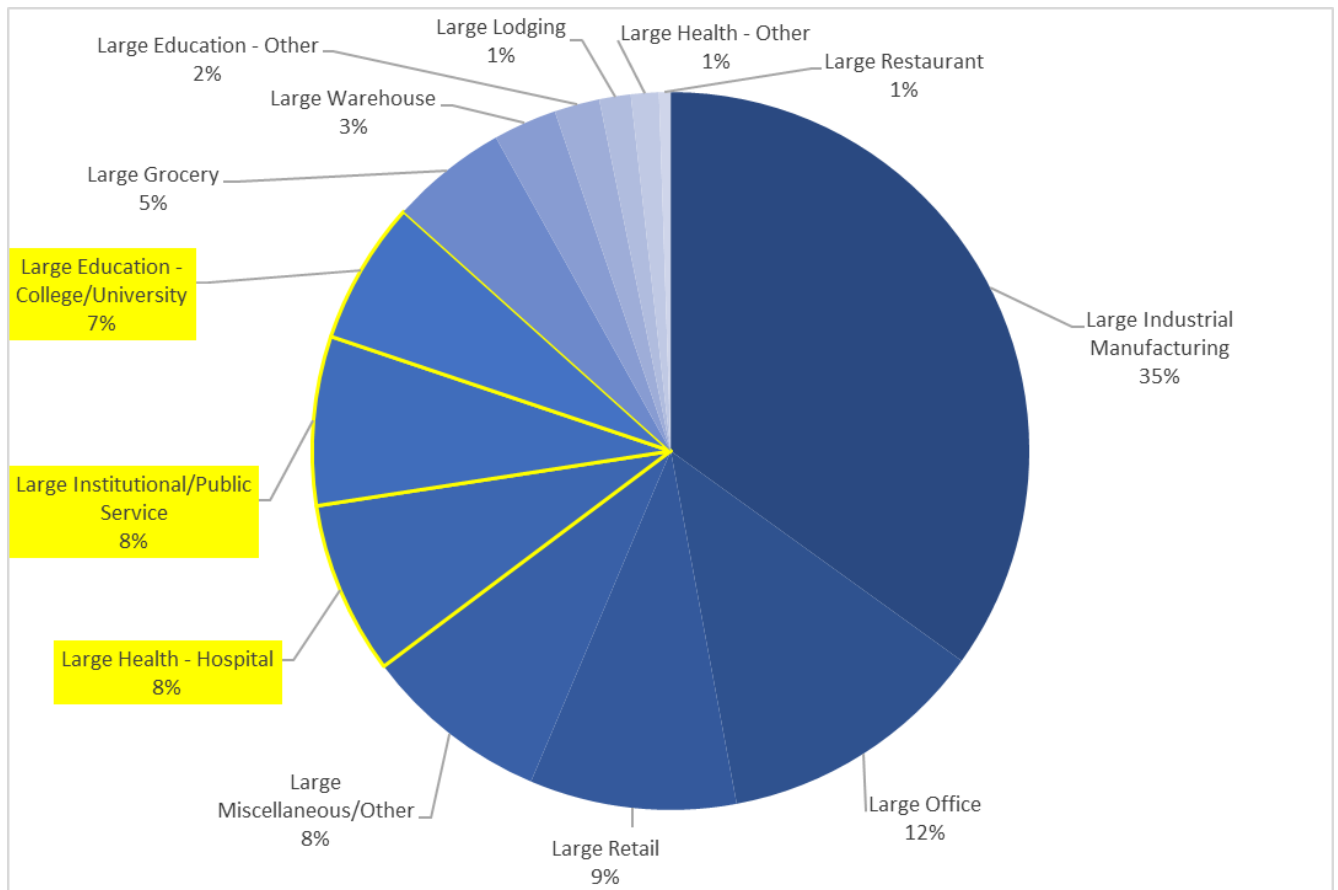
EDC	Costs (\$MM)	Benefits (\$MM)	Net benefits (\$MM)	Benefit-cost ratio (X:1)
PECO	\$299.8	\$496.1	\$196.3	1.65
PPL	\$191.9	\$318.6	\$126.7	1.66
Duquesne Light	\$52.9	\$79.8	\$26.8	1.51
FE: Met-Ed	\$84.0	\$126.5	\$42.5	1.51
FE: Penelec	\$61.0	\$91.9	\$30.9	1.51
FE: Penn Power	\$14.7	\$21.1	\$6.5	1.44
FE: West Penn Power	\$62.5	\$104.4	\$41.9	1.67
<b>Statewide</b>	<b>\$766.9</b>	<b>\$1,238.4</b>	<b>\$471.6</b>	<b>1.61</b>

Table 23 and Figure 8 show how the large C&I sector’s savings break out by building type. As is typical of similar states, industrial customers offer the highest potential opportunities; followed by large offices, retail, and other; and then closely followed by institutional, health, education, and grocery.

**Table 23: Program Potential large C&I incremental annual GWh savings**

Building type	PECO	PPL	Duquesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	State-wide
Large office	116.7	19.6	32.2	8.9	3.1	1.1	22.8	<b>204.5</b>
Large retail	59.2	34.8	10.0	21.3	14.3	8.9	8.7	<b>157.1</b>
Large education - college / university	45.6	18.0	17.2	9.6	5.1	1.4	12.1	<b>109.0</b>
Large education - other	14.4	5.7	5.4	3.0	1.6	0.4	3.9	<b>34.4</b>
Large grocery	43.5	19.0	5.5	7.8	6.3	0.4	6.3	<b>88.8</b>
Large health - hospital	51.3	34.1	18.2	8.7	8.9	1.4	9.0	<b>131.6</b>
Large health - other	8.4	5.5	2.9	1.4	1.4	0.2	1.5	<b>21.2</b>
Large industrial manufacturing	135.4	191.8	23.9	87.8	58.7	15.0	76.8	<b>589.5</b>
Large institutional / public service	64.0	19.6	11.2	9.7	14.7	0.8	8.4	<b>128.5</b>
Large lodging	8.8	10.1	1.9	1.2	0.0	0.1	1.8	<b>24.0</b>
Large misc. / other	58.0	42.5	7.0	8.5	11.9	1.6	11.9	<b>141.5</b>
Large restaurant	2.6	1.3	0.2	1.4	-	-	3.3	<b>8.8</b>
Large warehouse	10.1	15.4	1.1	17.5	0.1	3.4	0.8	<b>48.3</b>
<b>Statewide</b>	<b>617.9</b>	<b>417.5</b>	<b>136.6</b>	<b>186.9</b>	<b>126.1</b>	<b>34.9</b>	<b>167.2</b>	<b>1,687.2</b>

**Figure 8 | Program Potential large C&I incremental annual savings.**



*Note: Yellow-highlighted data in the chart above correspond to the GNI building types.*

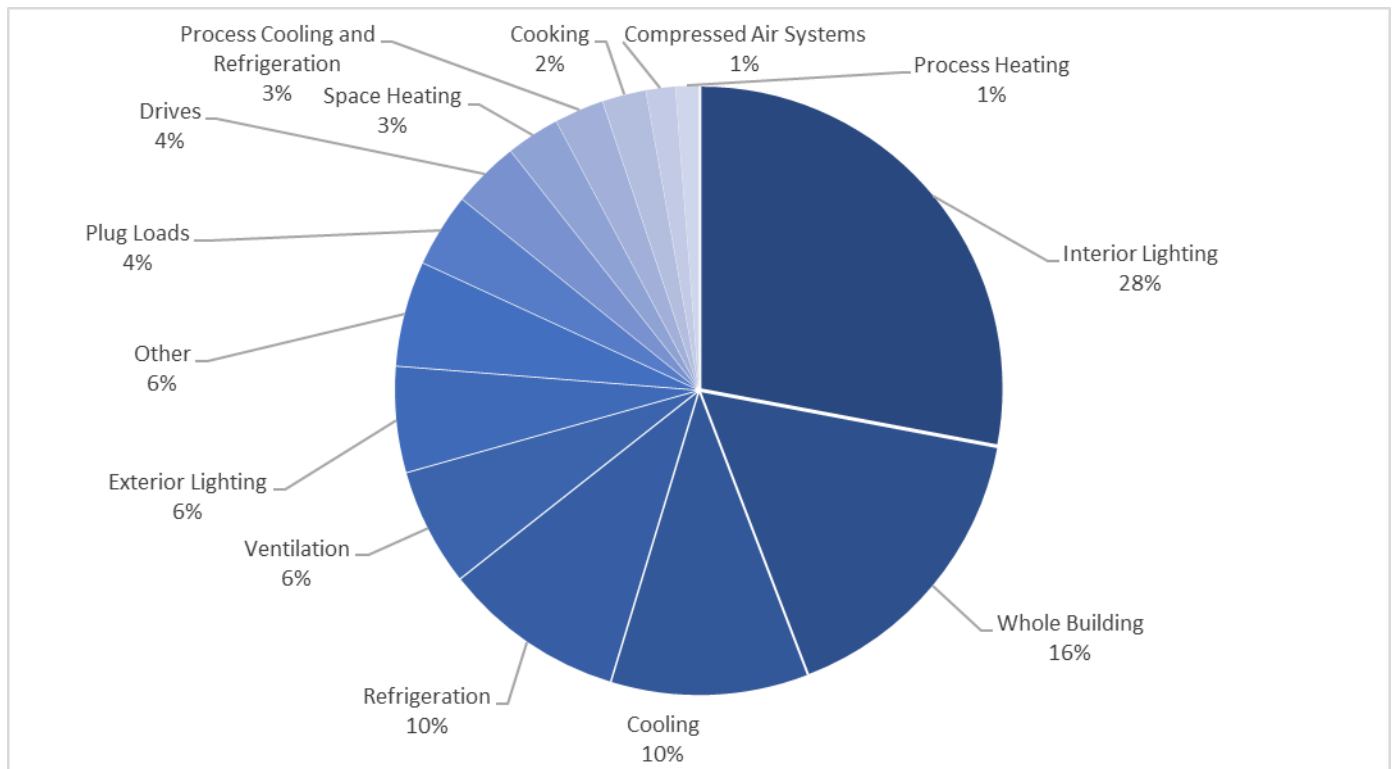
Table 24 and Figure 9 show the large C&I sector's savings breakdown by major end use category. Interior lighting efficiency offers the largest opportunity overall. After that is whole building, cooling, and refrigeration, which are traditionally the highest commercial electric opportunities besides ventilation.

**Table 24: Program Potential large C&I incremental annual GWh savings**

End use	PECO	PPL	Du-quesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	State-wide
Cooling	78.3	38.0	15.5	15.5	9.4	2.5	12.0	<b>171.2</b>
Exterior lighting	28.4	20.1	9.2	9.5	7.4	3.1	13.9	<b>91.7</b>
Interior lighting	160.2	115.0	27.8	53.6	41.4	10.3	47.3	<b>455.6</b>
Other	37.1	16.9	11.4	6.0	5.4	1.6	12.8	<b>91.1</b>
Plug loads	26.1	11.4	9.7	4.9	3.7	1.1	7.0	<b>63.8</b>
Refrigeration	65.5	32.2	14.0	16.6	11.6	4.6	13.4	<b>157.9</b>
Space heating	20.3	9.9	4.7	3.8	3.2	0.7	3.9	<b>46.3</b>
Water heating	3.2	1.9	0.9	0.5	0.4	0.1	0.7	<b>7.8</b>
Whole building	100.5	87.8	15.1	38.5	8.5	2.4	11.1	<b>263.9</b>
Cooking	15.9	7.4	4.4	3.3	2.6	0.5	4.0	<b>38.1</b>
Ventilation	41.9	19.0	14.3	8.0	6.3	2.0	10.3	<b>101.8</b>
Drives	15.7	22.3	-	10.3	10.1	-	-	<b>58.4</b>
Process cooling / refrig.	7.7	11.0	3.0	5.1	4.9	1.9	9.5	<b>43.0</b>
Process heating	3.7	5.2	1.4	2.4	2.3	0.9	4.5	<b>20.3</b>
Compressed air systems	13.7	19.4	5.3	9.0	8.7	3.3	16.8	<b>76.2</b>
<b>Statewide</b>	<b>617.9</b>	<b>417.5</b>	<b>136.6</b>	<b>186.9</b>	<b>126.1</b>	<b>34.9</b>	<b>167.2</b>	<b>1,687.2</b>



**Figure 9 | Program Potential large C&I incremental annual savings.**



## GOVERNMENT, NON-PROFIT, AND INSTITUTIONAL RESULTS

For this study, the SWE team was directed to separately report Program Potential found for the government, non-profit, and institutional (GNI) building types. In consultation with TUS, it was determined that education - college / university, health - hospital, and institutional / public service would constitute the GNI building types for both large and small C&I. The SWE team found substantial GNI savings potential, as shown in Table 25. These savings represent approximately 23 percent of the total C&I potential across both small C&I and large C&I sectors, which indicates that these customer segments show robust savings potential. This is consistent with the notion that GNI customers are likely to participate in efficiency programs much like other C&I customers. Finally, it is worth noting that GNI savings are distributed fairly evenly among the three constituent building types used to model this sector, although the institutional / public service segment does show higher total savings.

**Table 25: Program Potential GNI incremental annual GWh savings**

Building Type	PECO	PPL	Duquesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	Statewide
Education - college / university	63.4	42.8	23.9	15.8	17.1	3.8	22.2	<b>189.0</b>
Health - hospital	68.8	61.6	24.0	14.6	20.5	3.8	17.7	<b>210.9</b>
Institutional / public services	127.0	55.2	22.2	20.1	37.0	4.4	25.2	<b>291.2</b>
<b>Total</b>	<b>259.2</b>	<b>159.6</b>	<b>70.1</b>	<b>50.5</b>	<b>74.7</b>	<b>12.0</b>	<b>65.1</b>	<b>691.1</b>
<b>% of total C&amp;I savings</b>	<b>27.1%</b>	<b>18.9%</b>	<b>29.5%</b>	<b>16.5%</b>	<b>24.6%</b>	<b>15.4%</b>	<b>20.8%</b>	<b>22.8%</b>

## SECTION 4: CHP METHODOLOGY

### INTRODUCTION

The CHP module of the EEPDR MPS was conducted separately from the bulk of EE potential estimation due to the different nature of the technology and market for CHP, as well as differences in the data used for this portion of the study. The CHP study relied on a bottom-up analysis, using data covering 11,180 natural gas customers with annual usage of more than 28,000 therms, the minimum load needed to fully use a 50 kW microturbine. The study involved large commercial and industrial, large multifamily, and medium-size commercial customers with high natural gas consumption. To calculate the CHP technical potential for the areas subject to Act 129, the SWE team analyzed the data for CHP fit, equipment sizing, and engine type before passing through the cost-effectiveness screening. The resulting data were also matched to EDCs by address and ZIP Code.

### TECHNICAL POTENTIAL METHODS

CHP Technical Potential is an estimate of CHP potential for achieving savings, constrained only by technological limits. For CHP, the study team calculated and expressed Technical Potential in terms of electric energy (kWh) and generation (kW) potential, and net thermal impacts (MMBtu).

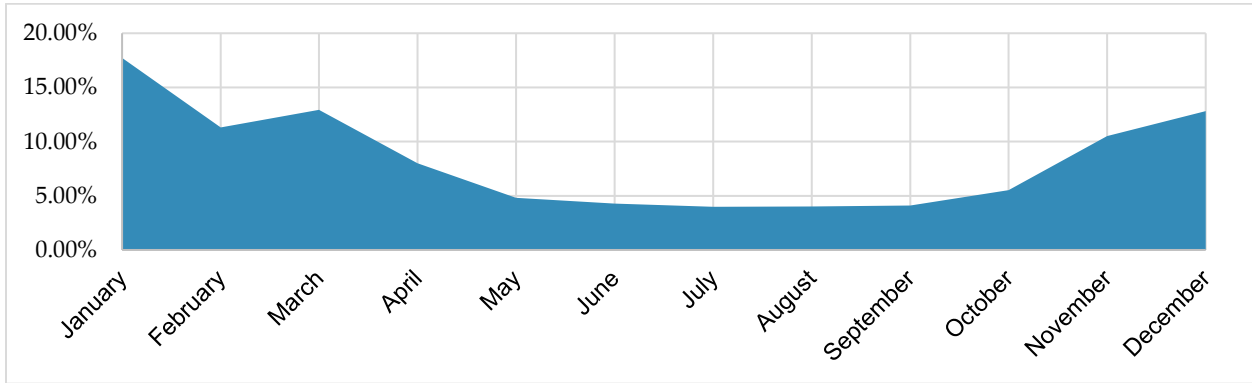
#### Thermal Load Profile Analysis

As the first step in the technical potential estimation, the SWE team performed a thermal load profile analysis using monthly gas consumption data to narrow the list of use-eligible and suitable customers. Properly sized CHP systems can run continuously through the year with full use of the electricity generated and the waste heat produced. The SWE team analyzed monthly use to create annual load profiles for each natural gas customer. The sizing of CHP systems did not include constraints on maximum electric power generation. The study assumed that customers were able to export excess power generation under the net metering rules in Pennsylvania. Table 26 and Figure 10 show the natural gas consumption data and associated load profile of a typical utility account holder in the pool of suitable customers.

**Table 26: Utility customers' natural gas consumption and load profile**

Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
2,124	1,356	1,551	958	578	512	478	482	490	662	1,259	1,534	11,985
17.73%	11.32%	12.94%	7.99%	4.82%	4.27%	3.99%	4.02%	4.09%	5.52%	10.51%	12.80%	100.00%

**Figure 10 | Overall customer monthly natural gas load profile.**



The SWE team used more detailed screening to remove facilities that would be incompatible for a CHP system. The SWE team created an algorithm to identify customers with a relatively constant thermal load. For each customer, the team flagged low-load months when consumption was less than 4.16 percent of the annual consumption.<sup>29</sup> If the number of low-load months exceeded four, or the average consumption during low-load months was less than 2 percent, the SWE team deemed CHP to be incompatible with the customer’s facility, and thus we removed that customer from further consideration of CHP.

Customers with large annual consumption might trigger the low-load flag because of inconsistent loads, but they might still have sufficient use for small internal combustion (IC) engines or microturbines to warrant inclusion. The SWE team retained customers in the analysis when thermal load requirement was greater than 0.31 MMBtu per hour during the lowest percentage load month.<sup>30</sup>

### Thermal Input Rate

Next, the SWE team calculated average monthly natural gas use when consumption was less than 8.33 percent<sup>31</sup> of the annual total, to estimate the annual thermal input that can be supplied by a CHP system. Table 27 shows an example of the months selected to calculate the thermal input rate for a typical customer.

**Table 27: Months selected to determine the thermal input rate for a CHP facility**

Apr	May	June	July	Aug	Sept	Oct	Average
958	578	512	478	482	490	662	
7.99%	4.82%	4.27%	3.99%	4.02%	4.09%	5.52%	4.96%

The SWE team calculated annual thermal production of a CHP system by multiplying the annual natural gas consumption of the facility by the average of the months in which the gas consumption was less than 8.33 percent. The algorithms were:

<sup>29</sup> 4.16 percent is equivalent to half of average monthly consumption (100 percent divided by 12, divided in half).

<sup>30</sup> 0.31 MMBtu per hour corresponds to approximately 50 kW of microturbine capacity.

<sup>31</sup> 8.33 percent is the average monthly use (100 percent divided by 12).

*Annual thermal supply from CHP*

$$= \text{Average}_{\text{months} < 8.33\%} * \text{Annual consumption} * 12 \left( \frac{\text{months}}{\text{year}} \right) * \left( \frac{1 \text{ MMBtu}}{0.973 \text{ CCF}} \right)$$

$$\begin{aligned} \text{Annual thermal supply from CHP} &= 4.96\% * 11,985 * 12 \left( \frac{\text{months}}{\text{year}} \right) * \left( \frac{1 \text{ MMBtu}}{0.973 \text{ CCF}} \right) \\ &= 7,329.14 \text{ MMBtu} \end{aligned}$$

The annual thermal input of the CHP system was then divided by the estimated operating hours of the system. The SWE team assumed a capacity factor of 90 percent for all CHP projects, to account for maintenance and other downtime.

$$\begin{aligned} \text{Useful thermal input to the facility from CHP} &= \frac{\text{Annual thermal supply from CHP}}{90\% * 8,760 \text{ hrs per year}} \\ &= 0.92 \text{ MMBtu per hr} \end{aligned}$$

## DOE Operating Curves

To determine other CHP system parameters such as efficiency, cost, and sizing for each customer, the SWE team used DOE CHP Technology Fact Sheets.<sup>32</sup> The Fact Sheets provide typical thermal and electrical efficiencies, fuel input and thermal output rates, and installed and O&M cost per kW for various CHP technologies and sizes. The SWE team used the DOE information to generate regression models for calculating CHP system parameters for each customer. The team considered four types of systems for each customer:

- Microturbine
- Natural gas turbine
- IC engine
- Steam turbine

Table 28 presents an example of the information obtained from the DOE CHP Technology Fact Sheets, which the team used to create regression models for each technology.

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<sup>32</sup> DOE, 2016. *Combined Heat and Power Technology Fact Sheet Series*.

“Reciprocating Engines,” <https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Recip%20Engines.pdf>;

“Gas Turbines,” <https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Gas%20Turbine.pdf>;

“Microturbines,” [https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Microturbines\\_0.pdf](https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Microturbines_0.pdf);

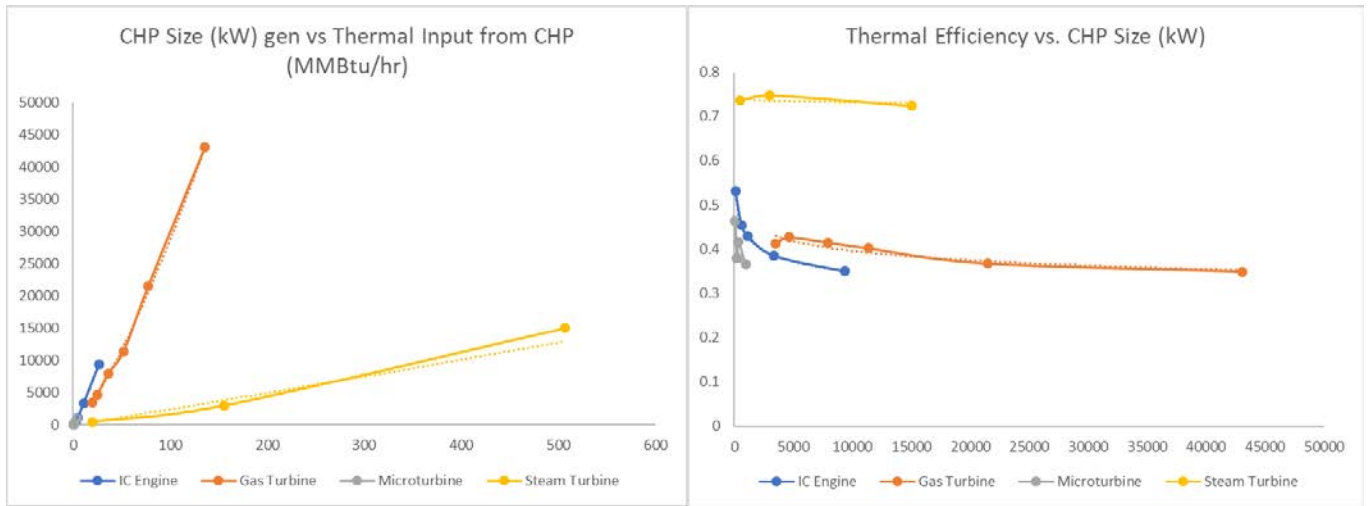
“Steam Turbines” <https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Steam%20Turbine.pdf>.

**Table 28: Data sample from U.S. DOE CHP Technology Fact Sheets used in this study**

Technology	Useful thermal rate (MMBtu/hr)	CHP size (kW)	Fuel input (MMBtu/hr)	Thermal efficiency	Electrical efficiency	Overall system efficiency	Installed cost (\$/kW)	O&M cost (cents/kWh)	Measure life
IC engine	0.6	100	1.2	0.530	0.297	0.827	2,900	2.4	15
IC engine	2.8	633	6.3	0.454	0.345	0.799	2,840	2.1	15
IC engine	4.5	1141	10.4	0.430	0.375	0.806	2,370	1.9	15
IC engine	10.7	3,325	27.7	0.386	0.409	0.795	1,800	1.6	15
IC engine	26.6	9,341	76.1	0.350	0.419	0.769	1,430	0.9	15
Gas turbine	19.6	3,515	47.5	0.413	0.252	0.665	3,320	1.3	15
Gas turbine	25.2	4,600	59.1	0.426	0.266	0.692	2,817	1.3	15
Gas turbine	36.3	7,965	87.6	0.414	0.310	0.725	2,017	1.2	15
Gas turbine	52.2	11,350	130.0	0.402	0.298	0.699	1,798	1.2	15
Gas turbine	77.4	21,475	210.8	0.367	0.348	0.715	1,474	0.9	15
Gas turbine	135.8	43,069	389.0	0.349	0.378	0.727	1,276	0.9	15
Microturbine	0.4	61	0.8	0.464	0.248	0.712	3,220	1.3	15
Microturbine	0.9	190	2.3	0.380	0.283	0.663	3,150	1.6	15
Microturbine	1.2	242	3.2	0.380	0.261	0.641	2,700	1.2	15
Microturbine	1.6	323	3.9	0.416	0.286	0.702	2,560	0.8	15
Microturbine	4.2	950	11.4	0.366	0.284	0.649	2,500	1.2	15
Steam turbine	20.0	500	27.2	0.735	0.063	0.798	1136	1.0	15
Steam turbine	155.5	3000	208.0	0.748	0.049	0.797	682	0.9	15
Steam turbine	506.8	15,000	700.1	0.724	0.073	0.797	666	0.6	15

The data from Table 28 formed the basis of correlations with CHP system size to create regression models for parameters such as thermal / electrical efficiency, installation cost, and O&M cost. Figure 11 shows regression models created from the DOE Fact Sheets.

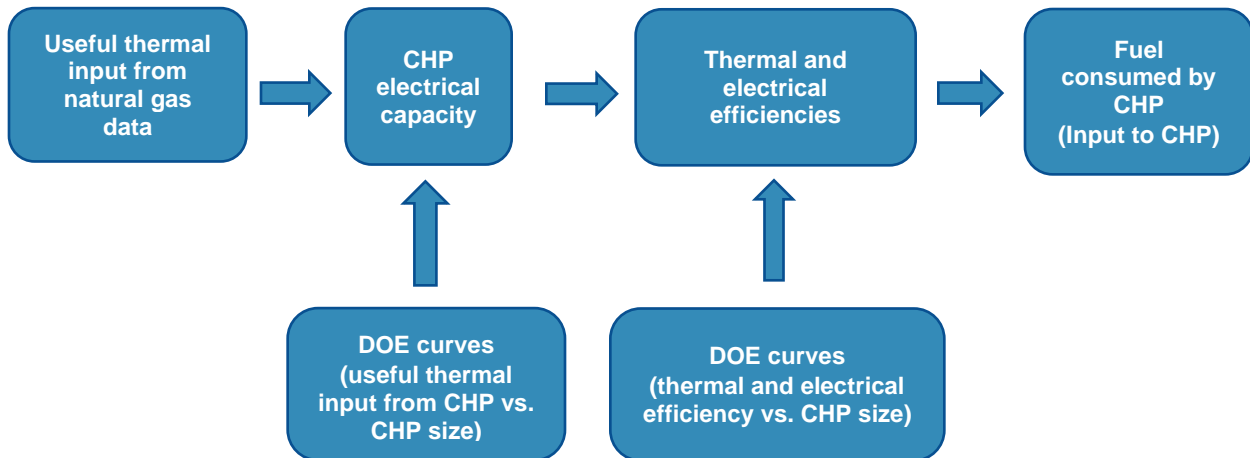
**Figure 11 | DOE CHP technology curves and regressions.**



### CHP Sizing and System Type Analysis

The next technical screening step involved determining the best size, and associated data, for each system type for each customer installing that system type. This step is primarily a calculation based on prior steps and data. Figure 12 shows the flowchart of the methods used to calculate the CHP system size and fuel consumed for each customer and technology combination.

**Figure 12 | Flowchart of methods to calculate CHP system size and fuel use.**



The SWE team used the thermal input rate, calculated in the previous step, to determine the appropriate size in kW of the CHP system for each of the four technologies (microturbine, natural gas turbine, IC engine, and steam turbine), applying the regression models described above. The models were also used to calculate the thermal, electrical, and system efficiencies. Using thermal efficiency, the SWE team calculated the amount of fuel required to operate the CHP system. The annual fuel consumption for microturbines, gas turbines, and steam turbines (source fuel) was

reported in MMBtus of natural gas. The IC engine fuel consumption was reported in gallons of No. 2 distillate fuel oil.

### Accounting for Existing Customers

Once the technical potential was calculated as described, the SWE team summed the CHP potential for each customer to derive the total technical potential for each EDC and CHP technology type. The last step was subtracting the capacity of the existing CHP installations in Pennsylvania from the analysis to avoid double counting in the estimation of Technical Potential, as well as subsequent analyses of Economic and Achievable potential that build upon the Technical Potential.

## ECONOMIC POTENTIAL METHODS

*Economic Potential* refers to the subset of the Technical Potential that is economically cost-effective as conventional supply-side energy resources. To determine the economics for each CHP installation, the SWE used the TRC Test following the 2021 TRC Test Final Order.

### Developing Cost Data

In general, the benefits calculated in the TRC typically include the avoided electric supply costs for the periods when there are electric load reductions, savings of other resources (such as fossil fuel, water, and O&M costs as negative benefits), and applicable federal and state energy efficiency tax credits. Costs in the TRC are program costs paid by the utility and the participants. Thus, the SWE team included all equipment costs, installation, and program administration costs in this test, without regard for the source of payment of these costs. The SWE team included net fuel costs as a negative benefit in the TRC Test, estimating the operating fuel costs of CHP and subtracting the estimated costs of other systems serving the thermal load at the facility.

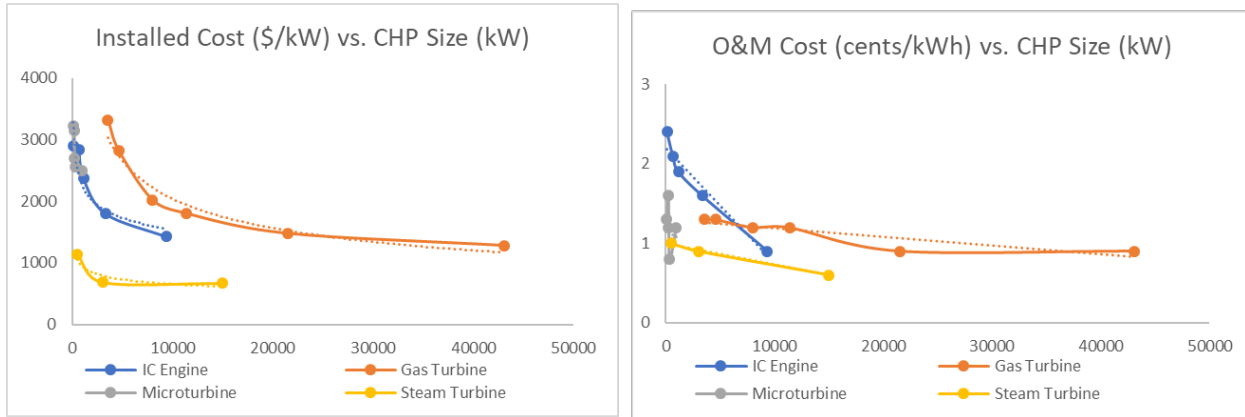
The team also used information from the DOE CHP Fact Sheets to calculate the upfront installed cost (incremental cost) and annual O&M impacts. Incremental cost was reduced by 10 percent to account for the federal Investment Tax Credit applicable to CHP systems.<sup>33</sup> Figure 13 presents the capital and O&M regression models, drawn from the DOE CHP Fact Sheet dataset.

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<sup>33</sup> Federal Business Investment Tax Credit: <https://www.epa.gov/chp/dchpp-chp-policies-and-incentives-database>.

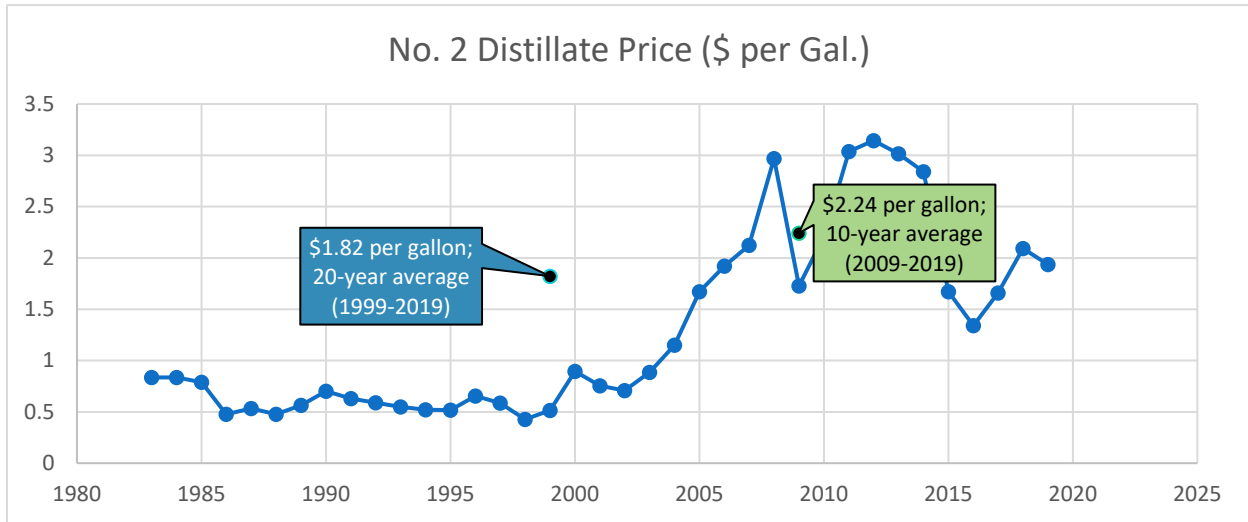


**Figure 13 | DOE CHP technology curves for installed cost and for O&M costs.**



The SWE team drew natural gas and electric energy avoided costs from the 2021 TRC Test Final Order’s Avoided Cost Calculator, consistent with the direction contained in the Order. Since it is assumed that all IC engine installations use No. 2 distillate fuel, the calculated fuel costs for this CHP type use this fuel source. The SWE team assumed the 2021 price for No. 2 distillate to be the 10-year average price in Pennsylvania, which was taken from EIA data.<sup>34</sup> Figure 14 shows the nominal wholesale price of No. 2 distillate in Pennsylvania since 1983.

**Figure 14 | Pennsylvania's historical costs of No. 2 distillate fuel.**



Source: EIA

The 2021 TRC Test Final Order limits measure lives to a maximum of 15 years when calculating the TRC Test ratios. Although many CHP technologies can have longer lifetimes, the SWE team capped the measure lives and the associated costs and benefits at a maximum of 15 years.

<sup>34</sup> U.S. Energy Information Administration, n.d. “No. 2 Distillate Prices by Sales Type.” [https://www.eia.gov/dnav/pet/PET\\_PRI\\_DIST\\_DCU\\_SPA\\_A.htm](https://www.eia.gov/dnav/pet/PET_PRI_DIST_DCU_SPA_A.htm).

## Preferred Technology Selection

To determine the most economically feasible CHP technology for customers who passed the Technical Potential screening, the SWE team ran more than 50,000 cost-effectiveness tests to calculate costs and benefits for all technically feasible CHP technologies at the customer level. The technology with the highest TRC BCR was selected as the best-fit system type for a given customer. The economic screening counterbalanced the technical analysis, and in some cases, the technologies that provided the best technical outcome (efficiency and power generation) were overruled by economic factors. A TRC threshold of 0.9 was set to disqualify customers for which CHP was not cost effective, while accounting for known, but not quantified, CHP benefits that can directly affect CHP adoption. Resiliency is one such benefit. The SWE team also considered the following capacity thresholds for various technologies, to prevent skewed economic results:

- Microturbines were capped at 1.5 MW per customer
- IC engines were capped at 5 MW per customer
- Customers with a cost-effective capacity less than 100 kW or greater than 20 MW were also removed from the analysis<sup>35</sup>

Economic Potential is generally the subset of Technical Potential that passes cost-effectiveness screening. However, since competing technologies were screened in direct competition in this study, the Economic Potential screening chooses the *most* cost-effective option, a standard practice for mutually exclusive measures in potential studies.

## ACHIEVABLE POTENTIAL METHODS

As with EE, determining reasonable adoption curves is a critical step in estimating maximum achievable CHP potential. To estimate CHP adoption curves for Pennsylvania, the SWE first analyzed the existing installed capacity.

### Estimating Adoption Curves

Using DOE's CHP Database and the PUC's CHP reports, the SWE team reviewed the technology, application, vintage, and capacities of existing CHP deployed in Pennsylvania.<sup>36,37</sup> This allowed the team to obtain a baseline of the current market for CHP and an understanding of which technologies have been deployed across various sectors over time.

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<sup>35</sup> Systems above 20 MW are so large that they begin to look as much like traditional supply-side generation assets as CHP. These sites were removed partly due to this blurred definition, and partly in recognition of a few very large installations' potentially outsized impact on overall CHP (or even overall efficiency) potential.

<sup>36</sup> DOE, n.d. "Combined Heat and Power Installation Database." <https://doe.icfwebservices.com/chpdb/>.

<sup>37</sup> CHP Biennial Report. March 28, 2019. Pennsylvania Public Utility Commission Bureau of Technical Utility Services Policy & Planning Section at [http://www.puc.pa.gov/Electric/pdf/CHPWG/CHP\\_Biennial\\_Report\\_2019.pdf](http://www.puc.pa.gov/Electric/pdf/CHPWG/CHP_Biennial_Report_2019.pdf).

Next, the team reviewed DOE Fact Sheets on the different CHP technologies evaluated for this potential study: steam turbines, gas turbines, microturbines, and IC engines.<sup>38,39,40,41</sup> These Fact Sheets have helped establish the maturity of each technology and an approximation of where each technology would fall on a standard technology adoption S-curve. Older technologies, like steam turbines—which have been around since the late 1800s—are on the upper slope of an adoption curve and beginning to level out. Newer technologies, like microturbines—which were introduced in the 1990s and work in applications not traditionally viewed as opportunities for CHP—are in the early stages of an adoption curve and are expected to increase more steeply over time.

Unlike many energy conservation measures, CHP is a highly complicated technology with high market barriers. It is capital intensive and has high maintenance costs; and installation requires specialists and interconnection agreements. The very high up-front costs also make it unrealistic to model achievable potential using the typical 100 percent incentive approach. The SWE team analyzed achievable CHP potential by calibrating adoption models to (1) current Pennsylvania data at the beginning of the 10-year analysis period, and (2) real results from nation-leading programs in other states as a proxy for realized potential by the end of the analysis period. Using the most recent State Scorecards issued by the American Council for an Energy-Efficient Economy (ACEEE), the SWE team identified all states that received full credit for policies that support CHP.<sup>42</sup> California, Massachusetts, and New Jersey each earned 3 of 3 available points for CHP and are ranked higher in this category, compared to the rest of the country (these states' overall efficiency rankings are as follows: Massachusetts at 1; California at 2; New Jersey at 17).

Having identified the states that are industry leaders in promoting CHP, the SWE then looked at the DOE CHP technical potential for each state.<sup>43,44,45</sup> Using the data on existing installed capacity from the state-specific DOE assessments of the overall technical potential for CHP, the team calculated the adoption rates of CHP from these nation-leading states. The average was approximately 40 percent achievement of overall technical potential across the three states. The SWE team then produced a reasonable end point for Pennsylvania CHP adoption curves based on the results of the best programs in the country.

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<sup>38</sup> DOE, 2016. "Steam Turbines." <https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Steam%20Turbine.pdf>.

<sup>39</sup> DOE, 2016. "Gas Turbines." <https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Gas%20Turbine.pdf>.

<sup>40</sup> DOE, 2016. "Microturbines." [https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Microturbines\\_0.pdf](https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Microturbines_0.pdf).

<sup>41</sup> DOE, 2016. "Reciprocating Engines." <https://www.energy.gov/sites/prod/files/2016/09/f33/CHP-Recip%20Engines.pdf>.

<sup>42</sup> Berg, Weston, Shruti Vaidyanathan, Eric Junga, Emma Cooper, Chris Perry, Grace Relf, Andrew Whitlock, Marianne DiMascio, Corri Waters, and Nadia Cortez. 2019. "The 2019 State Energy Efficiency Scorecard." Washington, DC: American Council for an Energy-Efficient Economy. <https://aceee.org/sites/default/files/publications/researchreports/u1908.pdf>.

<sup>43</sup> DOE, n.d. "State of CHP: California," *U.S. DOE CHP Installation Database*. <https://www.energy.gov/sites/prod/files/2017/11/f39/StateOfCHP-California.pdf>.

<sup>44</sup> DOE, n.d. "State of CHP: Massachusetts," *U.S. DOE CHP Installation Database*. <https://www.energy.gov/sites/prod/files/2017/11/f39/StateOfCHP-Massachusetts.pdf>.

<sup>45</sup> DOE, n.d. "State of CHP: New Jersey," *U.S. DOE CHP Installation Database*. <https://www.energy.gov/sites/prod/files/2017/11/f39/StateOfCHP-NewJersey.pdf>.

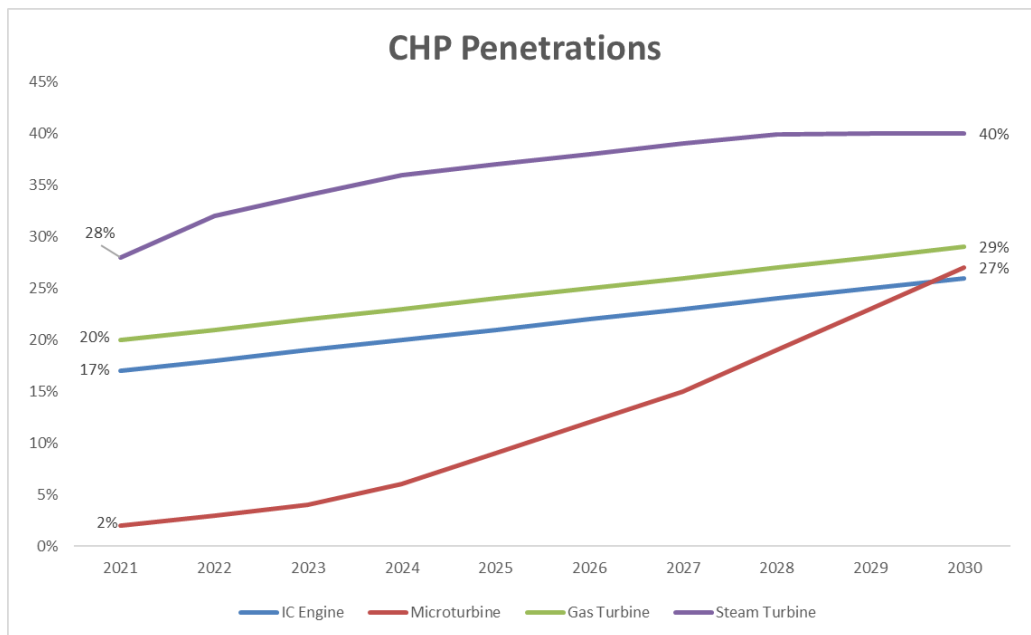
Finally, to determine where Pennsylvania currently sits on the overall CHP adoption curve, relative to nation-leading states, the team conducted the same analysis using DOE’s data for Pennsylvania for each technology. Combined, this approach allowed the team to model achievable adoption for CHP in Pennsylvania across 10 years. To account for the unique considerations of each CHP technology modeled in this study, the SWE team adjusted the initial penetrations, target penetrations, and overall shape of the curve to match where these technologies fell on a standard technology adoption curve. Consequently, as can be seen in Figure 15, only the most mature technology actually reached the 40 percent end point of the adoption curve within the 10-year time horizon.

### Calibrating Technologies

Although the SWE team modeled a 10-year adoption period, with results relating to potential drawn solely from the Act 129 Phase IV period of 2021 to 2025, the projected CHP installation potential starts in 2022, because of the long lead times of most CHP projects. The expected level and shape of the technology adoption curve for each of the technologies are:

- **IC engines**, midway in overall adoption; linear growth expected for the foreseeable future
- **Microturbines**, early in overall adoption; low initial penetration, expect to grow more rapidly over time
- **Gas turbines**, midway in overall adoption; linear growth expected for the foreseeable future
- **Steam turbines**, late in overall adoption; higher initial penetration, already represents over 50 percent of non-utility CHP in Pennsylvania with less opportunity for growth in the future; leveling off

Figure 15 | CHP projected technology penetrations.



These data were then converted into incremental annual penetration rates as a percent of the remaining potential by technology, ranging from 2022 through 2025 (as noted, we considered it highly unlikely to have installations complete in the first year of the Act 129 Phase IV period). The incremental penetration rates were applied to all potential by technology type among the technologies that screened as the most preferred within the estimate of Economic Potential to estimate Achievable Potential for CHP. Since CHP has represented a variable share of EDC savings over previous Act 129 phases, and typically has very low acquisition costs per unit of energy saved, the SWE team determined that the most appropriate Achievable Potential scenario would be a spending-unconstrained estimate of achievable savings. The savings in the Achievable Potential scenario would be driven primarily by technology adoption analysis, especially with the knowledge that a spending allocation would be used to blend energy efficiency and CHP potential.

## **PROGRAM POTENTIAL METHODS**

The SWE recognizes that the customers included in this potential study have widely varying thermal and electrical needs. A CHP system sized from this study might not be operated the entire year because of construction constraints (space, pipelines, and so on), cost of operating CHP during cheaper off-peak periods, or an unexpected variation in fuel costs. The team created a feasibility factor to accommodate these constraints and to develop Program Potential. Based on the studies conducted by other states for CHP potential and on engineering estimates, the SWE team applied a feasibility factor of 65 percent to microturbines, and a feasibility factor of 75 percent to gas turbines.<sup>46</sup> The SWE team applied the feasibility factors to the CHP Achievable Potential's incremental annual adoption rates to derive Program Potential.

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<sup>46</sup> Distributed Generation-Combined Heat and Power Impact Evaluation Report, NY ([document](#)); 2016-2017 Self-Generation Incentive Program Impact Evaluation, CA ([document](#)).

## SECTION 5: CHP RESULTS

This section summarizes results for Technical, Economic, Achievable, Program Potential, and Act 129 Potential scenarios for CHP. These calculations are consistent with the methods described in Section 4.

### TECHNICAL POTENTIAL RESULTS

Table 29 shows the CHP Technical Potential capacity (MW) and annual energy generation (MWh), capped at 50 percent of the 2007/2008 peak load, and 2009/2010 commercial and industrial sales forecast for each EDC's MW and MWh technical potential, respectively. The 50 percent cap on Technical Potential was added to avoid overestimating the Technical Potential from net exporting of electricity.<sup>47</sup> Although net exporting provides an additional benefit stream to customers, exporting a large amount of generation is not realistic, valued at the current electric wholesale rates in the PJM markets. The Technical Potential by technology type is not reported in this section because the selection of the most efficient technology is a function of the technical analysis and the economic screening, both described in the prior section. The analysis of Technical Potential selected the technology that provides the highest efficiency and the highest electrical output (kW) for each customer. The team counterbalanced this by economic considerations such as capital and O&M impacts of that technology. The selection of technology type was therefore based on thousands of SWE simulations that considered technical and economic indicators.

**Table 29: Technical Potential CHP capacity and annual generation**

EDC	CHP Technical Potential capacity (MW)	Annual CHP Technical Potential generation (MWh)
PECO	727	5,735,387
PPL	3,300	11,539,030
Duquesne Light	755	4,948,578
FE: Met-Ed	1,322	4,332,793
FE: Penelec	1,200	4,758,486
FE: Penn Power	181	1,424,874
FE: West Penn Power	1,271	6,503,520
<b>Statewide</b>	<b>8,755</b>	<b>39,242,668</b>

### ECONOMIC POTENTIAL RESULTS

Tables 30 and 31 show the sum of incremental annual CHP Economic Potential for each EDC and CHP technology type over the expected Act 129 Phase IV time horizon, 2021-2025. It is important to note that even though IC engines and steam turbines were not determined to be as cost-effective as gas turbines or microturbines, they can still be appropriate and cost effective for customers. In fact, approximately half of the CHP installations in Pennsylvania thus far have been steam turbines, and many other IC engine CHP systems have been installed through Act 129. The

<sup>47</sup> Although the 50 percent cap was added to estimate the Technical Potential, specific customers were not removed from the technical analysis to allow selecting the best fit CHP technology in the cost-effectiveness screening.

technology selection is ultimately an outcome of customer economics, which can include factors (such as resiliency) that were beyond the scope of this study. But that does not change the value of the CHP potential. The Economic Potential calculated in this study is higher than previous Act 129 market potential studies<sup>48</sup> because constraints, including feasibility factors and adoption assumptions over time, were applied in the Achievable Potential screening step of the study. Although previous studies included these factors in Technical and Economic Potential calculations, the SWE team believed it was more appropriate to apply these factors in the Achievable Potential scenarios.

**Table 30: Economic Potential CHP capacity (MW)**

EDC	Microturbine	IC engine	Gas turbine	Steam turbine	Total
PECO	199	-	131	-	<b>330</b>
PPL	206	-	312	-	<b>518</b>
Duquesne Light	-	-	58	-	<b>58</b>
FE: Met-Ed	89	-	118	-	<b>207</b>
FE: Penelec	78	-	50	-	<b>127</b>
FE: Penn Power	-	-	79	-	<b>79</b>
FE: West Penn Power	-	-	158	-	<b>158</b>
<b>Statewide</b>	<b>571</b>	<b>-</b>	<b>905</b>	<b>-</b>	<b>1,476</b>

**Table 31: Economic Potential CHP annual generation (MWh)**

EDC	Microturbine	IC engine	Gas turbine	Steam turbine	Total
PECO	1,568,221	-	1,035,345	-	<b>2,603,566</b>
PPL	1,623,100	-	2,459,501	-	<b>4,082,600</b>
Duquesne Light	-	-	453,441	-	<b>453,441</b>
FE: Met-Ed	701,932	-	930,414	-	<b>1,632,345</b>
FE: Penelec	611,625	-	390,053	-	<b>1,001,677</b>
FE: Penn Power	-	-	618,958	-	<b>618,958</b>
FE: West Penn Power	-	-	1,245,259	-	<b>1,245,259</b>
<b>Statewide</b>	<b>4,504,877</b>	<b>-</b>	<b>7,132,971</b>	<b>-</b>	<b>11,637,848</b>

## ACHIEVABLE POTENTIAL RESULTS

As shown in Table 32, achievable CHP potential electric energy savings rose steadily over the time period within about half of the EDCs. This is driven by a greater share of sites that screened with microturbines as the preferred technology. In the remaining EDCs, gas turbines accounted for most or all of the potential, so incremental annual savings potential was steady, corresponding to the linear portion of the technology adoption S-curve. However, within a given year the potential varied significantly among EDCs, ranging in 2025 from approximately 5,700 MWh for Duquesne Light to over 83,000 MWh for PPL, and totaling just over 240,000 MWh across

<sup>48</sup> "Distributed Generation Potential Study for Pennsylvania," March 2015.  
<http://www.puc.pa.gov/pdocs/1355000.pdf>

all EDCs. Similarly, as shown in Table 33, achievable CHP potential electric capacity savings in 2025 vary by a factor of over 10 across the EDCs, with Duquesne Light showing the lowest level of potential savings at approximately 0.7 MW, and PPL representing the highest level at over 10 MW.

**Table 32: Achievable Potential CHP incremental annual MWh savings**

EDC	2022	2023	2024	2025
PECO	31,257	31,257	48,538	65,818
PPL	49,293	49,293	66,551	83,809
Duquesne Light	5,714	5,714	5,714	5,714
FE: Met-Ed	20,146	20,146	27,824	35,502
FE: Penelec	11,917	11,917	18,608	25,298
FE: Penn Power	8,159	8,159	8,159	8,159
FE: West Penn Power	16,795	16,795	16,795	16,795
<b>Statewide</b>	<b>143,280</b>	<b>143,280</b>	<b>192,188</b>	<b>241,095</b>

**Table 33: Achievable Potential CHP incremental summer peak demand reduction (MW)**

EDC	2022	2023	2024	2025
PECO	3.94	3.94	6.11	8.29
PPL	6.21	6.21	8.38	10.56
Duquesne Light	0.72	0.72	0.72	0.72
FE: Met-Ed	2.54	2.54	3.50	4.47
FE: Penelec	1.50	1.50	2.34	3.19
FE: Penn Power	1.03	1.03	1.03	1.03
FE: West Penn Power	2.12	2.12	2.12	2.12
<b>Statewide</b>	<b>18.05</b>	<b>18.05</b>	<b>24.21</b>	<b>30.37</b>

## PROGRAM POTENTIAL RESULTS

Considering the feasibility methods used to derive CHP Program Potential from the Achievable Potential, results for the CHP Program Potential are roughly two-thirds of the Achievable Potential results, falling somewhere between the feasibility factors for the two technologies. Table 34 indicates statewide program potential savings in 2025 of over 150,000 MWh, and Table 35 indicates capacity savings nearing 21 MW in the same year. These data show similar trends to the Achievable Potential scenario, with the EDCs split between steady and increasing incremental annual potential, again driven by the mix of technologies that screened as “preferred” at the sites within each EDC. In addition, the spread among EDCs within each year is also similar, with Duquesne Light and PPL again representing the lowest and highest electric energy and capacity savings potential, respectively. The Program Potential estimate derived in this study is in the same range as the Achievable Potential estimated by previous Act 129 market



potential studies.<sup>49</sup> The SWE team applied similar constraints and adoption methods as the previous study but applied them at different points in the Technical, Economic, and Achievable Potential analyses. The result is the Program Potential, shown in Table 34 and Table 35, falls within the base and Achievable Potential range of the previous study.

**Table 34: Program Potential CHP achievable incremental annual MWh savings**

EDC	2022	2023	2024	2025
PECO	20,108	20,108	30,509	40,911
PPL	33,823	33,823	44,589	55,354
Duquesne Light	4,251	4,251	4,251	4,251
FE: Met-Ed	13,378	13,378	18,034	22,690
FE: Penelec	7,713	7,713	11,770	15,827
FE: Penn Power	5,803	5,803	5,803	5,803
FE: West Penn Power	11,674	11,674	11,674	11,674
<b>Statewide</b>	<b>96,751</b>	<b>96,751</b>	<b>126,630</b>	<b>156,509</b>

**Table 35: Program Potential CHP incremental annual summer demand reduction (MW)**

EDC	2022	2023	2024	2025
PECO	2.73	2.73	4.15	5.56
PPL	4.44	4.44	5.85	7.26
Duquesne Light	0.54	0.54	0.54	0.54
FE: Met-Ed	1.81	1.81	2.43	3.06
FE: Penelec	1.04	1.04	1.59	2.14
FE: Penn Power	0.77	0.77	0.77	0.77
FE: West Penn Power	1.59	1.59	1.59	1.59
<b>Statewide</b>	<b>12.92</b>	<b>12.92</b>	<b>16.92</b>	<b>20.93</b>

Table 36 summarizes the Act 129 Potential for CHP. It shows the total budget, TRC costs, TRC benefits, MWh savings, and MW savings from CHP, summed across 2021-2025, derived by applying the 1 percent spending allocation to the CHP Program Potential results.

<sup>49</sup> Previous Act 129 market potential studies expressed potential in terms of cumulative savings at the end of a phase. The cumulative and average values over the life of a phase are not directly comparable to the incremental annual potential presented in this report. The SWE performed a separate analysis to compare the results of this study to the previous Act 129 potential estimates.

**Table 36: Act 129 Potential CHP results**

EDC	Budget (\$MM nominal)	TRC costs (\$MM2021)	TRC benefits (\$MM2021)	MWh (meter)	MW (system)
PECO	\$4.27	\$39.53	\$48.27	57,476	7.81
PPL	\$3.08	\$26.98	\$31.07	41,355	5.43
Duquesne Light	\$0.98	\$7.27	\$7.20	13,143	1.67
FE: Met-Ed	\$1.24	\$11.35	\$12.30	16,721	2.26
FE: Penelec	\$1.15	\$10.41	\$10.86	15,449	2.09
FE: Penn Power	\$0.33	\$2.60	\$2.59	4,478	0.59
FE: West Penn Power	\$1.18	\$9.04	\$9.52	15,844	2.15
<b>Statewide</b>	<b>\$12.23</b>	<b>\$107.18</b>	<b>\$121.82</b>	<b>164,465</b>	<b>22.00</b>

In summary, significant potential exists for CHP installations in Pennsylvania. Although the SWE team determined that gas turbines and microturbines are the most “economically preferred” technologies, it is important to emphasize that this is driven by the quantifiable customer economics that were included within the scope of this study. As a result, although the Program Potential results do not include other CHP technologies, the SW team recommends any CHP program continue to support several technologies, since it is ultimately a mix of customer considerations that drive CHP technology selection. Last, the discussion of combining CHP potential with the results of the EE models is covered in other sections of this report, including Section 7.

## SECTION 6: DISPATCHABLE DEMAND RESPONSE POTENTIAL

The SWE team has completed an Act 129 Phase IV Demand Response (dispatchable demand response) Market Potential Study in parallel with the EEPDR MPS. Information from both studies can guide the Commission’s policy decisions for the planned Phase IV Tentative Implementation Order. These studies should also inform the Commission’s conservation targets for Pennsylvania EDCs. Given the 2 percent budget limits on EE&C program spending, a key question is: How should that funding be allocated between EEPDR and DDR? Assumptions about the funding levels of each type of service delivery will affect the amount of each resource that EDCs can be expected to acquire. With that knowledge in place, the EDCs can subsequently plan how they will achieve Commission-approved targets that are based on the outputs of the potential studies.

Table 37 summarizes the EDC and statewide results from an assumption that all Phase IV funding is allocated to EE. These results reflect the Act 129 Potential, for which each EDC’s budget has portions allocated to CHP (1 percent) and residential low-income programming (approximately 13 percent). The SWE team has presented energy savings (in GWh) at the meter level, and EE peak demand reductions blended with DDR reductions (in MW) at the system level.

**Table 37: Act 129 Potential with no funding for dispatchable demand response**

EDC	Acquisition cost (\$/MWh)	Budget (\$MM)	TRC costs (\$MM)	TRC benefits (\$MM)	Net TRC benefits (\$MM)	TRC benefit-cost ratio (X:1)	GWh	Peak MW
PECO	\$309.51	\$427	\$639	\$1,019	\$379	1.59	1,381	276
PPL	\$245.97	\$308	\$513	\$912	\$399	1.78	1,250	244
Duquesne Light	\$281.57	\$98	\$137	\$197	\$60	1.44	347	67
FE: Met-Ed	\$268.42	\$124	\$190	\$301	\$110	1.58	463	85
FE: Penelec	\$262.46	\$115	\$188	\$303	\$115	1.61	438	91
FE: Penn Power	\$258.31	\$33	\$46	\$65	\$19	1.42	129	22
FE: West Penn Power	\$233.32	\$118	\$180	\$277	\$97	1.54	505	95
<b>Statewide</b>	<b>\$271.01</b>	<b>\$1,223</b>	<b>\$1,894</b>	<b>\$3,073</b>	<b>\$1,179</b>	<b>1.62</b>	<b>4,513</b>	<b>878</b>

As discussed in the companion SWE Demand Response Market Potential Study, estimates of Phase IV DDR potential varied widely across the EDCs. Influencing this variation were differences in the avoided cost of T&D capacity. Further, the modeling assumptions regarding a potential Act 129 DDR program design and the mechanism through which PJM might recognize Phase IV DDR offerings in regional planning also influenced the results significantly. Table 38 shows the Phase IV funding allocations to DDR, as presented in the SWE’s primary modeling, and presents portfolio economics—assuming the Commission establishes DDR targets for Phase IV of Act 129. Assigning program funds to DDR correspondingly lowers the available budget for EE. The SWE team has thus scaled down the key outputs, in a linear fashion, with the reduction in EE funding. Although the DDR potential for FE: Penn Power is virtually zero, the SWE team has included that utility’s modeling outputs in Table 38 for completeness.

**Table 38: Act 129 Potential with funding for dispatchable demand response**

EDC	DDR spend (\$MM)	DDR spend (%)	TRC costs (\$MM)	TRC benefits (\$MM)	Net TRC benefits (\$MM)	TRC benefit-cost ratio (X:1)	GWh (2021-2025)	Peak MW* (2025)
PECO	\$29.7	7.0%	\$621	\$988	\$367	1.59	1,292	340
PPL	\$21.4	7.0%	\$497	\$880	\$383	1.77	1,169	297
Duquesne Light	\$0.5	0.5%	\$137	\$197	\$60	1.44	345	70
FE: Met-Ed	\$9.1	7.3%	\$184	\$289	\$104	1.56	433	104
FE: Penelec	\$2.5	2.2%	\$187	\$299	\$113	1.60	428	100
FE: Penn Power	\$0.0	0.1%	\$46	\$65	\$19	1.42	129	22
FE: West Penn Power	\$0.4	0.3%	\$180	\$277	\$97	1.54	503	98
<b>Statewide</b>	<b>\$63.6</b>	<b>5.2%</b>	<b>\$1,852</b>	<b>\$2,995</b>	<b>\$1,144</b>	<b>1.62</b>	<b>4,300</b>	<b>1,031</b>

\* Peak MW is, technically, the sum of incremental annual EE peak demand reductions combined with the average annual peak reduction for DDR, with the former treated as a proxy for cumulative peak reduction. This assumes most peak-coincident EE measures have effective useful lives of at least 5 years. This does not impact economic findings.

The SWE team offers the following observations from a comparison of Table 37 and Table 38:

- 1) **Statewide effects.** Allocating 5.2 percent of Phase IV funding in aggregate to DDR programming lowered the modeled incremental annual energy savings by 213 GWh, or 4.7 percent. This reduction did not directly align with program funding allocations, because the installation of connected thermostats in a DDR program achieved incremental EE savings that an EDC could count toward its annual consumption reduction targets.
- 2) **Peak demand.** Pursuing DDR programming in Phase IV increased the modeled 2025 peak demand reduction potential by 153 MW, or approximately 17.4 percent. The modeled Phase IV DDR programs achieved an average of 198 MW per year of reduced peak demand, whereas the reduced EE funding sacrificed 46 MW per year of reduced incremental annual peak demand. This reduction was due to lower peak demand reduction associated with installing efficiency measures. In addition, the peak demand reductions from EE would persist beyond the end of Phase IV to the end of each measure’s estimated useful life, whereas the impacts from DDR would not.
- 3) **Economic impacts.** Including DDR slightly reduced the overall TRC benefit-cost ratio for Act 129 (not visible due to rounding). Although DDR was cost effective, it was less so than EE. Thus, allocating Phase IV budget dollars to DDR lowered the PVNB and the TRC ratio. Given this result, and the uncertainties associated with incorporating Act 129 DDR at the wholesale level, the SWE team believes that EE offers a more cost-effective and reliable investment of the limited resources available under the 2 percent funding cap set forth in the legislation.

## SECTION 7: CONCLUSION

This potential study has been conducted in accordance with the 2021 TRC Test Final Order to determine EE savings potential and associated peak demand reductions for all seven EDCs regulated under Act 129. The study acknowledges the balance among EE, DDR, and CHP, and modeled the Act 129 potential for EE plus CHP and associated peak demand reductions, along with a separate study for DDR. It also ensured that the analysis conformed with past Act 129 spending practices related to efficiency activity in the low-income sector and reported savings separately for the GNI sector. This study struck a careful balance between the methods and purpose of a potential study, and the policy context in which the results of this study will be applied. With these factors all addressed in the manner described in the body of the report, the SWE team estimated the Act 129 Potential total incremental annual EE GWh savings. These results can be used to inform PUC targets for Phase IV of Act 129 for each EDC, and would allow for a comprehensive portfolio of EE measures inclusive of a reasonable share of CHP.

Capture of the Act 129 Potential would result in nearly \$1.18 billion in net benefits to the Pennsylvania economy, and provide, in aggregate, approximately \$1.62 in benefits for every dollar invested. We estimate this would reflect capturing approximately 49 percent of the achievable potential during those years. At the highest level, the SWE team's analyses also showed that substantial potential EE savings are available in Pennsylvania.

**Table 39: Act 129 Potential for Phase IV energy savings for Pennsylvania's EDCs**

EDC	Acquisition cost (\$/MWh)	Budget (\$MM)	TRC costs (\$MM)	TRC benefits (\$MM)	Net TRC benefits (\$MM)	TRC benefit -cost ratio (X:1)	GWh	Peak MW
PECO	\$309.51	\$427	\$639	\$1,019	\$379	1.59	1,381	276
PPL	\$245.97	\$308	\$513	\$912	\$399	1.78	1,250	244
Duquesne Light	\$281.57	\$98	\$137	\$197	\$60	1.44	347	67
FE: Met-Ed	\$268.42	\$124	\$190	\$301	\$110	1.58	463	85
FE: Penelec	\$262.46	\$115	\$188	\$303	\$115	1.61	438	91
FE: Penn Power	\$258.31	\$33	\$46	\$65	\$19	1.42	129	22
FE: West Penn Power	\$233.32	\$118	\$180	\$277	\$97	1.54	505	95
<b>Statewide</b>	<b>\$271.01</b>	<b>\$1,223</b>	<b>\$1,894</b>	<b>\$3,073</b>	<b>\$1,179</b>	<b>1.62</b>	<b>4,513</b>	<b>878</b>

*Notes: Budgets and acquisition costs are in nominal dollars. Benefits, costs, and net benefits are in real 2021 dollars. MWh and peak MW are the sum of first-year incremental annual savings for 2021-2025.*

The SWE team anticipates that key markets for EE, CHP, and DDR will continue to evolve in Pennsylvania. The team notes that the actual savings, costs, and benefits of such efficiency programs in Pennsylvania will vary according to the degree of deviation between the best available forecasts used in this study and actual market conditions. These factors (savings, costs, and benefits) will also vary because of individual program design, program support, and utility customer participation during Phase IV.

## **APPENDICES**

**Appendix A: Economic and Maximum Achievable Potential Modeling Results**

**Appendix B: Energy Forecasts**

**Appendix C: Energy Sales Disaggregation Data**

**Appendix D1: Measure Characterizations – Summary**

**Appendix D2: Measure Characterizations – Sources**

**Appendix E1: Impact Factors – Applicability**

**Appendix E2: Impact Factors – Feasibility**

**Appendix E3: Impact Factors – Retrofit Not Complete**

**Appendix F: Load Shapes**

## Appendix A. Economic and Maximum Achievable Potential Modeling Results

### Economic Results

#### All Sectors Incremental Annual Savings by EDC, 2021-2030 (GWh)

Year	PECO	PPL	Duquesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	Statewide
2021	1,357.8	1,218.9	333.5	448.8	404.0	113.9	472.7	<b>4,349.6</b>
2022	1,318.7	1,194.0	328.5	443.1	393.5	116.1	478.2	<b>4,272.3</b>
2023	1,274.7	1,153.3	319.4	431.2	381.1	114.7	470.5	<b>4,144.9</b>
2024	1,236.3	1,116.4	309.8	419.0	368.3	113.4	461.2	<b>4,024.5</b>
2025	1,152.8	1,033.7	289.5	390.0	342.6	106.1	429.1	<b>3,743.8</b>
2026	1,115.5	1,002.4	281.8	380.9	333.0	105.0	421.8	<b>3,640.5</b>
2027	1,139.0	1,027.5	286.0	394.6	342.2	110.9	441.4	<b>3,741.7</b>
2028	1,123.9	1,012.0	282.4	391.8	338.5	111.5	440.0	<b>3,700.1</b>
2029	1,110.2	997.1	277.8	387.6	334.1	111.4	437.5	<b>3,655.7</b>
2030	1,047.6	935.2	262.4	364.4	314.3	105.2	411.0	<b>3,440.1</b>
<b>Total</b>	<b>11,876.4</b>	<b>10,690.4</b>	<b>2,971.2</b>	<b>4,051.5</b>	<b>3,551.6</b>	<b>1,108.2</b>	<b>4,463.6</b>	<b>38,713.0</b>

#### All Sectors Cumulative Savings by EDC, 2021-2030 (GWh)

Year	PECO	PPL	Duquesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	Statewide
2021	1,466.3	1,303.1	347.9	483.5	435.0	121.4	512.2	<b>4,669.4</b>
2022	2,838.9	2,527.3	677.7	940.7	842.8	238.8	1,003.9	<b>9,070.1</b>
2023	4,145.4	3,689.9	993.1	1,378.5	1,231.8	352.5	1,478.1	<b>13,269.3</b>
2024	5,310.4	4,676.6	1,294.2	1,745.0	1,601.8	462.6	1,933.4	<b>17,023.9</b>
2025	6,255.7	5,468.9	1,532.8	2,040.7	1,907.2	552.1	2,299.6	<b>20,057.0</b>
2026	7,128.5	6,199.1	1,756.0	2,315.9	2,193.8	637.3	2,645.3	<b>22,875.9</b>
2027	7,984.9	6,916.4	1,975.1	2,589.0	2,477.0	723.4	2,991.2	<b>25,656.9</b>
2028	8,817.9	7,613.5	2,188.9	2,857.2	2,754.3	809.3	3,332.9	<b>28,374.1</b>
2029	9,577.7	8,253.7	2,382.0	3,105.6	3,010.5	890.4	3,652.7	<b>30,872.7</b>
2030	10,243.2	8,801.2	2,552.3	3,317.8	3,236.6	961.8	3,929.2	<b>33,042.2</b>

## Appendix A. Economic and Maximum Achievable Potential Modeling Results

### Maximum Achievable Results

#### All Sectors Incremental Annual Savings by EDC, 2021-2030 (GWh)

Year	PECO	PPL	Duquesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	Statewide
2021	303.9	267.9	76.1	98.0	95.1	25.6	107.8	<b>974.3</b>
2022	478.8	432.5	117.6	159.6	146.4	40.8	169.9	<b>1,545.6</b>
2023	605.7	544.7	147.0	201.4	184.7	51.0	211.4	<b>1,945.9</b>
2024	679.7	608.3	166.6	224.4	206.5	58.6	240.1	<b>2,184.1</b>
2025	702.4	622.7	173.3	229.8	213.3	60.6	246.7	<b>2,248.6</b>
2026	719.1	638.8	178.5	237.2	219.4	63.3	256.1	<b>2,312.5</b>
2027	750.1	671.5	185.5	252.3	230.7	68.5	274.6	<b>2,433.1</b>
2028	762.4	681.5	186.9	257.9	234.4	70.3	279.1	<b>2,472.4</b>
2029	762.6	680.9	186.4	258.4	233.1	70.9	280.0	<b>2,472.2</b>
2030	734.8	652.3	178.5	247.8	223.8	67.5	265.1	<b>2,369.8</b>
<b>Total</b>	<b>6,499.4</b>	<b>5,801.0</b>	<b>1,596.4</b>	<b>2,166.5</b>	<b>1,987.4</b>	<b>577.1</b>	<b>2,330.6</b>	<b>20,958.5</b>

#### All Sectors Cumulative Savings by EDC, 2021-2030 (GWh)

Year	PECO	PPL	Duquesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	Statewide
2021	328.1	286.7	79.4	105.6	102.4	27.3	116.8	<b>1,046.3</b>
2022	811.7	714.9	193.6	264.2	249.6	66.7	283.6	<b>2,584.3</b>
2023	1,424.9	1,255.3	336.6	465.0	435.6	115.8	491.7	<b>4,524.8</b>
2024	2,099.8	1,841.7	497.2	681.4	641.5	171.6	724.9	<b>6,658.1</b>
2025	2,730.7	2,381.2	647.3	879.3	840.5	224.8	945.3	<b>8,649.0</b>
2026	3,377.9	2,938.0	803.4	1,084.9	1,049.3	282.6	1,181.8	<b>10,717.9</b>
2027	4,014.3	3,489.0	956.3	1,290.2	1,258.0	341.4	1,419.9	<b>12,769.2</b>
2028	4,657.3	4,046.0	1,109.4	1,499.5	1,469.8	401.7	1,662.0	<b>14,845.7</b>
2029	5,284.2	4,588.6	1,258.2	1,703.8	1,676.2	461.5	1,900.1	<b>16,872.7</b>
2030	5,861.6	5,082.8	1,394.0	1,889.3	1,867.4	515.9	2,114.9	<b>18,726.1</b>



## Appendix A. Economic and Maximum Achievable Potential Modeling Results

### Program Achievable Results

#### All Sectors Incremental Annual Savings by EDC, 2021-2030 (GWh)

Year	PECO	PPL	Duquesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	Statewide
2021	160.4	144.5	41.8	53.2	51.5	15.0	59.7	526.1
2022	237.9	220.1	61.2	82.0	76.0	22.7	89.6	789.5
2023	286.8	264.2	72.4	98.5	91.4	26.8	105.7	946.0
2024	319.9	292.4	81.4	108.8	101.5	30.4	118.5	1,052.8
2025	325.1	292.7	83.0	108.7	102.7	30.5	118.5	1,061.1
2026	332.3	299.5	85.3	111.9	105.4	31.7	122.6	1,088.6
2027	352.6	321.0	90.2	121.5	112.9	35.2	134.6	1,168.1
2028	358.2	325.4	90.9	124.1	114.7	36.0	136.7	1,186.0
2029	357.8	324.8	90.5	124.3	114.2	36.4	137.1	1,185.1
2030	338.8	304.9	84.9	116.4	107.5	33.6	126.8	1,113.0
<b>Total</b>	<b>3,069.9</b>	<b>2,789.4</b>	<b>781.6</b>	<b>1,049.4</b>	<b>977.8</b>	<b>298.3</b>	<b>1,149.7</b>	<b>10,116.2</b>

#### All Sectors Cumulative Savings by EDC, 2021-2030 (GWh)

Year	PECO	PPL	Duquesne Light	FE: Met-Ed	FE: Penelec	FE: Penn Power	FE: West Penn Power	Statewide
2021	173.2	155.0	43.8	57.4	55.5	16.0	64.7	565.7
2022	408.4	367.8	101.9	136.8	130.0	37.3	150.3	1,332.5
2023	691.8	622.6	170.4	231.9	219.6	62.2	250.8	2,249.3
2024	1,001.2	895.9	246.3	333.4	317.5	89.9	361.2	3,245.3
2025	1,297.4	1,149.1	320.2	426.3	412.7	116.1	465.8	4,187.7
2026	1,610.8	1,419.5	399.9	526.4	515.5	145.7	582.4	5,200.2
2027	1,925.0	1,691.5	479.9	628.0	619.8	176.2	701.9	6,222.4
2028	2,244.2	1,967.7	560.6	732.0	726.1	207.8	824.2	7,262.7
2029	2,554.1	2,236.0	638.6	833.3	829.5	239.0	944.1	8,274.6
2030	2,833.9	2,473.7	708.4	922.4	922.9	266.4	1,048.9	9,176.6

## Appendix B. Energy Forecasts

Table B1: PECO - Baseline Electric Sales Forecast, at meter (MWh)

Sector	Year									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential	14,407,709	14,430,174	14,410,752	14,601,427	14,724,639	14,735,471	14,773,691	14,802,990	14,850,735	14,893,364
Small C&I	7,594,924	7,594,924	7,601,396	7,578,778	7,566,930	7,526,433	7,499,932	7,476,598	7,457,220	7,437,977
Large C&I	16,100,397	16,100,397	16,114,117	16,066,169	16,041,052	15,955,204	15,899,024	15,849,559	15,808,478	15,767,686

Table B2: PPL - Baseline Electric Sales Forecast, at meter (MWh)

Sector	Year									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential	14,387,874	14,352,002	14,294,639	14,251,803	14,194,796	14,138,017	14,081,465	14,025,139	13,969,038	13,913,162
Small C&I	9,511,219	9,501,237	9,469,973	9,436,501	9,398,755	9,361,160	9,323,715	9,286,421	9,249,275	9,212,278
Large C&I	12,202,260	12,189,453	12,149,343	12,106,401	12,057,976	12,009,744	11,961,705	11,913,858	11,866,202	11,818,738

Table B3: Duquesne Light - Baseline Electric Sales Forecast, at meter (MWh)

Sector	Year									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential	3,923,406	3,872,984	3,829,029	3,771,954	3,717,162	3,660,770	3,581,274	3,549,880	3,499,172	3,449,196
Small C&I	3,028,956	2,996,226	2,975,603	2,945,556	2,921,489	2,901,811	2,873,532	2,853,208	2,829,160	2,805,358
Large C&I	5,382,270	5,324,112	5,287,466	5,234,075	5,191,309	5,156,342	5,106,092	5,069,977	5,027,246	4,984,951

## Appendix B. Energy Forecasts

Table B4: FE: Met-Ed - Baseline Electric Sales Forecast, at meter (MWh)

Sector	Year									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential	5,310,556	5,322,418	5,337,848	5,357,411	5,386,316	5,417,799	5,452,776	5,483,226	5,484,245	5,491,343
Small C&I	2,694,490	2,710,523	2,723,001	2,721,035	2,727,340	2,734,646	2,744,490	2,755,619	2,757,113	2,760,387
Large C&I	5,491,706	5,524,382	5,549,814	5,545,807	5,558,658	5,573,549	5,593,611	5,616,294	5,619,340	5,626,012

Table B5: FE: Penelec - Baseline Electric Sales Forecast, at meter (MWh)

Sector	Year									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential	4,237,772	4,242,977	4,250,808	4,262,561	4,281,196	4,304,213	4,331,308	4,347,331	4,349,038	4,349,943
Small C&I	4,371,685	4,395,171	4,414,668	4,407,528	4,413,309	4,420,771	4,433,766	4,447,900	4,448,081	4,450,116
Large C&I	4,716,155	4,741,492	4,762,525	4,754,822	4,761,058	4,769,108	4,783,128	4,798,375	4,798,570	4,800,766

Table B6: FE: Penn Power - Baseline Electric Sales Forecast, at meter (MWh)

Sector	Year									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential	1,692,531	1,699,043	1,706,329	1,714,004	1,722,533	1,732,198	1,742,311	1,750,049	1,754,303	1,758,496
Small C&I	1,245,985	1,262,750	1,278,602	1,295,213	1,311,785	1,329,252	1,347,104	1,368,813	1,380,046	1,395,349
Large C&I	1,728,826	1,752,088	1,774,083	1,797,131	1,820,124	1,844,361	1,869,130	1,899,252	1,914,838	1,936,072

Table B7: FE: West Penn Power - Baseline Electric Sales Forecast, at meter (MWh)

Sector	Year									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential	6,888,170	6,881,883	6,874,708	6,858,535	6,850,372	6,839,435	6,823,335	6,802,083	6,778,210	6,753,829
Small C&I	4,395,717	4,420,480	4,461,160	4,473,146	4,493,464	4,516,766	4,542,740	4,572,219	4,585,259	4,603,350
Large C&I	8,618,352	8,666,904	8,746,661	8,770,161	8,809,998	8,855,683	8,906,610	8,964,407	8,989,973	9,025,443

Appendix C. Energy Sales Disaggregation Data

Table C1: PECO - Electric Sales Disaggregation by Building Type and End-Use, 2021, at meter (MWH)

End-Use	Building Type																														
	Single Family	Multifamily	Single Family LI	Multifamily LI	Small Education - College/University	Small Education - Other	Small Grocery	Small Health - Hospital	Small Health - Other	Small Industrial - Manufacturing	Small Institutional - Public Service	Small Lodging	Small Microbusiness - Other	Small Office	Small Restaurant	Small Retail	Small Warehouse	Large Education - College/University	Large Education - Other	Large Grocery	Large Health - Hospital	Large Health - Other	Large Industrial - Manufacturing	Large Institutional - Public Service	Large Lodging	Large Microbusiness - Other	Large Office	Large Restaurant	Large Retail	Large Warehouse	
Appliances	1,334,274	200,382	222,143	120,229	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C2: PPL - Electric Sales Disaggregation by Building Type and End-Use, 2021, at meter (MWH)

End-Use	Building Type																														
	Single Family	Multifamily	Single Family LI	Multifamily LI	Small Education - College/University	Small Education - Other	Small Grocery	Small Health - Hospital	Small Health - Other	Small Industrial - Manufacturing	Small Institutional - Public Service	Small Lodging	Small Microbusiness - Other	Small Office	Small Restaurant	Small Retail	Small Warehouse	Large Education - College/University	Large Education - Other	Large Grocery	Large Health - Hospital	Large Health - Other	Large Industrial - Manufacturing	Large Institutional - Public Service	Large Lodging	Large Microbusiness - Other	Large Office	Large Restaurant	Large Retail	Large Warehouse	
Appliances	1,430,288	167,464	276,805	100,478	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C3: Duquesne Light - Electric Sales Disaggregation by Building Type and End-Use, 2021, at meter (MWH)

End-Use	Building Type																														
	Single Family	Multifamily	Single Family LI	Multifamily LI	Small Education - College/University	Small Education - Other	Small Grocery	Small Health - Hospital	Small Health - Other	Small Industrial - Manufacturing	Small Institutional - Public Service	Small Lodging	Small Microbusiness - Other	Small Office	Small Restaurant	Small Retail	Small Warehouse	Large Education - College/University	Large Education - Other	Large Grocery	Large Health - Hospital	Large Health - Other	Large Industrial - Manufacturing	Large Institutional - Public Service	Large Lodging	Large Microbusiness - Other	Large Office	Large Restaurant	Large Retail	Large Warehouse	
Appliances	368,462	67,563	61,961	40,532	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix C: Energy Sales Disaggregation Data

Table C4: FE: Mid-Ed - Electric Sales Disaggregation by Building Type and End-Use, 2021, at meter (MWh)

Table with 25 columns for building types and 16 rows for end-uses. Building types include Single Family, Multifamily, Single Family LI, Multifamily LI, Small Education College/University, Small Education Other, Small Grocery, Small Health Hospital, Small Health Other, Small Industrial Manufacturing, Small Institutional Public Service, Small Lodging, Small Microhouse/Other, Small Office, Small Restaurant, Small Retail, Small Warehouse, Large Education College/University, Large Education Other, Large Grocery, Large Health Hospital, Large Health Other, Large Industrial Manufacturing, Large Institutional Public Service, Large Lodging, Large Microhouse/Other, Large Office, Large Restaurant, Large Retail, Large Warehouse.

Table C5: FE: Panels - Electric Sales Disaggregation by Building Type and End-Use, 2021, at meter (MWh)

Table with 25 columns for building types and 16 rows for end-uses. Building types include Single Family, Multifamily, Single Family LI, Multifamily LI, Small Education College/University, Small Education Other, Small Grocery, Small Health Hospital, Small Health Other, Small Industrial Manufacturing, Small Institutional Public Service, Small Lodging, Small Microhouse/Other, Small Office, Small Restaurant, Small Retail, Small Warehouse, Large Education College/University, Large Education Other, Large Grocery, Large Health Hospital, Large Health Other, Large Industrial Manufacturing, Large Institutional Public Service, Large Lodging, Large Microhouse/Other, Large Office, Large Restaurant, Large Retail, Large Warehouse.

Table C6: FE: Penn Power - Electric Sales Disaggregation by Building Type and End-Use, 2021, at meter (MWh)

Table with 25 columns for building types and 16 rows for end-uses. Building types include Single Family, Multifamily, Single Family LI, Multifamily LI, Small Education College/University, Small Education Other, Small Grocery, Small Health Hospital, Small Health Other, Small Industrial Manufacturing, Small Institutional Public Service, Small Lodging, Small Microhouse/Other, Small Office, Small Restaurant, Small Retail, Small Warehouse, Large Education College/University, Large Education Other, Large Grocery, Large Health Hospital, Large Health Other, Large Industrial Manufacturing, Large Institutional Public Service, Large Lodging, Large Microhouse/Other, Large Office, Large Restaurant, Large Retail, Large Warehouse.

Table C7: FE: West Penn Power - Electric Sales Disaggregation by Building Type and End-Use, 2021, at meter (MWh)

Table with 25 columns for building types and 16 rows for end-uses. Building types include Single Family, Multifamily, Single Family LI, Multifamily LI, Small Education College/University, Small Education Other, Small Grocery, Small Health Hospital, Small Health Other, Small Industrial Manufacturing, Small Institutional Public Service, Small Lodging, Small Microhouse/Other, Small Office, Small Restaurant, Small Retail, Small Warehouse, Large Education College/University, Large Education Other, Large Grocery, Large Health Hospital, Large Health Other, Large Industrial Manufacturing, Large Institutional Public Service, Large Lodging, Large Microhouse/Other, Large Office, Large Restaurant, Large Retail, Large Warehouse.









Appendix D1: Measure Characterizations

Table D1: PECO - Measure Characteristics Summary

Table with 15 columns: Meas#, Sector, Market, Target Markets, Measure Name, Primary Fuel, Secondary Fuel, Primary End Use, Secondary End Use, Measure Description, Baseline Description, Efficient Description, Start Year, End Year, Life, Percent Savings (Primary Fuel), Inc. Cost Per kWh or MMBtu Saved, and Links with Meas#. The table lists various energy efficiency measures such as LED lighting retrofits, tube replacement lamps, high-bay systems, and commercial dishwasher replacements.



Appendix D1. Measure Characterizations

Table D1: PECO - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Measure#
20398	C&I	MD	NC.RENO	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
20398	C&I	RET	RET	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
21001	C&I	MD	NC.RENO.REPL	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.32	---
21001	C&I	RET	RET	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.32	---
21002	C&I	RET	RET	VFD on HVAC System	E		Ventilation		Installation of a variable speed drives on HVAC fans and pumps to vary the speed of the motor in a HVAC application with an oversized load	Weighted average of baseline control type on HVAC motor	VFD on HVAC motor	2021	2030	15	53.4%	0.11	---
21003	C&I	RET	RET	ECM Furnace Motors	E		Ventilation		Replace standard fan motor in furnace with ECM motor	PSC Furnace motors	ECM Furnace Motors	2021	2030	15	39.0%	0.18	---
21005	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
21006	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20319
21007	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.22	21007
21007	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.23	21007
21008	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.00	21008
21008	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.00	21008
21009	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol sprayers	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 7% duct leakage	2021	2030	15	13.0%	1.49	21009
21010	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol sprayers	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 7% duct leakage	2021	2030	15	13.0%	1.49	21010
21103	C&I	MD	NC.RENO.REPL	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters ( $\leq 120$ gallons) in commercial facilities with more efficient storage-type heat pump water heaters	Storage-type electric resistance water heater ( $\leq 120$ gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21103	C&I	RET	RET	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters ( $\leq 120$ gallons) in commercial facilities with more efficient storage-type heat pump water heaters	Storage-type electric resistance water heater ( $\leq 120$ gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21107	C&I	RET	RET	Faucet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing, inefficient faucet aerator	Low-flow faucet aerator	2021	2030	10	31.8%	0.01	---
21109	C&I	RET	RET	Pre-Rinse Sprayes	E		Water Heating		Retrofit of working standard pre-rinse sprayers with low-flow, pre-rinse sprayers in commercial kitchen applications.	Existing, inefficient pre-rinse sprayer	Low-flow pre-rinse sprayer	2021	2030	8	47.9%	0.05	---
21114	C&I	MD	NC.RENO.REPL	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7	59.8%	0.00	20604
21114	C&I	RET	RET	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7	59.8%	0.00	20610
21116	C&I	RET	RET	Onsite Laundry	E		Water Heating		On-site laundry systems for laundromats and facilities with on-site laundry	Laundry systems without ozone technology	Laundry systems with ozone technology	2021	2030	10	81.0%	0.11	---
21118	C&I	MD	NC.RENO.REPL	Commercial ENERGY STAR Dishwasher	E		Water Heating		Installation of an ENERGY STAR commercial dishwasher	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	24.3%	0.00	20601
21201	C&I	RET	RET	Industrial Process, Drives Improvements	E		Drives		Optimized drive systems for energy efficiency	Existing industrial drive systems	High efficiency industrial drive systems	2021	2030	15	32.5%	0.59	---
21401	C&I	RET	RET	Industrial Process, Compressed Air Systems Improveme	E	Compressed Air Systems			Increase efficiency of compressed air systems	Existing industrial compressed air systems	High efficiency industrial compressed air systems	2021	2030	15	45.0%	0.35	---
21501	C&I	RET	RET	Industrial Process, Process Cooling and Refrigeration Im	E	Process Cooling and Refrigeration			Increase the efficiency of industrial process cooling	Existing industrial process cooling systems	High efficiency industrial process cooling systems	2021	2030	15	55.0%	0.17	---
21601	C&I	RET	RET	Industrial Process, Process Heating Improvements	E	Process Heating			Increase efficiency of process heating	Existing industrial process heating systems	High efficiency industrial process heating systems	2021	2030	62	12.6%	0.26	---
21701	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Holistically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.08	---
21702	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Holistically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.12	21702
21703	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy-efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute's and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.49	---
21704	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.25	---
21705	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy-efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute's and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.76	21705
21706	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.39	21706
21707	C&I	RET	RET	Recommissioning	E		Total Electric		Recommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.23	---
21708	C&I	RET	RET	Recommissioning	E		Total Electric		Recommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.00	21708
21709	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fan coils, an 8:1 turndown ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turndown ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	1.34	---
21710	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fan coils, an 8:1 turndown ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turndown ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	0.00	21710
21711	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.40	---
21711	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.87	---
21712	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.00	21712
21712	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.00	21712
21713	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.56	---
21713	C&I	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	0.45	---
21714	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.88	21714

## Appendix D1: Measure Characterizations

Table D1: PECO - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Measure#
21714	CAI	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building services. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	1.39	21714
21715	CAI	RET	RET	Industrial Strategic Energy Management	E		Total Electric		Industrial Strategic Energy Management	No SEM	SEM implemented	2021	2030	3	5.0%	0.13	---





Appendix D1: Measure Characterizations

Table D2: PPL - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20313	C&I	MD	NC.RENO.REPL	Computer Room Air Conditioner	E		Cooling		This measure analyzes the space cooling savings potential for the replacement or new commissioning of a computer room air conditioner (CRAC). CRACs are installed to meet cooling requirements for computers, servers, and other electronic components.	Standard efficiency CRAC	High-efficiency CRAC	2021	2030	15	23.1%	0.36	--
20314	C&I	MD	REPL	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	3.95	20314
20314	C&I	RET	RET	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of existing, standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	7.99	20314
20315	C&I	MD	NC.RENO.REPL	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	22.6%	1.12	--
20315	C&I	RET	RET	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Existing, standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	54.5%	0.26	--
20316	C&I	RET	RET	Chiller Tuneup	E		Cooling		Commercial air cooled or water chiller tune-up completed in accordance with the following recommended tune-up requirements: - Clean condenser coils/tubes - Check cooling tower for scale or buildup - Check contactors condition - Check evaporator condition - Check low-pressure controls - Check high-pressure controls - Check filter, replace as needed - Check belt, replace as needed - Check crankcase heater operation - Check economizer operation	Existing air cooled or water chiller	Tuned-up existing air cooled or water chiller	2021	2030	5	5.0%	1.28	--
20317	C&I	RET	RET	Unitary Equipment Economizer	E		Cooling		Retrofit of existing equipment or the optional addition of an air-side economizer on new equipment where not required by code. This measure analyzes the cooling savings potential of the installation of an air side economizer on unitary equipment. This measure is applicable to dx and water cooled air	Existing unitary equipment without a functional air side economizer	Existing unitary equipment with a functional air side economizer	2021	2030	10	36.3%	0.82	--
20318	C&I	RET	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20318
20319	C&I	RET	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20319
20320	C&I	RET	RET	Controls for Unitary AC	E		Cooling		Unitary equipment (RTU)	Existing RTU without advanced controls	Existing RTU with advanced controls	2021	2030	10	15.0%	0.47	--
20321	C&I	MD	NC.RENO	Optimized UnitaryAC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is primarily a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321
20322	C&I	MD	NC.RENO	Optimized UnitaryAC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is primarily a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20322
20323	C&I	MD	NC.RENO	Optimized Chiller Distribution/Control System	E		Cooling		High efficiency distribution system for chiller systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, better design, etc.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	15	36.0%	0.48	--
20324	C&I	RET	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	18.8%	0.30	20324
20325	C&I	RET	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	16.7%	0.31	20325
20326	C&I	MD	NC.RENO	Programmable Tsat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.29	20326
20327	C&I	MD	NC.RENO	Programmable Tsat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.29	20327
20327	C&I	RET	RET	Programmable Tsat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.29	20327
20328	C&I	MD	NC.RENO	Smart Tsat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	18.8%	0.62	20328
20328	C&I	RET	RET	Smart Tsat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	18.8%	0.62	20328
20329	C&I	MD	NC.RENO	Smart Tsat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	18.8%	0.62	20329
20329	C&I	RET	RET	Smart Tsat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	18.8%	0.62	20329
20330	C&I	RET	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol process.	Over a very broad set of buildings, we measured average duct leakage at 8%.	Generally aerosol duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	0.00	21009
20331	C&I	RET	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol process on pre-screened buildings for high savings	A subset of buildings have high leakage, nominally 29%. Screening procedures can identify these buildings with good success.	High leakage buildings were sealed from 29% duct leakage to 6% duct leakage	2021	2030	15	13.0%	0.00	21010
20332	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	15.7%	7.80	20332
20334	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	15.7%	7.80	20334
20335	C&I	RET	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain	Window film	Window film	2021	2030	10	21.1%	5.28	20335
20336	C&I	RET	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	21.1%	5.28	20336
20337	C&I	MD	NC.RENO.REPL	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	--
20337	C&I	RET	RET	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	--
20338	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20338
20338	C&I	RET	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20338
20339	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20339
20339	C&I	RET	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20339
20401	C&I	MD	NC.REPL	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.6%	0.10	--
20401	C&I	RET	RET	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.6%	0.29	--
20402	C&I	MD	NC.REPL	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	--
20402	C&I	RET	RET	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	--
20403	C&I	MD	NC	Improved Exterior Lighting Design	E		Exterior Lighting		Reduced light levels and better outdoor lighting design. Includes reduced wattage lamps, better spacing and use of cut-offs and shields to better control light and minimize glare.	Unoptimized exterior lighting design	Optimized exterior lighting design	2021	2030	15	65.5%	0.10	--
20404	C&I	RET	RET	Exterior Lighting Controls	E		Exterior Lighting		Optimized exterior lighting controls	Existing exterior lighting controls	Existing exterior lighting controls	2021	2030	8	9.0%	0.17	--
20508	C&I	MD	NC.REPL	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	0.99	--
20508	C&I	RET	RET	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	2.65	--

## Appendix D1: Measure Characterizations

Table D2: PPL - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20509	C&I	MD	NC, REPL	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	0.82	--
20508	C&I	RET	RET	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	2.20	--
20511	C&I	MD	REPL	LED Tube Replacement Lamps	E	G	Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12,333,333	48.4%	0.21	--
20511	C&I	RET	RET	LED Tube Replacement Lamps	E	G	Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12,333,333	48.4%	0.78	--
20512	C&I	MD	REPL	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12,333,333	58.3%	0.18	--
20512	C&I	RET	RET	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12,333,333	58.3%	0.65	--
20514	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems	E	G	Interior Lighting		LED High bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED High bay fixtures	2021	2030	15	35.6%	0.72	--
20514	C&I	RET	RET	LED High-bay and Low-bay Systems	E	G	Interior Lighting		LED High bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED High bay fixtures	2021	2030	15	35.6%	2.13	--
20515	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED High bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED High bay fixtures	2021	2030	15	42.9%	0.60	--
20515	C&I	RET	RET	LED High-bay and Low-bay Systems with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED High bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED High bay fixtures	2021	2030	15	42.9%	1.77	--
20617	C&I	RET	RET	Exit Sign Retrofits	E	G	Interior Lighting		Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	71.9%	0.46	--
20618	C&I	RET	RET	Exit Sign Retrofits with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	86.5%	0.39	--
20620	C&I	RET	RET	Interior Detriments	E	G	Interior Lighting		Remove fluorescent fixtures from multi-lamp fixtures in wall/ceiling areas.	Existing fluorescent fixture in multi-lamp	Detrimented fixture	2021	2030	13	85.1%	0.29	--
20621	C&I	RET	RET	Interior Detriments with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Remove fluorescent fixtures from multi-lamp fixtures in wall/ceiling areas.	Existing fluorescent fixture in multi-lamp	Detrimented fixture	2021	2030	13	102.4%	0.24	--
20622	C&I	RET	RET	Refrigerator/Freezer Case LEDs	E	G	Interior Lighting		Replace existing vertical and horizontal fluorescent refrigerated case lighting with more efficient LED lighting.	Vertical and horizontal fluorescent refrigerated case lighting	LED fixtures	2021	2030	8	83.8%	0.56	--
20624	C&I	RET	RET	Interior Lighting Controls	E	G	Interior Lighting		Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration.	Manual control	Average of multiple control types	2021	2030	8	32.3%	1.28	--
20626	C&I	RET	RET	Interior Lighting Controls with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration. This measure involves installing occupancy controls for refrigerated case lighting with internal LED lighting. Without occupancy sensors, case lighting typically runs at 100% power during the time a controlled lighting sensors allow lights to turn fully on only when motion is detected in the store aisle. When no motion is detected for a preset period of time, the lights automatically dim to a lower power state, generating substantial energy savings.	Manual control	Average of multiple control types	2021	2030	8	38.9%	1.06	--
20629	C&I	RET	RET	Refrigerator/Freezer Case Occupancy Controls	E	G	Interior Lighting		This measure involves installing occupancy controls for refrigerated case lighting with internal LED lighting. Without occupancy sensors, case lighting typically runs at 100% power during the time a controlled lighting sensors allow lights to turn fully on only when motion is detected in the store aisle. When no motion is detected for a preset period of time, the lights automatically dim to a lower power state, generating substantial energy savings.	Manually controlled LED refrigerated case lighting	LED refrigerated case lighting with occupancy controls	2021	2030	8	46.2%	0.37	--
20631	C&I	MD	NC	Interior Lighting Design	E	G	Interior Lighting		Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	27.4%	0.99	--
20632	C&I	MD	NC	Interior Lighting Design with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	33.0%	0.82	--
20601	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E	Other			Installation of a new ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20601
20602	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E	Other			Installation of an ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20602
20603	C&I	MD	NC,RENO,REPL	ENERGY STAR Dehumidifier	E	Other			This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Old or previously non-existent dehumidifier	New ENERGY STAR dehumidifier	2021	2030	12	21.9%	0.29	--
20604	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E	Other			High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	1.60	20604
20606	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E	Other			High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20606
20607	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E	Other			High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20608
20610	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E	Other			High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
20611	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E	Other			High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20610
20613	C&I	MD	NC,RENO,REPL	Clothes Dryer	E	Other			High efficiency commercial clothes dryers with moisture sensors.	Standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.19	--
20613	C&I	RET	RET	Clothes Dryer	E	Other			High efficiency commercial clothes dryers with moisture sensors.	Existing, standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.80	--
20614	C&I	MD	NC,RENO,REPL	Motors	E	Other			This measure includes one-for-one replacement of working or failed/motor failure 1,200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/motor failure motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.25	--
20614	C&I	RET	RET	Motors	E	Other			This measure includes one-for-one replacement of working or failed/motor failure 1,200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/motor failure motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	4.6%	1.28	--
20615	C&I	RET	RET	VFDs on HVAC Pumps	E	Other			Installation of VSD on Chilled Water and Hot Water Pumps in HVAC Applications	Weighted average of no control, bypass valves, and fixed speed drives on HVAC pumps.	Variable Speed Drives on HVAC pumps	2021	2030	15	41.8%	0.09	--
20616	C&I	RET	RET	Industrial Process, Other Improvements	E	Other			Increase the efficiency of other misc. process measures.	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	--
20617	C&I	RET	RET	Industrial Non-Process, Other Improvements	E	Other			Increase the electrical efficiency of non-process end uses other than lighting and space heat & cool throughout facility.	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	--
20701	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E	Other	Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	--
20701	C&I	RET	RET	Advanced Power Strip	E	Other	Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	--
20702	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E	Other	Plug Loads		Tier 2 Advanced Power Strips (APS) use an external sensor paired with a configurable countdown timer to manage both active and standby loads for controlled devices in a complete system. Tier 2 APS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled sockets; those with a master control socket sense power for the device connected to the control socket. The external sensor of a Tier 2 APS may utilize an infrared-only sensor, or it may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APS device. Both versions of external sensor use IR filtering to prevent inappropriate switching events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.69	--



Appendix D1. Measure Characterizations

Table D2: PPL - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20702	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APRS) use an external sensor paired with a configurable countdown timer to manage both active and standby power loads for controlled devices in a complete system. Tier 2 APRS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled sockets; those with a master control socket sense power for the device control socket. The external sensor of a Tier 2 APRS may utilize an infrared-only sensor, or it may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APRS device. Both versions of external sensor use IR filtering to prevent inappropriate activating events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.76	--
20703	C&I	RET	RET	Computer Power Management	E		Plug Loads		This measure characterizes average savings from adjustment of computer power management settings by a direct install technician. Computer power management settings, when properly enabled, automatically put the computer and monitor in a low power state when no activity is detected for a certain period of time.	Computer power management controls set by user	Power Management controls set by IT on a top down bases	2021	2030	5	36.0%	0.22	--
20704	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing laptops with ENERGY STAR certified laptops	Non-ENERGY STAR certified laptops	ENERGY STAR certified laptops	2021	2030	4	41.8%	0.00	--
20705	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing PCs with ENERGY STAR certified PCs	Non-ENERGY STAR certified PCs	ENERGY STAR certified PCs	2021	2030	4	43.5%	0.00	--
20706	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing monitors with ENERGY STAR certified monitors	Non-ENERGY STAR certified monitors	ENERGY STAR certified monitors	2021	2030	7	15.4%	0.00	--
20707	C&I	RET	RET	Vending Machine Controls	E		Plug Loads		Installation of automatic shutoff control on non-refrigerated snack vending machines. Controls must include a passive infrared sensor to shut off lighting when the area surrounding the vending machine is unoccupied for fifteen (15) minutes. Controls must be capable of powering up the machine on IR activation to highlight the product offerings.	No Controls on the vending machines	Occupancy sensors turn off lights when no one is around	2021	2030	5	46.0%	0.00	--
20708	C&I	RET	RET	Vending Machine Controls	E		Plug Loads		Installation of automatic shutoff control on refrigerated vending machines. Controls must include a passive infrared sensor to shut off lighting and compressor. Controls must be capable of periodically powering up the machine to maintain product temperature and provide compressor protection.	No Controls on the vending machines	Occupancy sensors and timers turn off lights and refrigeration when no one is around	2021	2030	5	38.0%	0.13	--
20801	C&I	MD	NC, RENO, REPL	ENERGY STAR Refrigerator and Freezer	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in commercial buildings, as well as installation of high efficiency refrigerators and freezers in new buildings. New units will include at least no-sweat door controls, evaporator fan motor controls, ECM motors, etc	Federal standard efficiency vertical closed and horizontal closed commercial refrigerators with transparent or solid doors and self-contained condensing units	ENERGY STAR vertical closed and horizontal closed commercial refrigerators with transparent or solid doors and self-contained condensing units	2021	2030	12	24.1%	0.32	--
20802	C&I	MD	NC, RENO, REPL	ENERGY STAR Ice Machine	E		Refrigeration		Commercial ice machines are used in restaurants, hospitals, hotels, schools, offices and grocery stores. ENERGY STAR rates air-cooled ice machines. ENERGY STAR ice machines are designed with higher efficiency compressors and use less water than standard ice machines.	Federal standard (manufactured on or after January 28, 2014) compliant commercial ice machine	ENERGY STAR ice machine	2021	2030	8	19.0%	0.09	--
20803	C&I	MD	NC, RENO	High Efficiency Built Up Refrigeration with Gas Secondary	E	G	Refrigeration	Space Heating	High-efficiency built-up refrigeration systems for grocery and refrigerated warehouses. This potentially includes HE compressors, better design and controls, HE motors and VFDs.	Standard efficiency built-up refrigeration systems	High efficiency built-up refrigeration systems	2021	2030	10	25.3%	0.48	--
20803	C&I	RET	RET	High Efficiency Built Up Refrigeration with Gas Secondary	E	G	Refrigeration	Space Heating	High-efficiency built-up refrigeration systems for grocery and refrigerated warehouses. This potentially includes HE compressors, better design and controls, HE motors and VFDs.	Standard efficiency built-up refrigeration systems	High efficiency built-up refrigeration systems	2021	2030	10	31.4%	2.12	--
20805	C&I	RET	RET	ECM Compressor Condenser Fan Motors	E		Refrigeration		Replacing existing shaded pole condenser fan motors with high efficiency electronically commutated motors (ECM) in a commercial refrigeration system compressor or condensing unit	Existing shaded pole or PSC compressor or condensing unit fan motors	ECM compressor or condensing unit fan motors	2021	2030	15	52.4%	0.10	--
20806	C&I	RET	RET	Evaporator Fan Motor Replacement	E		Refrigeration		Replacement of an existing, working standard-efficiency shaded-pole evaporator fan motor in refrigerated/freezer display cases or walk-in coolers with a high efficiency electronically commutated motor (ECM)	Existing, working standard-efficiency shaded-pole evaporator fan motor in refrigerated/freezer display cases or walk-in coolers	ECM evaporator fan motor in refrigerated/freezer display cases or walk-in coolers	2021	2030	15	58.7%	0.19	--
20807	C&I	MD	NC, RENO	Evaporator Fan Speed Controls	E		Refrigeration		This measure adds controls to vary the speed of evaporator fan motors in walk-in coolers and freezers. The evaporator fans are used to both provide cooling when the compressor is running and to provide air circulation when the compressor is off. The controls provide a lower fan speed during periods when the compressor is off. Alternative control strategy of simple ON/OFF also characterized.	Uncontrolled ECM evaporator fan motors in walk-in coolers and freezers	Controlled ECM evaporator fan motors in walk-in coolers and freezers	2021	2030	15	42.5%	0.20	--
20807	C&I	RET	RET	Evaporator Fan Speed Controls	E		Refrigeration		This measure adds controls to vary the speed of evaporator fan motors in walk-in coolers and freezers. The evaporator fans are used to both provide cooling when the compressor is running and to provide air circulation when the compressor is off. The controls provide a lower fan speed during periods when the compressor is off. Alternative control strategy of simple ON/OFF also characterized.	Uncontrolled PSC, SP, or ECM evaporator fan motors in walk-in coolers and freezers	Controlled PSC, SP, or ECM evaporator fan motors in walk-in coolers and freezers	2021	2030	15	42.2%	0.20	--
20808	C&I	RET	RET	Evaporator Coil Defrost Control	E		Refrigeration		A freezer refrigeration system with electric defrost is set to run the defrost cycle periodically throughout the day. A defrost control uses temperature and pressure sensors to monitor system processes and statistical modeling to determine the requirement of the system. When the system calls for a defrost cycle, the controller determines if it is necessary and skips the cycle if it is not.	Freezer refrigeration system with no defrost controls	Freezer refrigeration system with defrost controls	2021	2030	10	44.6%	0.32	--
20809	C&I	RET	RET	Floating Head Pressure Controls	E		Refrigeration		By installing a floating head pressure control (FHPC) condenser system, the refrigeration system can change condensing temperatures in response to different outdoor temperatures.	No floating head pressure control	Install floating head pressure control	2021	2030	15	11.3%	0.11	--
20811	C&I	RET	RET	Anti-Sweat Head Control	E		Refrigeration		Glass doors on refrigerator and freezer cases can have anti-sweat or anti-condensate heaters in the frames and millions of the case. These heaters operate continuously in order to prevent condensation/frosting on the glass and frame that occurs when the surface temperature is below the dew point of the surrounding air. Anti-sweat heater controls control the operation of these heaters so that they do not run continuously when not needed (lower gas gain in the area, typically occurs in winter).	Reach-in coolers and freezers with standard, low, or no-heat doors	Reach-in coolers and freezers with anti-sweat heat control	2021	2030	12	57.2%	0.43	--
20818	C&I	RET	RET	Low Heat and No Heat Doors	E		Refrigeration		Replaces standard refrigerated case doors which incorporate electric resistance heaters in the door to prevent condensation from forming on the glass and frost from forming on the door frames with more efficient doors that have a smaller electric resistance heater (low heat) or no heater at all (no heat). Low heat and no heat doors are more efficient due to having three panes of glass, a low conductivity filler gas (such as argon), and/or a low-E coating on the glass.	Standard refrigerated case doors with electric resistance heaters	Refrigerated case low-heat and no-heat doors	2021	2030	12	41.8%	0.18	--
20821	C&I	RET	RET	Walk-In Cooler Retrofit	E		Refrigeration		Retrofit of a walk-in cooler to improve system energy efficiency	Standard efficiency existing stock walk-in refrigeration systems	High efficiency walk-in refrigeration systems	2021	2030	15	32.0%	0.56	--
20910	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Space Heating		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	5.1%	0.00	20303
20910	C&I	RET	RET	Unitary Heat Pump	E		Space Heating		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing, standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	5.1%	0.00	20303
20911	C&I	RET	RET	AC Tuneup	E		Space Heating		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.00	20304
20913	C&I	MD	REPL	MiniSplit Ductless HP	E		Space Heating		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	71.6%	0.60	20308
20913	C&I	RET	RET	MiniSplit Ductless HP	E		Space Heating		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	71.6%	0.00	20308
20914	C&I	MD	NC, RENO, REPL	Packaged Terminal Heat Pump	E		Space Heating		Replacement of non-working and working packaged terminal heat pump (PTHP) equipment. This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency packaged terminal heat pump (PTHP) equipment	High-efficiency packaged terminal heat pump (PTHP) equipment	2021	2030	15	17.4%	0.00	20310
20914	C&I	RET	RET	Packaged Terminal Heat Pump	E		Space Heating		Replacement of non-working and working packaged terminal heat pump (PTHP) equipment. This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing standard efficiency packaged terminal heat pump (PTHP) equipment	High-efficiency packaged terminal heat pump (PTHP) equipment	2021	2030	15	17.4%	0.00	20310
20915	C&I	MD	REPL	Ground Source Heat Pump	E		Space Heating		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of standard efficiency unitary air source heat pumps (ASHP) and electric resistance heat (ASHR)	High-efficiency ground source heat pump (GSHP)	2021	2030	15	70.7%	0.00	20314
20915	C&I	RET	RET	Ground Source Heat Pump	E		Space Heating		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Existing standard efficiency unitary air source heat pump (ASHP) and electric resistance heat	High-efficiency ground source heat pump (GSHP)	2021	2030	15	70.7%	0.00	20314
20916	C&I	MD	NC	VRF Heat Pump	E		Space Heating		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application.	ASHPs	VRF Heat Pump	2021	2030	15	2.7%	0.00	20311
20917	C&I	MD	NC, RENO	Optimized Unitary AC Distribution/Control System	E		Space Heating		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is mainly a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321
20919	C&I	RET	RET	Demand Control Ventilation	E		Space Heating		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX water-cooled systems.	Existing DX or water cooled air systems without DCV equipment	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
20921	C&I	RET	RET	Guest Room EM	E		Space Heating		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (ITAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	16.8%	0.00	20324
20923	C&I	MD	NC, RENO, REPL	Kitchen DCV - MD	E		Space Heating		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooking load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	41.3%	0.00	21007
20923	C&I	RET	RET	Kitchen DCV - MD	E		Space Heating		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooking load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	41.3%	0.00	21007
20925	C&I	MD	NC, RENO	Programmable Tstat	E		Space Heating		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	6.8%	0.00	20326
20927	C&I	MD	NC, RENO	Smart Tstat MD	E		Space Heating		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, preferencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	18.8%	0.00	20328
20927	C&I	RET	RET	Smart Tstat MD	E		Space Heating		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, preferencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	18.8%	0.00	20328
20929	C&I	RET	RET	Duct Sealing Regulated	E		Space Heating		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol Injectors	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally aerosol duct sealing can seal to less than 2% duct leakage	2021	2030	15	5.2%	0.00	21009
20932	C&I	MD	NC, RENO	Windows	E		Space Heating		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	8.6%	0.00	20333
20934	C&I	RET	RET	Window Film	E		Space Heating		Auto window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	-27.3%	0.00	20335

Appendix D1. Measure Characterizations

Table D2: PPL - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20396	C&I	MD	NC.RENO	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
20398	C&I	RET	RET	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
21001	C&I	MD	NC.RENO.REPL	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.32	---
21001	C&I	RET	RET	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.32	---
21002	C&I	RET	RET	VFD on HVAC System	E		Ventilation		Installation of a variable speed drives on HVAC fans and pumps to vary the speed of the motor in a HVAC application with a diversified load	Weighted average of baseline control type on HVAC motor	VFD on HVAC motor	2021	2030	15	53.4%	0.11	---
21003	C&I	RET	RET	ECM Furnace Motors	E		Ventilation		Replace standard fan motor in furnace with ECM motor	PSC Furnace motors	ECM Furnace Motors	2021	2030	15	39.0%	0.18	---
21005	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
21006	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20319
21007	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.22	21007
21007	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.23	21007
21008	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.00	21008
21008	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.00	21008
21009	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol gaskets	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21009
21010	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol gaskets	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21010
21103	C&I	MD	NC.RENO.REPL	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≥ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters.	Storage-type electric resistance water heater (≥ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21103	C&I	RET	RET	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≥ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters.	Storage-type electric resistance water heater (≥ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21107	C&I	RET	RET	Facet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing, inefficient faucet aerator	Low-flow faucet aerator	2021	2030	10	31.8%	0.01	---
21109	C&I	RET	RET	Pre-Rinse Sprayers	E		Water Heating		Retrofit of working standard pre-rinse sprayers with low-flow, pre-rinse sprayers in commercial kitchen applications.	Existing, inefficient pre-rinse sprayer	Low-flow pre-rinse sprayer	2021	2030	8	47.9%	0.05	---
21114	C&I	MD	NC.RENO.REPL	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20604
21114	C&I	RET	RET	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
21116	C&I	RET	RET	On-site Laundry	E		Water Heating		On-site laundry systems for laundromats and facilities with on-site laundry.	Laundry systems without ozone technology	Laundry systems with ozone technology	2021	2030	10	81.0%	0.11	---
21118	C&I	MD	NC.RENO.REPL	Commercial ENERGY STAR Dishwasher	E		Water Heating		Installation of an ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	24.3%	0.00	20601
21201	C&I	RET	RET	Industrial Process, Drives Improvements	E		Drives		Optimized drive systems for energy efficiency.	Existing industrial drive systems	High efficiency industrial drive systems	2021	2030	15	32.5%	0.59	---
21401	C&I	RET	RET	Industrial Process, Compressed Air Systems Improveme	E		Compressed Air Systems		Increase efficiency of compressed air systems	Existing industrial compressed air systems	High efficiency industrial compressed air systems	2021	2030	15	45.0%	0.35	---
21501	C&I	RET	RET	Industrial Process, Process Cooling and Refrigeration Im	E		Process Cooling and Refrigeration		Increase the efficiency of industrial process cooling	Existing industrial process cooling systems	High efficiency industrial process cooling systems	2021	2030	15	55.0%	0.17	---
21601	C&I	RET	RET	Industrial Process, Process Heating Improvements	E		Process Heating		Increase efficiency of process heating	Existing industrial process heating systems	High efficiency industrial process heating systems	2021	2030	62	12.6%	0.26	---
21701	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.08	---
21702	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.12	21702
21703	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy-efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute's Advanced Energy Retrofit Guides available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.49	---
21704	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.25	---
21705	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy-efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute's Advanced Energy Retrofit Guides available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.76	21705
21706	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.39	21706
21707	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.23	---
21708	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.00	21708
21709	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV tune hoods, an 8:1 turnaround ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turnaround ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	1.34	---
21710	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV tune hoods, an 8:1 turnaround ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turnaround ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	0.00	21710
21711	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.40	---
21711	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Historic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.87	---
21712	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.00	21712
21712	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Historic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.00	21712
21713	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.56	---
21713	C&I	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	0.45	---
21714	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.88	21714

Appendix D1: Measure Characterizations

Table D2: PPL - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Measure#
21714	CAI	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building services. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	1.39	21714
21715	CAI	RET	RET	Industrial Strategic Energy Management	E		Total Electric		Industrial Strategic Energy Management	No SEM	SEM implemented	2021	2030	3	5.0%	0.13	---

Appendix D1. Measure Characterizations

Table D3: Duquesne Light - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Int. Cost Per kWh or \$/MBtu Saved	Links with Measure#
10101	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Appliances		This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	10101
10102	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher with Gas Secondary Fuel	E	G	Appliances	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with gas water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	--
10103	Res	MD	NC, RENO, REPL	ENERGY STAR Dehumidifier	E		Appliances		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Existing or dehumidifier or new standard dehumidifier meeting the federal minimum standard	New ENERGY STAR dehumidifier	2021	2030	12	27.3%	0.02	--
10105	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	30.8%	1.37	10105
10107	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	30.8%	1.37	--
10108	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Appliances	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and gas drying	2021	2030	11	47.0%	7.65	10108
10109	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	29.5%	0.39	10109
10111	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	29.5%	0.39	--
10301	Res	MD	NC, RENO, REPL	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing or baseline central AC system with SEER 13	High efficiency central AC system with SEER 16	2021	2030	15	21.3%	2.11	--
10301	Res	RET	RET	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing central AC system with SEER 12.1	High efficiency central AC system with SEER 16	2021	2030	15	24.4%	10.78	--
10303	Res	RET	RET	Central Air Conditioner Tune Up	E		Cooling		Residential split system air conditioning tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing CAC system that has not received a tune-up within the last 3 years	Existing CAC tune-up	2021	2030	3	5.0%	0.93	--
10305	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10305
10305	Res	RET	RET	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with SEER 13.6	High efficiency air source heat pump system with SEER 18	2021	2030	15	25.0%	0.00	10305
10306	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10306
10309	Res	RET	RET	Air Source Heat Pump Tune Up	E		Cooling		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.00	10309
10311	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Split or Central A/C with SEER 13	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	44.6%	0.00	10311
10311	Res	RET	RET	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Split or Central A/C with SEER 12.1	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	48.4%	0.00	10311
10313	Res	MD	NC, RENO, REPL	Energy Star Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in residential homes, as well as installation of high efficiency cooling systems in new homes.	Failed or working non-Energy Star Room AC with weighted average Federal standards CEER of 9.9	New Energy Star Room AC with weighted average ENERGYSTAR CEER of 11	2021	2030	9	9.6%	1.20	--
10314	Res	MD	NC	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	1.92	--
10314	Res	RET	RET	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	1.66	--
10315	Res	MD	NC	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	0.00	10918
10315	Res	RET	RET	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	0.00	10918
10316	Res	RET	RET	Duct Sealing	E		Cooling		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system of homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	10.0%	0.00	10919
10318	Res	RET	RET	Wall Insulation	E		Cooling		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Wall Insulation with R-value of 8.6	Wall insulation with R-value of 14.6	2021	2030	15	41.1%	0.00	10921
10319	Res	RET	RET	Attic Insulation	E		Cooling		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Attic Insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	0.00	10922
10404	Res	RET	RET	ENERGY STAR LED Outdoor Fixture	E		Exterior Lighting		ENERGY STAR LED outdoor fixtures replace less efficient incandescent fixtures in retrofits or new construction. Fixtures are hardwired and use either pin based or screw in lamps.	60W General service incandescent fixtures	34W ENERGY STAR LED exterior fixtures	2021	2030	15	46.0%	0.50	--
10405	Res	RET	RET	LED Holiday Lights	E		Exterior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to exterior lighting end use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New exterior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	--
10406	Res	RET	RET	Lighting Controls	E		Exterior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When motion is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.25	--
10509	Res	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Weighted average of existing T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	5	44.2%	0.31	--
10510	Res	RET	RET	LED Holiday Lights	E		Interior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to interior lighting end use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New interior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	--
10512	Res	RET	RET	Lighting Controls	E		Interior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When motion is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.83	--
10601	Res	RET	RET	ENERGY STAR Ceiling Fan	E		Other		ENERGY STAR qualified ceiling fan with no light units are over 50% more efficient than conventional fans. They also use improved motors and blade designs. Includes fan-only options.	Existing Non-ENERGY STAR Ceiling Fan	ENERGY STAR Ceiling Fan	2021	2030	15	8.7%	24.49	--
10602	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electrically commutated (EC) circulator pumps are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	1.40	--
10603	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electrically commutated (EC) circulator pumps are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	0.24	--
10604	Res	RET	RET	ECM Blower Motor	E		Other		A retrofit of a less efficient (PSC) motor to a 2-stage BPM or ECM motor in an existing furnace. For retrofits, the target age range for existing furnaces is 10-12 years. This measure characterizes only the electric savings associated with the fan and could be coupled with gas savings associated with a more efficient furnace. Savings improve when the blower is used for cooling as well and when it is used for continuous ventilation, but only if the non-ECM motor would have been used for continuous ventilation.	Existing furnace with less efficient PSC motor	Existing furnace with 2-stage BPM or ECM motor	2021	2030	15	25.0%	2.09	--
10605	Res	MD	NC, REPL	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Failed or baseline Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.53	--
10605	Res	RET	RET	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Working Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.66	--
10701	Res	RET	RET	Advanced Tier 2 Power Strips	E		Plug Loads		Advanced power strips are power strips that contain a number of controlled sockets and at least one uncontrolled socket. When the appliance that is plugged into the uncontrolled socket is turned off, the power strips shuts off the appliances that are plugged into the controlled sockets. These have recently been renamed "Tier 1" power strips. Tier 2 power strips expand on the functionality by using algorithms to monitor the power of all controlled devices, whereas Tier 1 power strips only monitor the master device and turns off peripheral devices accordingly. Tier 2 power strips use infrared (IR) sensing and Root Mean Squared (RMS) power sensing to detect energy consumption from connected devices; Tier 1 power strips only use current sensing. After 1 hour of inactivity, energy savings are delivered by turning off power to inactive devices.	Audio-visual home entertainment systems connected to wall outlet or standard power strip.	Audio-visual home entertainment system connected to advanced Tier 2 power strip.	2021	2030	5	30.0%	0.23	--
10801	Res	MD	NC, RENO, REPL	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Baseline or Failed non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12,875	9.8%	0.44	--
10801	Res	RET	RET	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Existing non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12,875	41.5%	2.97	--
10802	Res	RET	RET	Secondary Refrigerator and Freezer Removal	E		Refrigeration		This measure reflects recycling of refrigerators or freezers without replacement.	Existing functional secondary refrigerators or freezers	Remove and recycle secondary refrigerator or freezer	2021	2030	4,584,325	100.0%	0.17	--
10910	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with HSPF 8.2	High efficiency air source heat pump system with HSPF 12	2021	2030	15	31.7%	1.34	10305

Appendix D1: Measure Characterizations

Table D3: Duquesne Light - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Int. Cost Per kWh or \$/MBtu Saved	Links with Measure
10910	Res	RET	RET	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with HSPF 8.2 with HSPF 12.	High efficiency air source heat pump system with HSPF 12.	2021	2030	15	31.7%	3.28	10305
10911	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing electric resistance heating system with HSPF 3.412	High efficiency air source heat pump system with HSPF 18	2021	2030	15	71.6%	0.25	10306
10914	Res	RET	RET	Air Source Heat Pump Tune Up	E		Space Heating		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.43	10308
10915	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.06	10311
10916	Res	RET	RET	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.39	10311
10918	Res	MD	NC, RENO, REPL	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing or baseline Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.22	10312
10919	Res	RET	RET	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.22	10312
10918	Res	MD	NC	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	6.4%	0.30	10918
10918	Res	RET	RET	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	7.9%	0.40	10918
10919	Res	RET	RET	Duct Sealing	E		Space Heating		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system of homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	2.0%	0.81	10919
10920	Res	RET	RET	Air Sealing	E		Space Heating		This measure characterizes increased air sealing for reduction of thermal losses through the building envelope. This measure captures heating savings.	Existing building envelope without additional air sealing	Building envelope with improved air sealing	2021	2030	15	15.0%	0.27	10920
10921	Res	RET	RET	Wall Insulation	E		Space Heating		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Wall Insulation with R-value of 8.6	Wall Insulation with R-value of 14.6	2021	2030	15	41.1%	3.55	10921
10922	Res	RET	RET	Attic Insulation	E		Space Heating		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Attic Insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	3.43	10922
1103	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
1103	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
1104	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
1104	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
1105	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
1105	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.6%	1.16	--
1106	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
1106	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.6%	1.16	--
1109	Res	RET	RET	Water Heater Setback	E		Water Heating		This measure involves turning the water heater set point to 120°F in a non-energy electric storage tank heat pump water heaters. Savings do not occur in applications such as in a shower or faucet where the user adjusts the hot water flow to make up for the lower temperature. Clothes washer hot water use and water heater tank losses are included in the savings calculation, but shower, faucet, and dishwasher use are not included due to expected behavioral and automatic (dishwasher) adjustments in response to lower water temperature. It is expected that the net energy use for the dish washer hot water will remain the same after a temperature reduction because dishwashers will adjust hot water temperature to necessary levels using internal heating elements. The existing temperature set point is assumed to be 119°F.	Water heater with set point temperature of 130°F	Water heater with set point temperature of 119°F	2021	2030	2	8.5%	0.00	--
1112	Res	RET	RET	Thermostatic Restriction Valve	E		Water Heating		This measure involves installing a thermostatically restricting shower valve that reduces the amount of excess hot shower water during warm-up periods.	Shower with no thermostatic restriction valve	Shower with thermostatic restriction valve	2021	2030	15	12.0%	0.31	--
11117	Res	RET	RET	Pipe Insulation	E		Water Heating		This measure includes installing 3/4" foam insulation on exposed pipe in unconditioned space.	Un-insulated piping of an electric water heating system	Insulated piping of an electric water heating system	2021	2030	13	3.0%	0.34	--
11118	Res	RET	RET	Water Heater Jacket Insulation	E		Water Heating		This measure includes installing a water heater blanket on an electric water storage water heater.	Electric water heater with no insulation jacket	Electric water heater with insulation jacket	2021	2030	7	43.1%	0.18	--
11124	Res	RET	RET	Low Flow Showerhead	E		Water Heating		This measure involves replacing a standard showerhead with a low flow showerhead.	Existing 2.5 GPM showerhead	Low-flow 1.5 GPM showerhead	2021	2030	9	40.0%	0.04	--
11124	Res	RET	RET	Faucet Aerator	E		Water Heating		This measure includes installing an existing faucet aerator with low-flow aerator.	Existing 2.2 GPM faucet aerator	Low-flow 1.5 GPM faucet aerator	2021	2030	10	31.8%	0.03	--
11126	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Water Heating	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	29.7%	0.00	10101
11127	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	12.9%	0.00	10105
11128	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	12.9%	0.00	10106
11130	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	11.3%	0.00	10109
11131	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	11.3%	0.00	10110
11702	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes.	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	1.7%	0.06	11702
11703	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes.	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	1.7%	0.06	11703
11704	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes.	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	1.3%	0.05	11704
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes.	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	0.8%	0.00	11706
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes.	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	0.3%	0.00	11706
20001	C&I	MD	NC, RENO, REPL	ENERGY STAR Ovens	E		Cooking		Replacement of failed or working electric ovens and ranges with new high efficiency ovens and ranges.	Baseline Oven	ENERGY STAR Ovens	2021	2030	12	16.1%	0.07	--
20002	C&I	MD	NC, RENO, REPL	ENERGY STAR Gridfries	E		Cooking		Replacement of failed or working electric gridfries with new high efficiency gridfries.	Baseline Gridfrie	ENERGY STAR Gridfrie	2021	2030	12	16.2%	0.33	--
20004	C&I	MD	NC, RENO, REPL	ENERGY STAR Steamers	E		Cooking		Replacement of failed or working electric steamers with new high efficiency steamers.	Baseline Steamer	ENERGY STAR Steamer	2021	2030	12	57.0%	0.19	--
20006	C&I	MD	NC, RENO, REPL	ENERGY STAR Fryers	E		Cooking		Replacement of failed or working electric fryers with new high efficiency fryers.	Baseline Fryers	ENERGY STAR Fryers	2021	2030	12	17.2%	0.10	--
20028	C&I	MD	NC, RENO, REPL	Hot Food Holding Cabinet	E		Cooking		Replacement of failed or working electric hot food holding cabinets with new high efficiency hot food holding cabinets.	Baseline Hot Food Holding Cabinet	ENERGY STAR Hot Food Holding Cabinet	2021	2030	12	52.7%	0.52	--
20301	C&I	MD	NC, RENO, REPL	Efficient Unitary AC	E		Cooling		Installation of electric DX split packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency unitary AC	High-efficiency unitary AC	2021	2030	15	18.2%	0.77	--
20301	C&I	RET	RET	Efficient Unitary AC	E		Cooling		Installation of electric DX split packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency unitary AC	High-efficiency unitary AC	2021	2030	15	18.2%	9.01	--
20302	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air conditioning rooftop unit involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.74	--
20303	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing RTU system unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	2.27	20303
20303	C&I	RET	RET	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing, standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	17.37	20303
20304	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.87	20304
20308	C&I	MD	REPL	MiniSplit Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system.	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	35.0%	0.00	20308
20308	C&I	RET	RET	MiniSplit Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system.	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	48.2%	7.37	20308
20309	C&I	MD	NC, RENO, REPL	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency PTAC	High-efficiency PTAC	2021	2030	15	17.2%	0.87	--
20309	C&I	RET	RET	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency PTAC	High-efficiency PTAC	2021	2030	15	29.3%	3.23	--
20311	C&I	MD	NC	VRF Heat Pump	E		Cooling		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application.	ASHPs	VRF Heat Pump	2021	2030	15	23.1%	0.82	20311
20312	C&I	MD	NC, RENO, REPL	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high-efficiency room air conditioners in new buildings.	Standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	9.4%	0.20	--
20312	C&I	RET	RET	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high-efficiency room air conditioners in new buildings.	Existing standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	15.1%	2.46	--

Appendix D1: Measure Characterizations

Table D3: Duquesne Light - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Int. Cost Per kWh or \$/MBtu Saved	Links with Measure#
20313	C&I	MD	NC.RENO.REPL	Computer Room Air Conditioner	E		Cooling		This measure analyzes the space cooling savings potential for the replacement or new commissioning of a computer room air conditioner (CRAC). CRACs are installed to meet cooling requirements for computers, servers, and other electronic components.	Standard efficiency CRAC	High-efficiency CRAC	2021	2030	15	23.1%	0.36	---
20314	C&I	MD	REPL	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Weighted average of standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	2.91	20314
20314	C&I	MD	RET	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Weighted average of existing, standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	5.88	20314
20315	C&I	MD	NC.RENO.REPL	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	22.6%	1.20	---
20315	C&I	MD	RET	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Existing, standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	54.5%	0.28	---
20316	C&I	MD	RET	Chiller Tuneup	E		Cooling		Commercial air cooled or water chiller tune-up completed in accordance with the following recommended tune-up requirements: <ul style="list-style-type: none"><li>- Clean condenser coils/tubes</li><li>- Check cooling tower for scale or buildup</li><li>- Check contactors condition</li><li>- Check evaporator condition</li><li>- Check low-pressure controls</li><li>- Check high-pressure controls</li><li>- Check filter, replace as needed</li><li>- Check belt, replace as needed</li><li>- Check crankcase heater operation</li><li>- Check economizer operation</li></ul>	Existing air cooled or water chiller	Tuned-up existing air cooled or water chiller	2021	2030	5	6.0%	1.28	---
20317	C&I	MD	RET	Unitary Equipment Economizer	E		Cooling		Retrofit of existing equipment or the optional addition of an air-side economizer on new equipment where not required by code. This measure analyzes the cooling savings potential of the installation of an air side economizer on unitary equipment. This measure is applicable to dx and water cooled air systems.	Existing unitary equipment without a functional air side economizer	Existing unitary equipment with a functional air side economizer	2021	2030	10	26.7%	0.82	---
20318	C&I	MD	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20318
20319	C&I	MD	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20319
20320	C&I	MD	RET	Controls for Unitary AC	E		Cooling		Unitary equipment (RTU)	Existing RTU without advanced controls	Existing RTU with advanced controls	2021	2030	10	15.0%	0.47	---
20321	C&I	MD	NC.RENO	Optimized Unitary/AC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is mainly a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321
20322	C&I	MD	NC.RENO	Optimized Unitary/AC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is mainly a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20322
20323	C&I	MD	NC.RENO	Optimized Chiller Distribution/Control System	E		Cooling		High efficiency distribution system for chiller systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, better design, etc.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	15	35.0%	0.48	---
20324	C&I	MD	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	16.5%	0.30	20324
20325	C&I	MD	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	16.4%	0.31	20325
20326	C&I	MD	NC.RENO	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	0.95	20326
20327	C&I	MD	NC.RENO	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	0.95	20327
20327	C&I	MD	RET	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	0.95	20327
20328	C&I	MD	NC.RENO	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	13.8%	0.62	20328
20328	C&I	MD	RET	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	13.8%	0.62	20328
20329	C&I	MD	NC.RENO	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	13.8%	0.62	20329
20329	C&I	MD	RET	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	13.8%	0.62	20329
20330	C&I	MD	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol processes.	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally aerosol duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	0.00	21009
20331	C&I	MD	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol processes on pre-scheduled buildings for high savings	A subset of buildings have high leakage, nominally 29%. Screening procedures can identify these buildings with good success.	High leakage buildings were sealed from 29% duct leakage to 6% duct leakage	2021	2030	15	13.0%	0.00	21010
20332	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	16.7%	7.80	20332
20334	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	15.7%	7.80	20334
20335	C&I	MD	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain	Window film	Window film	2021	2030	10	21.1%	5.28	20335
20336	C&I	MD	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	21.1%	5.28	20336
20337	C&I	MD	NC.RENO.REPL	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	---
20337	C&I	MD	RET	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	---
20338	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20338
20338	C&I	MD	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20338
20339	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20339
20339	C&I	MD	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20339
20401	C&I	MD	NC.REPL	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.8%	0.10	---
20401	C&I	MD	RET	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.8%	0.29	---
20402	C&I	MD	NC.REPL	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	---
20402	C&I	MD	RET	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	---
20403	C&I	MD	NC	Improved Exterior Lighting Design	E		Exterior Lighting		Reduced light levels and better outdoor lighting design. Includes reduced wattage lamps, better spacing and use of cut-offs and/or shields to better control light and minimize glare.	Unoptimized exterior lighting design	Optimized exterior lighting design	2021	2030	15	65.5%	0.10	---
20404	C&I	MD	RET	Exterior Lighting Controls	E		Exterior Lighting		Optimized exterior lighting controls.	Existing exterior lighting controls	Existing exterior lighting controls	2021	2030	8	9.0%	0.17	---
20508	C&I	MD	NC.REPL	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	0.99	---
20508	C&I	MD	RET	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	2.65	---

## Appendix D1. Measure Characterizations

Table D3: Duquesne Light - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Int. Cost Per kWh or \$/MBtu Saved	Links with Meas#
20509	C&I	MD	NC, REPL	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	0.82	--
20508	C&I	RET	RET	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	2.20	--
20511	C&I	MD	REPL	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.21	--
20511	C&I	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.78	--
20512	C&I	MD	REPL	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.18	--
20512	C&I	RET	RET	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.65	--
20514	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	0.72	--
20514	C&I	RET	RET	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	2.13	--
20515	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	0.60	--
20515	C&I	RET	RET	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	1.77	--
20617	C&I	RET	RET	Exit Sign Retrofits	E		Interior Lighting		Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	71.9%	0.46	--
20618	C&I	RET	RET	Exit Sign Retrofits with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	86.5%	0.39	--
20620	C&I	RET	RET	Interior Detriments	E		Interior Lighting		Remove fluorescent fixtures from multiple areas in a facility.	Existing fluorescent fixtures in multiple areas	Detriments	2021	2030	13	65.1%	0.29	--
20621	C&I	RET	RET	Interior Detriments with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Remove fluorescent fixtures from multiple areas in a facility.	Existing fluorescent fixtures in multiple areas	Detriments	2021	2030	13	102.4%	0.24	--
20622	C&I	RET	RET	Refrigerator/Freezer Case LEDs	E		Interior Lighting		Replace existing vertical and horizontal fluorescent refrigerated case lighting with more efficient LED lighting.	Vertical and horizontal fluorescent refrigerated case lighting	LED fixtures	2021	2030	8	83.8%	0.56	--
20624	C&I	RET	RET	Interior Lighting Controls	E		Interior Lighting		Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration.	Manual control	Average of multiple control types	2021	2030	8	32.3%	1.28	--
20626	C&I	RET	RET	Interior Lighting Controls with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration.	Manual control	Average of multiple control types	2021	2030	8	38.9%	1.06	--
20629	C&I	RET	RET	Refrigerator/Freezer Case Occupancy Controls	E		Interior Lighting		This measure involves installing occupancy controls for refrigerated case lighting with internal LED lighting. Without occupancy sensors, case lighting typically runs at 100% power in a controlled space. Occupancy sensors allow lights to turn fully on only when motion is detected in the store aisle. When no motion is detected for a preset period of time, the lights automatically dim to a lower power state, generating substantial energy savings.	LED refrigerated case lighting with occupancy controls	LED refrigerated case lighting with occupancy controls	2021	2030	8	46.2%	0.37	--
20631	C&I	MD	NC	Interior Lighting Design	E		Interior Lighting		Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	27.4%	0.99	--
20632	C&I	MD	NC	Interior Lighting Design with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	33.0%	0.82	--
20601	C&I	MD	NC, RENO, REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of a new ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20601
20602	C&I	MD	NC, RENO, REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of an ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20602
20603	C&I	MD	NC, RENO, REPL	ENERGY STAR Dehumidifier	E		Other		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Old or previously non-existent dehumidifier	New ENERGY STAR dehumidifier	2021	2030	12	21.9%	0.29	--
20604	C&I	MD	NC, RENO, REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	1.60	20604
20606	C&I	MD	NC, RENO, REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20606
20607	C&I	MD	NC, RENO, REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.86	20608
20610	C&I	MD	NC, RENO, REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
20611	C&I	MD	NC, RENO, REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20610
20613	C&I	MD	NC, RENO, REPL	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.19	--
20613	C&I	RET	RET	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Existing, standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.93	--
20614	C&I	MD	NC, RENO, REPL	Motors	E		Other		This measure includes one-for-one replacement of working or failed/motor failure 1,200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/motor failure motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.24	--
20614	C&I	RET	RET	Motors	E		Other		This measure includes one-for-one replacement of working or failed/motor failure 1,200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/motor failure motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	4.6%	1.24	--
20615	C&I	RET	RET	VFDs on HVAC Pumps	E		Other		Installation of VSD on Chilled Water and Hot Water Pumps in HVAC Applications	Weighted average of no control, bypass valves, and fixed speed drives on HVAC pumps	Variable Speed Drives on HVAC pumps	2021	2030	15	41.8%	0.09	--
20616	C&I	RET	RET	Industrial Process, Other Improvements	E		Other		Increase the efficiency of other misc. process measures	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	--
20617	C&I	RET	RET	Industrial Non-Process, Other Improvements	E		Other		Increase the electrical efficiency of non process end uses other than lighting and space heat & cool throughout facility	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	--
20701	C&I	MD	NC, RENO, REPL	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g., a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	--
20701	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g., a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	--
20702	C&I	MD	NC, RENO, REPL	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APS) use an external sensor paired with a configurable countdown timer to manage both active and standby power loads for controlled devices in a complete system. Tier 2 APS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled sockets; those with a master control socket sense power for the device connected to the control socket. The external sensor of a Tier 2 APS may utilize an infrared-only sensor, or it may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APS device. Both versions of external sensor use IR filtering to prevent inappropriate switching events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.69	--

Appendix D1. Measure Characterizations

Table D3: Duquesne Light - Measure Characteristics Summary

Table with columns: Measure#, Sector, Market, Target Markets, Measure Name, Primary Fuel, Secondary Fuel, Primary End Use, Secondary End Use, Measure Description, Baseline Description, Efficient Description, Start Year, End Year, Life, Percent Savings (Primary Fuel), Int. Cost Per kWh or MBtu Saved, Links with Measure#. Rows include various energy efficiency measures like Advanced Power Strip, Computer Power Management, ENERGY STAR Office Equipment, Vending Machine Controls, and Refrigerator/Freezer upgrades.



Appendix D1. Measure Characterizations

Table D3: Duquesne Light - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Int. Cost Per kWh or \$/MBtu Saved	Links with Meas#
20396	C&I	MD	NC.RENO	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20396
20398	C&I	RET	RET	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
21001	C&I	MD	NC.RENO.REPL	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.31	—
21001	C&I	RET	RET	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.56	—
21002	C&I	RET	RET	VFD on HVAC System	E		Ventilation		Installation of a variable speed drives on HVAC fans and pumps to vary the speed of the motor in a HVAC application with a diversified load	Weighted average of baseline control type on HVAC motor	VFD on HVAC motor	2021	2030	15	53.4%	0.11	—
21003	C&I	RET	RET	ECM Furnace Motors	E		Ventilation		Replace standard fan motor in furnace with ECM motor	PSC Furnace motors	ECM Furnace Motors	2021	2030	15	39.0%	0.18	—
21005	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
21006	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20319
21007	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.22	21007
21007	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.23	21007
21008	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.00	21008
21008	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.00	21008
21009	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol gaskets	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21009
21010	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol gaskets	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21010
21103	C&I	MD	NC.RENO.REPL	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≥ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters	Storage-type electric resistance water heater (≥ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	—
21103	C&I	RET	RET	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≥ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters	Existing storage-type electric resistance water heater (≥ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	—
21107	C&I	RET	RET	Facet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing, inefficient faucet aerator	Low-flow faucet aerator	2021	2030	10	31.8%	0.01	—
21109	C&I	RET	RET	Pre-Rinse Sprayers	E		Water Heating		Retrofit of working standard pre-rinse sprayers with low-flow, pre-rinse sprayers in commercial kitchen applications.	Existing, inefficient pre-rinse sprayer	Low-flow pre-rinse sprayer	2021	2030	8	47.9%	0.05	—
21114	C&I	MD	NC.RENO.REPL	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20604
21114	C&I	RET	RET	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
21116	C&I	RET	RET	Onsite Laundry	E		Water Heating		On-site laundry systems for laundromats and facilities with on-site laundry	Laundry systems without ozone technology	Laundry systems with ozone technology	2021	2030	10	81.0%	0.11	—
21118	C&I	MD	NC.RENO.REPL	Commercial ENERGY STAR Dishwasher	E		Water Heating		Installation of an ENERGY STAR commercial dishwasher	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	24.3%	0.00	20601
21201	C&I	RET	RET	Industrial Process, Drivers Improvements	E		Drives		Optimized drive systems for energy efficiency	Existing industrial drive systems	High efficiency industrial drive systems	2021	2030	15	32.5%	0.59	—
21401	C&I	RET	RET	Industrial Process, Compressed Air Systems Improvement	E		Compressed Air Systems		Increase efficiency of compressed air systems	Existing industrial compressed air systems	High efficiency industrial compressed air systems	2021	2030	15	45.0%	0.36	—
21501	C&I	RET	RET	Industrial Process, Process Cooling and Refrigeration Improvements	E		cess Cooling and Refrigeration		Increase the efficiency of industrial process cooling	Existing industrial process cooling systems	High efficiency industrial process cooling systems	2021	2030	15	55.0%	0.17	—
21601	C&I	RET	RET	Industrial Process, Process Heating Improvements	E		Process Heating		Increase efficiency of process heating	Existing industrial process heating systems	High efficiency industrial process heating systems	2021	2030	62	12.6%	0.26	—
21701	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.08	—
21702	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.12	21702
21703	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute's and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.49	—
21704	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.25	—
21705	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute's and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.76	21705
21706	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.39	21706
21707	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.23	—
21708	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.00	21708
21709	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy savings opportunity offered by VAV fan coil units, an 8:1 turn-down ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turn-down ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	1.34	—
21710	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy savings opportunity offered by VAV fan coil units, an 8:1 turn-down ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turn-down ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	0.00	21710
21711	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.40	—
21711	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.87	—
21712	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.00	21712
21712	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.00	21712
21713	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.56	—
21713	C&I	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	0.45	—
21714	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.88	21714

## Appendix D1: Measure Characterizations

Table D3: Duquesne Light - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inv. Cost Per kWh or \$/MBtu Saved	Links with Meas#
21714	CAI	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building services. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	1.39	21714
21715	CAI	RET	RET	Industrial Strategic Energy Management	E		Total Electric		Industrial Strategic Energy Management	No SEM	SEM implemented	2021	2030	3	5.0%	0.13	---

Appendix D1. Measure Characterizations

Table D4: FE: Met-Ed - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
10101	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Appliances		This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	10101
10102	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher with Gas Secondary Fuel	E	G	Appliances	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR dishwasher with gas water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	---
10103	Res	MD	NC, RENO, REPL	ENERGY STAR Dehumidifier	E		Appliances		This measure includes installation of a new ENERGY STAR dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Existing or dehumidifier or new standard dehumidifier meeting the federal minimum standard	New ENERGY STAR dehumidifier	2021	2030	12	27.3%	0.02	---
10105	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	30.8%	1.37	10105
10107	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	30.8%	1.37	---
10108	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Appliances	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and gas drying	2021	2030	11	47.0%	7.65	10108
10109	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	29.5%	0.39	10109
10111	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	29.5%	0.39	---
10301	Res	MD	NC, RENO, REPL	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing or baseline central AC system with SEER 13	High efficiency central AC system with SEER 16	2021	2030	15	21.3%	1.63	---
10301	Res	RET	RET	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing central AC system with SEER 12.1	High efficiency central AC system with SEER 16	2021	2030	15	24.4%	8.29	---
10303	Res	RET	RET	Central Air Conditioner Tune Up	E		Cooling		Residential split system air conditioning tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing CAC system that has not received a tune-up within the last 3 years	Existing CAC tune-up	2021	2030	3	5.0%	0.71	---
10305	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10305
10305	Res	RET	RET	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with SEER 13.6	High efficiency air source heat pump system with SEER 18	2021	2030	15	25.0%	0.00	10305
10306	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10306
10309	Res	RET	RET	Air Source Heat Pump Tune Up	E		Cooling		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.00	10309
10311	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Split or Central A/C with SEER 13	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	44.6%	0.00	10311
10311	Res	RET	RET	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Split or Central A/C with SEER 12.1	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	48.4%	0.00	10311
10313	Res	MD	NC, RENO, REPL	Energy Star Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in residential homes, as well as installation of high efficiency room air conditioning systems in new homes.	Failed or working non-Energy Star Room AC with weighted average federal standard CEER of 9.9	New Energy Star Room AC with weighted average ENERGY STAR CEER of 11	2021	2030	9	9.6%	0.93	---
10314	Res	MD	NC	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	1.48	---
10314	Res	RET	RET	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	1.28	---
10315	Res	MD	NC	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	0.00	10918
10315	Res	RET	RET	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	0.00	10918
10316	Res	RET	RET	Duct Sealing	E		Cooling		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system in homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	10.0%	0.00	10919
10318	Res	RET	RET	Wall Insulation	E		Cooling		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Wall Insulation with R-value of 8.6	Wall Insulation with R-value of 14.6	2021	2030	15	41.1%	0.00	10921
10319	Res	RET	RET	Attic Insulation	E		Cooling		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Attic Insulation with R-value of 18.6	Attic Insulation with R-value of 49	2021	2030	15	62.0%	0.00	10922
10404	Res	RET	RET	ENERGY STAR LED Outdoor Fixture	E		Exterior Lighting		ENERGY STAR LED outdoor fixtures replace less efficient incandescent fixtures in retrofits or new construction. Fixtures are hardwired and use either pin based or screw in lamps.	BWV General service incandescent fixtures	BWV ENERGY STAR LED exterior fixtures	2021	2030	15	39.2%	0.58	---
10405	Res	RET	RET	LED Holiday Lights	E		Exterior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to exterior lighting end use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New exterior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	---
10406	Res	RET	RET	Lighting Controls	E		Exterior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When motion is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.25	---
10509	Res	RET	RET	LED Tube Replacement Lamps			Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote drive). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Weighted average of existing T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	5	44.2%	0.31	---
10510	Res	RET	RET	LED Holiday Lights	E		Interior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to interior lighting end use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New interior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	---
10512	Res	RET	RET	Lighting Controls	E		Interior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When motion is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.83	---
10601	Res	RET	RET	ENERGY STAR Ceiling Fan	E		Other		ENERGY STAR qualified ceiling fan with no light units are over 50% more efficient than conventional fans. They also use improved motors and blade designs. Includes fan-only options.	Existing Non-ENERGY STAR Ceiling Fan	ENERGY STAR Ceiling Fan	2021	2030	15	8.7%	24.40	---
10602	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electronically commutated (EC) circulators (pumps) are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	1.47	---
10603	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electronically commutated (EC) circulators (pumps) are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	0.24	---
10604	Res	RET	RET	ECM Blower Motor	E		Other		A retrofit of a less efficient (PSC) motor to a 2-stage BPM or ECM motor in an existing furnace. For retrofits, the target age range for existing furnaces is 10-12 years. This measure characterizes only the electric savings associated with the fan that could be coupled with gas savings associated with a more efficient furnace. Savings improve when the blower is used for cooling as well and when it is used for continuous ventilation, but only if the non-ECM motor would have been used for continuous ventilation too.	Existing furnace with less efficient PSC motor	Existing furnace with 2 stage BPM or ECM motor	2021	2030	15	25.0%	1.94	---
10605	Res	MD	NC, REPL	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Failed or baseline Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.53	---
10605	Res	RET	RET	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Working Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.66	---
10701	Res	RET	RET	Advanced Tier 2 Power Strips	E		Plug Loads		Advanced power strips are power strips that contain a number of controlled sockets and at least one uncontrolled socket. When the appliance that is plugged into the controlled socket is turned off, the power strips shuts off the appliances that are plugged into the controlled sockets. These have recently been renamed "Tier 1" power strips. Tier 2 power strips expand on the functionality by using algorithms to monitor the power of all controlled devices, whereas Tier 1 power strips only monitor the master device and turns off peripheral devices accordingly. Tier 2 power strips use infrared (IR) sensing and Root Mean Squared (RMS) power sensing to detect energy consumption from connected devices; Tier 1 power strips only use current sensing. After 1 hour of inactivity, energy savings are delivered by turning off power to inactive devices.	Audio-visual home entertainment systems connected to wall outlet or standard power strip.	Audio-visual home entertainment system connected to advanced tier 2 power strip.	2021	2030	5	30.0%	0.23	---
10801	Res	MD	NC, RENO, REPL	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Baseline or Failed non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12,875	9.8%	0.44	---
10801	Res	RET	RET	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Existing non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12,875	41.5%	2.97	---
10802	Res	RET	RET	Secondary Refrigerator and Freezer Removal	E		Refrigeration		This measure reflects recycling of refrigerators or freezers without replacement	Existing functional secondary refrigerators or freezers	Remove and recycle secondary refrigerator or freezer	2021	2030	4,584,325	100.0%	0.16	---
10910	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with HSPF 8.2	High efficiency air source heat pump system with HSPF 12	2021	2030	15	31.7%	1.39	10305

Appendix D1. Measure Characterizations

Table D4: FE: Met-Ed - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
10910	Res	RET	RET	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with HSPF 8.2 with HSPF 12.	High efficiency air source heat pump system with HSPF 12	2021	2030	15	31.7%	3.41	10305
10911	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pumps units, as well as installation of ASHP systems in new homes.	Existing electric resistance heating system with HSPF 3.412	High efficiency air source heat pump system with HSPF 18	2021	2030	15	71.6%	0.26	10306
10914	Res	RET	RET	Air Source Heat Pump Tune Up	E		Space Heating		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.45	10309
10915	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.06	10311
10916	Res	RET	RET	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.40	10311
10919	Res	MD	NC, RENO, REPL	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing or baseline Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.27	10312
10919	Res	RET	RET	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.27	10312
10918	Res	MD	NC	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	6.4%	0.31	10918
10918	Res	RET	RET	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	7.9%	0.42	10918
10919	Res	RET	RET	Duct Sealing	E		Space Heating		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system of homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high infiltration and exfiltration	Sealed duct work	2021	2030	15	2.0%	0.85	10919
10920	Res	RET	RET	Air Sealing	E		Space Heating		This measure characterizes increased air sealing for reduction of thermal losses through the building envelope. This measure captures heating savings.	Existing building envelope without additional air sealing	Building envelope with improved air sealing	2021	2030	15	15.0%	0.29	10920
10921	Res	RET	RET	Wall Insulation	E		Space Heating		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Wall insulation with R-value of 8.6	Wall insulation with R-value of 14.6	2021	2030	15	41.1%	3.76	10921
10922	Res	RET	RET	Attic Insulation	E		Space Heating		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Attic insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	3.63	10922
11103	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
11103	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
11104	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
11104	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
11105	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
11105	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.6%	1.16	--
11106	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
11106	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.6%	1.16	--
11109	Res	RET	RET	Water Heater Setback	E		Water Heating		This measure includes installing a thermostatically restricting shower valve that reduces the amount of excess hot shower water during warm-up periods.	Shower with no thermostatic restriction valve	Shower with thermostatic restriction valve	2021	2030	15	12.0%	0.31	--
11112	Res	RET	RET	Thermostatic Restriction Valve	E		Water Heating		This measure involves installing a thermostatically restricting shower valve that reduces the amount of excess hot shower water during warm-up periods.	Shower with no thermostatic restriction valve	Shower with thermostatic restriction valve	2021	2030	15	12.0%	0.31	--
11117	Res	RET	RET	Pipe Insulation	E		Water Heating		This measure includes installing 3/4" foam insulation on exposed pipe in unconditioned space.	Un-insulated piping of an electric water heating system	Insulated piping of an electric water heating system	2021	2030	13	3.0%	0.34	--
11118	Res	RET	RET	Water Heater Jacket Insulation	E		Water Heating		This measure includes installing a water heater blanket on an electric water storage water heater.	Electric water heater with no insulation jacket	Electric water heater with insulation jacket	2021	2030	7	43.1%	0.18	--
11121	Res	RET	RET	Low Flow Showerhead	E		Water Heating		This measure involves replacing a standard showerhead with a low flow showerhead.	Existing 2.5 GPM showerhead	Low-flow 1.5 GPM showerhead	2021	2030	9	40.0%	0.02	--
11124	Res	RET	RET	Faucet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing 2.2 GPM faucet aerator	Low-flow 1.5 GPM faucet aerator	2021	2030	10	31.8%	0.03	--
11126	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Water Heating	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	29.7%	0.00	10101
11127	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	12.9%	0.00	10105
11128	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	12.9%	0.00	10106
11130	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	11.3%	0.00	10109
11131	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	11.3%	0.00	10110
11702	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	1.7%	0.06	11702
11703	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	1.7%	0.06	11702
11704	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	1.3%	0.05	11702
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	0.8%	0.00	11702
11708	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HERS	Typical home receiving HERS	2021	2030	1	0.7%	0.00	11702
20001	C&I	MD	NC, RENO, REPL	ENERGY STAR Ovens	E		Cooking		Replacement of failed or working electric ovens and ranges with new high efficiency ovens and ranges	Baseline Ovens	ENERGY STAR Ovens	2021	2030	12	16.1%	0.07	--
20002	C&I	MD	NC, RENO, REPL	ENERGY STAR Griddles	E		Cooking		Replacement of failed or working electric griddles with new high efficiency griddles	Baseline Griddle	ENERGY STAR Griddle	2021	2030	12	15.2%	0.33	--
20004	C&I	MD	NC, RENO, REPL	ENERGY STAR Steamers	E		Cooking		Replacement of failed or working electric steamers with new high efficiency steamers	Baseline Steamer	ENERGY STAR Steamer	2021	2030	12	57.0%	0.19	--
20006	C&I	MD	NC, RENO, REPL	ENERGY STAR Fryers	E		Cooking		Replacement of failed or working electric fryers with new high efficiency fryers	Baseline Fryers	ENERGY STAR Fryers	2021	2030	12	17.2%	0.10	--
20026	C&I	MD	NC, RENO, REPL	Hot Food Holding Cabinet	E		Cooking		Replacement of failed or working electric hot food holding cabinets with new high efficiency hot food holding cabinets	Baseline Hot Food Holding Cabinet	ENERGY STAR Hot Food Holding Cabinet	2021	2030	12	52.7%	0.52	--
20301	C&I	MD	NC, RENO, REPL	Efficient Unitary AC	E		Cooling		Installation of electric DX split-packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency unitary AC	High efficiency unitary AC	2021	2030	15	18.2%	0.93	--
20301	C&I	RET	RET	Efficient Unitary AC	E		Cooling		Installation of electric DX split-packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency unitary AC	High efficiency unitary AC	2021	2030	15	18.2%	1.07	--
20302	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air conditioning rooftop unit involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.62	--
20303	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency unitary air source heat pump (ASHP)	High efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	2.73	20303
20303	C&I	RET	RET	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing, standard efficiency unitary air source heat pump (ASHP)	High efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	20.96	20303
20304	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.74	20304
20308	C&I	MD	REPL	MiniSplit Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High efficiency mini split ductless HP	2021	2030	15	35.0%	0.00	20308
20308	C&I	RET	RET	MiniSplit Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High efficiency mini split ductless HP	2021	2030	15	48.2%	8.90	20308
20309	C&I	MD	NC, RENO, REPL	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency PTAC	High efficiency PTAC	2021	2030	15	17.2%	0.81	--
20309	C&I	RET	RET	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing, standard efficiency PTAC	High efficiency PTAC	2021	2030	15	29.3%	3.90	--
20311	C&I	MD	NC	VRF Heat Pump	E		Cooling		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application	ASHPs	VRF Heat Pump	2021	2030	15	23.1%	0.99	20311
20312	C&I	MD	NC, RENO, REPL	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high efficiency room air conditioners in new buildings.	Standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	9.4%	0.20	--
20312	C&I	RET	RET	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high efficiency room air conditioners in new buildings.	Existing standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	15.1%	2.46	--

Appendix D1. Measure Characterizations

Table D4: FE: Met-Ed - Measure Characteristics Summary

Table with columns: Measure ID, Sector, Market, Target Markets, Measure Name, Primary Fuel, Secondary Fuel, Primary End Use, Secondary End Use, Measure Description, Baseline Description, Efficient Description, Start Year, End Year, Life, Percent Savings (Primary Fuel), Inc. Cost Per kWh or MMBtu Saved, Links with Measure ID. The table lists various energy efficiency measures across different sectors and markets, detailing their implementation and expected savings.

Appendix D1. Measure Characterizations

Table D4: FE: Met-Ed - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20509	C&I	MD	NC, REPL	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	0.82	---
20508	C&I	RET	RET	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	2.20	---
20511	C&I	MD	REPL	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.21	---
20511	C&I	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.78	---
20512	C&I	MD	REPL	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.18	---
20512	C&I	RET	RET	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.65	---
20514	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	0.72	---
20514	C&I	RET	RET	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	2.13	---
20515	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	0.60	---
20515	C&I	RET	RET	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	1.77	---
20617	C&I	RET	RET	Exit Sign Retrofits	E		Interior Lighting		Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	71.9%	0.46	---
20618	C&I	RET	RET	Exit Sign Retrofits with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	86.5%	0.39	---
20620	C&I	RET	RET	Interior Detriments	E		Interior Lighting		Remove fluorescent fixtures from multi-lamp fixtures in multi-lamp areas.	Existing fluorescent fixture in multi-lamp	Detriments fixture	2021	2030	13	85.1%	0.29	---
20621	C&I	RET	RET	Interior Detriments with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Remove fluorescent fixtures from multi-lamp fixtures in multi-lamp areas.	Existing fluorescent fixture in multi-lamp	Detriments fixture	2021	2030	13	102.4%	0.24	---
20622	C&I	RET	RET	Refrigerator/Freezer Case LEDs	E		Interior Lighting		Replace existing vertical and horizontal fluorescent refrigerated case lighting with more efficient LED lighting.	Vertical and horizontal fluorescent refrigerated case lighting	LED fixtures	2021	2030	8	83.8%	0.56	---
20624	C&I	RET	RET	Interior Lighting Controls	E		Interior Lighting		Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration.	Manual control	Average of multiple control types	2021	2030	8	32.3%	1.28	---
20625	C&I	RET	RET	Interior Lighting Controls with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration. This measure involves installing occupancy controls for refrigerated case lighting with internal LED lighting. Without occupancy sensors, case lighting typically turns on 100% power during the entire daylight period. Sensors allow lights to turn fully on only when motion is detected in the store aisle. When no motion is detected for a preset period of time, the lights automatically dim to a lower power state, generating substantial energy savings.	Manual control	Average of multiple control types	2021	2030	8	38.9%	1.06	---
20629	C&I	RET	RET	Refrigerator/Freezer Case Occupancy Controls	E		Interior Lighting		This measure involves installing occupancy controls for refrigerated case lighting with internal LED lighting. Without occupancy sensors, case lighting typically turns on 100% power during the entire daylight period. Sensors allow lights to turn fully on only when motion is detected in the store aisle. When no motion is detected for a preset period of time, the lights automatically dim to a lower power state, generating substantial energy savings.	Manually controlled LED refrigerated case lighting	LED refrigerated case lighting with occupancy controls	2021	2030	8	46.2%	0.37	---
20631	C&I	MD	NC	Interior Lighting Design	E		Interior Lighting		Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	27.4%	0.99	---
20632	C&I	MD	NC	Interior Lighting Design with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	33.0%	0.82	---
20601	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of a new ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20601
20602	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of an ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20602
20603	C&I	MD	NC,RENO,REPL	ENERGY STAR Dehumidifier	E		Other		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Old or previously non-existent dehumidifier	New ENERGY STAR dehumidifier	2021	2030	12	21.9%	0.29	---
20604	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	1.60	20604
20606	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20606
20607	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.6%	0.85	20608
20610	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
20611	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20610
20613	C&I	MD	NC,RENO,REPL	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.19	---
20613	C&I	RET	RET	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Existing, standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.93	---
20614	C&I	MD	NC,RENO,REPL	Motors	E		Other		This measure includes one-for-one replacement of working or failed/near-failure 1,000 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/near-failure motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.27	---
20614	C&I	RET	RET	Motors	E		Other		This measure includes one-for-one replacement of working or failed/near-failure 1,000 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/near-failure motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	4.6%	1.38	---
20615	C&I	RET	RET	VFDs on HVAC Pumps	E		Other		Installation of VSD on Chilled Water and Hot Water Pumps in HVAC Applications	Weighted average of no control, bypass valves, and transition valves on HVAC pumps.	Variable Speed Drives on HVAC pumps	2021	2030	15	41.8%	0.09	---
20616	C&I	RET	RET	Industrial Process, Other Improvements	E		Other		Increase the efficiency of other misc. process measures.	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	---
20617	C&I	RET	RET	Industrial Non-Process, Other Improvements	E		Other		Increase the electrical efficiency of non-process end uses other than lighting and space heat & cool throughout facility.	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	---
20701	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	---
20701	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	---
20702	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APS) use an external sensor paired with a configurable countdown timer to manage both active and standby loads for controlled devices in a complete system. Tier 2 APS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled sockets; those with a master control socket sense power for the device connected to the control socket. The external sensor of a Tier 2 APS may utilize an infrared-only sensor, or it may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APS device. Both versions of external sensor use IR filtering to prevent inappropriate switching events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.69	---

Appendix D1. Measure Characterizations

Table D4. FE: Met-Ed - Measure Characteristics Summary

Table with 15 columns: Meas#, Sector, Market, Target Markets, Measure Name, Primary Fuel, Secondary Fuel, Primary End Use, Secondary End Use, Measure Description, Baseline Description, Efficient Description, Start Year, End Year, Life, Percent Savings (Primary Fuel), Inc. Cost Per kWh or MBtu Saved, and Links with Meas#. The table lists various energy efficiency measures such as Advanced Power Strips, Computer Power Management, ENERGY STAR Office Equipment, Vending Machine Controls, Refrigeration, Evaporator Fan Motor Replacement, Evaporator Fan Speed Controls, Evaporator Coil Defrost Control, Floating Head Pressure Controls, Anti-Sweat Head Control, Low Heat and No Heat Doors, Walk-In Cooler Retrofit, Unitary Heat Pump, Packaged Terminal Heat Pump, Ground Source Heat Pump, VRF Heat Pump, Demand Control Ventilation, Guest Room EM, Kitchen DCV - MD, Programmable Tstat, Smart Tstat MD, and Smart Tstat RET.

## Appendix D1: Measure Characterizations

Table D4: FE: Met-Ed - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20396	C&I	MD	NC.RENO	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20396
20396	C&I	RET	RET	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20396
21001	C&I	MD	NC.RENO.REPL	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.52	---
21001	C&I	RET	RET	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.58	---
21002	C&I	RET	RET	VFD on HVAC System	E		Ventilation		Installation of a variable speed drives on HVAC fans and pumps to vary the speed of the motor in a HVAC application with a diversified load	Weighted average of baseline control type on HVAC motor	VFD on HVAC motor	2021	2030	15	53.4%	0.11	---
21003	C&I	RET	RET	ECM Furnace Motors	E		Ventilation		Replace standard fan motor in furnace with ECM motor	PSC Furnace motors	ECM Furnace Motors	2021	2030	15	39.0%	0.18	---
21005	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
21006	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20319
21007	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.22	21007
21007	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.23	21007
21008	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and fans make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.00	21008
21008	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and fans make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.00	21008
21009	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol gaskets	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally aereoseal duct sealing can seal to less than 7% duct leakage	2021	2030	15	13.0%	1.49	21009
21010	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol gaskets	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally aereoseal duct sealing can seal to less than 7% duct leakage	2021	2030	15	13.0%	1.49	21010
21013	C&I	MD	NC.RENO.REPL	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≥ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters.	Storage-type electric resistance water heater (≥ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21013	C&I	RET	RET	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≥ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters.	Existing storage-type electric resistance water heater (≥ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21017	C&I	RET	RET	Faucet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing inefficient faucet aerator	Low-flow faucet aerator	2021	2030	10	31.8%	0.01	---
21109	C&I	RET	RET	Pre-Rinse Sprayers	E		Water Heating		Retrofit of working standard pre-rinse sprayers with low-flow, pre-rinse sprayers in commercial kitchen applications.	Existing inefficient pre-rinse sprayer	Low-flow pre-rinse sprayer	2021	2030	8	47.9%	0.05	---
21114	C&I	MD	NC.RENO.REPL	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
21114	C&I	RET	RET	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20608
21116	C&I	RET	RET	Onsite Laundry	E		Water Heating		On-site laundry systems for laundromats and facilities with on-site laundry.	Laundry systems without ozone technology	Laundry systems with ozone technology	2021	2030	10	81.0%	0.11	---
21118	C&I	MD	NC.RENO.REPL	Commercial ENERGY STAR Dishwasher	E		Water Heating		Installation of an ENERGY STAR commercial dishwasher	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	24.3%	0.00	20601
21201	C&I	RET	RET	Industrial Process, Drives Improvements	E		Drives		Optimized drive systems for energy efficiency	Existing industrial drive systems	High efficiency industrial drive systems	2021	2030	15	32.5%	0.89	---
21401	C&I	RET	RET	Industrial Process, Compressed Air Systems Improvem	E		Compressed Air Systems		Increase efficiency of compressed air systems	Existing industrial compressed air systems	High efficiency industrial compressed air systems	2021	2030	15	45.0%	0.36	---
21501	C&I	RET	RET	Industrial Process, Process Cooling and Refrigeration Im	E		cess Cooling and Refrigera		Increase the efficiency of industrial process cooling	Existing industrial process cooling systems	High efficiency industrial process cooling systems	2021	2030	15	55.0%	0.17	---
21601	C&I	RET	RET	Industrial Process, Process Heating Improvements	E		Process Heating		Increase efficiency of process heating	Existing industrial process heating systems	High efficiency industrial process heating systems	2021	2030	62	12.6%	0.26	---
21701	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.08	---
21702	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.12	21702
21703	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy-efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.49	---
21704	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.25	---
21705	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy-efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.76	21705
21706	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.39	21706
21707	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.23	---
21708	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.00	21708
21709	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fanme hoods, an 8:1 turndown ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turndown ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	1.34	---
21710	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fanme hoods, an 8:1 turndown ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turndown ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	0.00	21710
21711	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.40	---
21711	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Historic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.87	---
21712	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.00	21712
21712	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Historic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.00	21712
21713	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.56	---
21713	C&I	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	0.45	---
21714	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent stand-alone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.88	21714



## Appendix D1. Measure Characterizations

Table D4: FE: Met-Ed - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Measure#
21714	CAI	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building services. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	1.39	21714
21715	CAI	RET	RET	Industrial Strategic Energy Management	E		Total Electric		Industrial Strategic Energy Management	No SEM	SEM implemented	2021	2030	3	5.0%	0.13	---

## Appendix D1. Measure Characterizations

Table D6: FE: Penelac - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
10101	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Appliances		This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	10101
10102	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher with Gas Secondary Fuel	E	G	Appliances	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR dishwasher with gas water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	---
10103	Res	MD	NC, RENO, REPL	ENERGY STAR Dehumidifier	E		Appliances		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Existing or dehumidifier or new standard dehumidifier meeting the federal minimum standard	New ENERGY STAR dehumidifier	2021	2030	12	27.3%	0.02	---
10105	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	30.8%	1.37	10105
10107	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	30.8%	1.37	---
10108	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Appliances	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and gas drying	2021	2030	11	47.0%	7.65	10108
10109	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	29.5%	0.39	10109
10111	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	29.5%	0.39	---
10301	Res	MD	NC, RENO, REPL	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing or baseline central AC system with SEER 13	High efficiency central AC system with SEER 16	2021	2030	15	21.3%	2.41	---
10301	Res	RET	RET	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing central AC system with SEER 12.1	High efficiency central AC system with SEER 16	2021	2030	15	24.4%	12.27	---
10303	Res	RET	RET	Central Air Conditioner Tune Up	E		Cooling		Residential split system air conditioning tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing CAC system that has not received a tune-up within the last 3 years	Existing CAC tune-up	2021	2030	3	5.0%	1.06	---
10305	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10305
10305	Res	RET	RET	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with SEER 13.6	High efficiency air source heat pump system with SEER 18	2021	2030	15	25.0%	0.00	10305
10306	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10306
10309	Res	RET	RET	Air Source Heat Pump Tune Up	E		Cooling		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.00	10309
10311	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Split or Central A/C with SEER 13	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	44.6%	0.00	10311
10311	Res	RET	RET	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Split or Central A/C with SEER 12.1	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	48.4%	0.00	10311
10313	Res	MD	NC, RENO, REPL	Energy Star Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in residential homes, as well as installation of high efficiency room air conditioning systems in new homes.	Failed or working non-Energy Star Room AC with weighted average federal standards CEER of 9.9	New Energy Star Room AC with weighted average ENERGY STAR CEER of 11	2021	2030	9	9.6%	1.37	---
10314	Res	MD	NC	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	2.19	---
10314	Res	RET	RET	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	1.90	---
10315	Res	MD	NC	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	0.00	10918
10315	Res	RET	RET	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	0.00	10918
10316	Res	RET	RET	Duct Sealing	E		Cooling		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	10.0%	0.00	10919
10318	Res	RET	RET	Wall Insulation	E		Cooling		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Wall Insulation with R-value of 8.6	Wall insulation with R-value of 14.6	2021	2030	15	41.1%	0.00	10921
10319	Res	RET	RET	Attic Insulation	E		Cooling		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Attic Insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	0.00	10922
10404	Res	RET	RET	ENERGY STAR LED Outdoor Fixture	E		Exterior Lighting		ENERGY STAR LED outdoor fixtures replace less efficient incandescent fixtures in retrofits or new construction. Fixtures are hardwired and use either pin based or screw in lamps.	8W/ General service incandescent fixtures	8W ENERGY STAR LED exterior fixtures	2021	2030	15	43.0%	0.53	---
10405	Res	RET	RET	LED Holiday Lights	E		Exterior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to exterior lighting end use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New exterior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	---
10406	Res	RET	RET	Lighting Controls	E		Exterior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When motion is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.25	---
10509	Res	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Weighted average of existing T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	5	44.2%	0.31	---
10510	Res	RET	RET	LED Holiday Lights	E		Interior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to interior lighting end use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New interior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	---
10512	Res	RET	RET	Lighting Controls	E		Interior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When motion is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.83	---
10601	Res	RET	RET	ENERGY STAR Ceiling Fan	E		Other		ENERGY STAR qualified ceiling fan has no light units or are over 50% more efficient than conventional fans. They also use improved motors and blade designs. Includes fan-only options.	Existing Non-ENERGY STAR Ceiling Fan	ENERGY STAR Ceiling Fan	2021	2030	15	8.7%	24.40	---
10602	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electronically commutated (EC) circulators (pumps) are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	1.27	---
10603	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electronically commutated (EC) circulators (pumps) are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	0.24	---
10604	Res	RET	RET	ECM Blower Motor	E		Other		A retrofit of a less efficient (PSC) motor to a 2 stage BPM or ECM motor in an existing furnace. For retrofits, the target age range for existing furnaces is 10-12 years. This measure characterizes only the electric savings associated with the fan and could be coupled with gas savings associated with a more efficient furnace. Savings improve when the blower is used for cooling as well and when it is used for continuous ventilation, but only if the non-ECM motor would have been used for continuous ventilation too.	Existing furnace with less efficient PSC motor	Existing furnace with 2 stage BPM or ECM motor	2021	2030	15	25.0%	2.05	---
10605	Res	MD	NC, REPL	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Failed or baseline Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.53	---
10605	Res	RET	RET	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Working Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.66	---
10701	Res	RET	RET	Advanced Tier 2 Power Strips	E		Plug Loads		Advanced power strips are power strips that contain a number of controlled sockets and at least one uncontrolled socket. When the appliance that is plugged into the controlled socket is turned off, the power strips shuts off the appliances that are plugged into the controlled sockets. These have recently been renamed 'Tier 1' power strips. Tier 2 power strips expand on the functionality by using algorithms to monitor the power of all controlled devices, whereas Tier 1 power strips only monitor the master device and turns off peripheral devices accordingly. Tier 2 power strips use infrared (IR) sensing and Root Mean Squared (RMS) power sensing to detect energy consumption from connected devices; Tier 1 power strips only use current sensing. After 1 hour of inactivity, energy savings are delivered by turning off power to inactive devices.	Audio-visual home entertainment systems connected to wall outlet or standard power strip.	Audio-visual home entertainment system connected to advanced tier 2 power strip.	2021	2030	5	30.0%	0.23	---
10801	Res	MD	NC, RENO, REPL	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Baseline or Failed non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12.875	9.8%	0.44	---
10801	Res	RET	RET	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Existing non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12.875	41.5%	2.97	---
10802	Res	RET	RET	Secondary Refrigerator and Freezer Removal	E		Refrigeration		This measure reflects recycling of refrigerators or freezers without replacement.	Existing functional secondary refrigerators or freezers	Remove and recycle secondary refrigerator or freezer	2021	2030	4.5844325	100.0%	0.17	---
10910	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with HSPF 8.2	High efficiency air source heat pump system with HSPF 12	2021	2030	15	31.7%	1.23	10305

## Appendix D1. Measure Characterizations

Table D5: FE: Penelac - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
10910	Res	RET	RET	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with HSPF 8.2 with HSPF 12.	High efficiency air source heat pump system with HSPF 12.	2021	2030	15	31.7%	3.02	10305
10911	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing electric resistance heating system with HSPF 3.412	High efficiency air source heat pump system with HSPF 18	2021	2030	15	71.6%	0.23	10306
10914	Res	RET	RET	Air Source Heat Pump Tune Up	E		Space Heating		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.40	10308
10915	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.05	10311
10916	Res	RET	RET	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.35	10311
10918	Res	MD	NC, RENO, REPL	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing or baseline Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.12	10312
10919	Res	RET	RET	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.12	10312
10918	Res	MD	NC	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	6.4%	0.27	10918
10918	Res	RET	RET	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	7.9%	0.37	10918
10919	Res	RET	RET	Duct Sealing	E		Space Heating		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system of homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	2.0%	0.73	10919
10920	Res	RET	RET	Air Sealing	E		Space Heating		This measure characterizes increased air sealing for reduction of thermal losses through the building envelope. This measure captures heating savings.	Existing building envelope without additional air sealing	Building envelope with improved air sealing	2021	2030	15	15.0%	0.25	10920
10921	Res	RET	RET	Wall Insulation	E		Space Heating		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Wall Insulation with R-value of 8.6	Wall insulation with R-value of 14.6	2021	2030	15	41.1%	3.16	10921
10922	Res	RET	RET	Attic Insulation	E		Space Heating		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Attic Insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	3.05	10922
11103	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
11103	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
11104	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
11104	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
11105	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
11105	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.6%	1.16	--
11106	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
11106	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.6%	1.16	--
11109	Res	RET	RET	Water Heater Setback	E		Water Heating		This measure involves turning the water heater set point to 70°F in a non-energy star storage type heat pump water heater. Savings do not occur in applications such as in a shower or faucet where the user adjusts the hot water flow to make up for the lower temperature. Clothes washer hot water use and water heater tank losses are included in the savings calculation, but shower, faucet, and dishwasher use are not included due to expected behavioral and automatic dishwasher adjustments in response to lower water temperature. It is expected that the net energy use for the dish washer hot water will remain the same after a temperature reduction because dishwashers will adjust hot water temperature to necessary levels using internal heating elements. The existing temperature set point is assumed to be 119°F.	Water heater with set point temperature of 130°F	Water heater with set point temperature of 119°F	2021	2030	2	8.5%	0.00	--
11112	Res	RET	RET	Thermostatic Restriction Valve	E		Water Heating		This measure involves installing a thermostatically restricting shower valve that reduces the amount of excess hot shower water during warm-up periods.	Shower with no thermostatic restriction valve	Shower with thermostatic restriction valve	2021	2030	15	12.0%	0.31	--
11117	Res	RET	RET	Pipe Insulation	E		Water Heating		This measure includes installing 3/4" foam insulation on exposed pipe in unconditioned space.	Un-insulated piping of an electric water heating system	insulated piping of an electric water heating system	2021	2030	13	3.0%	0.34	--
11118	Res	RET	RET	Water Heater Jacket Insulation	E		Water Heating		This measure includes installing a water heater blanket on an electric water storage water heater.	Electric water heater with no insulation jacket	Electric water heater with insulation jacket	2021	2030	7	43.1%	0.18	--
11121	Res	RET	RET	Low Flow Showerhead	E		Water Heating		This measure involves replacing a standard showerhead with a low flow showerhead.	Existing 2.5 GPM showerhead	Low-flow 1.5 GPM showerhead	2021	2030	9	40.0%	0.02	--
11124	Res	RET	RET	Faucet Aerator	E		Water Heating		This measure includes installing an existing faucet aerator with low-flow aerator.	Existing 2.2 GPM faucet aerator	Low-flow 1.5 GPM faucet aerator	2021	2030	10	31.8%	0.03	--
11126	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Water Heating	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	29.7%	0.00	10101
11127	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	12.9%	0.00	10105
11128	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	12.9%	0.00	10106
11130	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	11.3%	0.00	10109
11131	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	11.3%	0.00	10110
11702	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.7%	0.06	11702
11703	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.7%	0.06	11702
11704	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.3%	0.05	11703
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	0.8%	0.00	11702
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	0.3%	0.00	11702
20001	C&I	MD	NC, RENO, REPL	ENERGY STAR Ovens	E		Cooking		Replacement of failed or working electric ovens and ranges with new high efficiency ovens and ranges	Baseline Oven	ENERGY STAR Ovens	2021	2030	12	16.1%	0.07	--
20002	C&I	MD	NC, RENO, REPL	ENERGY STAR Griddles	E		Cooking		Replacement of failed or working electric griddles with new high efficiency griddles	Baseline Griddle	ENERGY STAR Griddle	2021	2030	12	15.2%	0.33	--
20004	C&I	MD	NC, RENO, REPL	ENERGY STAR Steamers	E		Cooking		Replacement of failed or working electric steamers with new high efficiency steamers	Baseline Steamer	ENERGY STAR Steamer	2021	2030	12	57.0%	0.19	--
20006	C&I	MD	NC, RENO, REPL	ENERGY STAR Fryers	E		Cooking		Replacement of failed or working electric fryers with new high efficiency fryers	Baseline Fryers	ENERGY STAR Fryers	2021	2030	12	17.2%	0.10	--
20028	C&I	MD	NC, RENO, REPL	Hot Food Holding Cabinet	E		Cooking		Replacement of failed or working electric hot food holding cabinets with new high efficiency hot food holding cabinets	Baseline Hot Food Holding Cabinet	ENERGY STAR Hot Food Holding Cabinet	2021	2030	12	52.7%	0.52	--
20301	C&I	MD	NC, RENO, REPL	Efficient Unitary AC	E		Cooling		Installation of electric DX split-packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency unitary AC	High-efficiency unitary AC	2021	2030	15	18.2%	1.07	--
20301	C&I	RET	RET	Efficient Unitary AC	E		Cooling		Installation of electric DX split-packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency unitary AC	High-efficiency unitary AC	2021	2030	15	18.2%	12.54	--
20302	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air conditioning rooftop unit involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.81	--
20303	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing RTU efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	3.15	20303
20303	C&I	RET	RET	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	24.18	20303
20304	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.95	20304
20308	C&I	MD	REPL	MiniSplit Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	35.0%	0.00	20308
20308	C&I	RET	RET	MiniSplit Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	48.2%	10.28	20308
20309	C&I	MD	NC, RENO, REPL	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency PTAC	High-efficiency PTAC	2021	2030	15	17.2%	0.94	--
20309	C&I	RET	RET	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency PTAC	High-efficiency PTAC	2021	2030	15	29.3%	4.50	--
20311	C&I	MD	NC	VRF Heat Pump	E		Cooling		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application.	ASHPs	VRF Heat Pump	2021	2030	15	23.1%	1.14	20311
20312	C&I	MD	NC, RENO, REPL	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high efficiency room air conditioners in new buildings.	Standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	9.4%	0.20	--
20312	C&I	RET	RET	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high efficiency room air conditioners in new buildings.	Existing standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	15.1%	2.46	--

Appendix D1. Measure Characterizations

Table D5: FE: Penelac - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20313	C&I	MD	NC.RENO.REPL	Computer Room Air Conditioner	E		Cooling		This measure analyzes the space cooling savings potential for the replacement or new commissioning of a computer room air conditioner (CRAC). CRACs are installed to meet cooling requirements for computers, servers, and other electronic components.	Standard efficiency CRAC	High-efficiency CRAC	2021	2030	15	23.1%	0.36	---
20314	C&I	MD	REPL	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	4.05	20314
20314	C&I	RET	RET	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of existing, standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	8.18	20314
20315	C&I	MD	NC.RENO.REPL	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	22.6%	1.31	---
20315	C&I	RET	RET	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Existing, standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	54.5%	0.31	---
20316	C&I	RET	RET	Chiller Tuneup	E		Cooling		Commercial air cooled or water chiller tune-up completed in accordance with the following recommended tune-up requirements: <ul style="list-style-type: none"> <li>- Clean condenser coil/tubes</li> <li>- Check cooling tower for scale or buildup</li> <li>- Check contactors condition</li> <li>- Check evaporator condition</li> <li>- Check low-pressure controls</li> <li>- Check high-pressure controls</li> <li>- Check filter, replace as needed</li> <li>- Check belt, replace as needed</li> <li>- Check crankcase heater operation</li> <li>- Check economizer operation</li> </ul>	Existing air cooled or water chiller	Tuned-up existing air cooled or water chiller	2021	2030	5	5.0%	1.28	---
20317	C&I	RET	RET	Unitary Equipment Economizer	E		Cooling		Retrofit of existing equipment or the optional addition of an air-side economizer on new equipment where not required by code. This measure analyzes the cooling savings potential of the installation of an air side economizer on unitary equipment. This measure is applicable to dx and water cooled air	Existing unitary equipment without a functional air side economizer	Existing unitary equipment with a functional air side economizer	2021	2030	10	37.2%	0.82	---
20318	C&I	RET	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20318
20319	C&I	RET	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20319
20320	C&I	RET	RET	Controls for Unitary AC	E		Cooling		Unitary packaged (RTU) systems	Existing RTU without advanced controls	Existing RTU with advanced controls	2021	2030	10	15.0%	0.47	---
20321	C&I	MD	NC.RENO	Optimized UnitaryAC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is primarily a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321
20322	C&I	MD	NC.RENO	Optimized UnitaryAC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is primarily a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20322
20323	C&I	MD	NC.RENO	Optimized Chiller Distribution/Control System	E		Cooling		High efficiency distribution system for chiller systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, better design, etc.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	15	36.0%	0.48	---
20324	C&I	RET	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	15.3%	0.30	20324
20325	C&I	RET	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	15.2%	0.31	20325
20326	C&I	MD	NC.RENO	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.32	20326
20327	C&I	MD	NC.RENO	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.32	20327
20327	C&I	RET	RET	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.32	20327
20328	C&I	MD	NC.RENO	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	19.3%	0.62	20328
20328	C&I	RET	RET	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	19.3%	0.62	20328
20329	C&I	MD	NC.RENO	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	19.3%	0.62	20329
20329	C&I	RET	RET	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	19.3%	0.62	20329
20330	C&I	RET	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol process.	Over a very broad set of buildings, we measured average duct leakage at 8%.	Generally aerosol-seal duct sealing can seal to less than 2% duct leakage.	2021	2030	15	13.0%	0.00	21009
20331	C&I	RET	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol process on pre-screened buildings for high savings	A subset of buildings have high leakage, nominally 29%. Screening procedures can identify these buildings with good success.	High leakage buildings were sealed from 29% duct leakage to 6% duct leakage.	2021	2030	15	13.0%	0.00	21010
20332	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	16.7%	7.80	20332
20334	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	15.7%	7.80	20334
20335	C&I	RET	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	21.1%	5.28	20335
20336	C&I	RET	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	21.1%	5.28	20336
20337	C&I	MD	NC.RENO.REPL	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	---
20337	C&I	RET	RET	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	---
20338	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20338
20338	C&I	RET	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20338
20339	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20339
20339	C&I	RET	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20339
20401	C&I	MD	NC.REPL	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.6%	0.10	---
20401	C&I	RET	RET	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.6%	0.29	---
20402	C&I	MD	NC.REPL	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	---
20402	C&I	RET	RET	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	---
20403	C&I	MD	NC	Improved Exterior Lighting Design	E		Exterior Lighting		Reduced light levels and better outdoor lighting design. Includes reduced wattage lamps, better spacing and use of cut-offs and shields to better control light and minimize glare.	Unoptimized exterior lighting design	Optimized exterior lighting design	2021	2030	15	65.5%	0.10	---
20404	C&I	RET	RET	Exterior Lighting Controls	E		Exterior Lighting		Optimized exterior lighting controls	Existing exterior lighting controls	Existing exterior lighting controls	2021	2030	8	9.0%	0.17	---
20508	C&I	MD	NC.REPL	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	0.99	---
20508	C&I	RET	RET	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	2.65	---

Appendix D1. Measure Characterizations

Table D5: FE: Penelac - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20509	C&I	MD	NC, REPL	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	0.82	---
20509	C&I	RET	RET	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	2.20	---
20511	C&I	MD	REPL	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.21	---
20511	C&I	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.78	---
20512	C&I	MD	REPL	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.18	---
20512	C&I	RET	RET	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.65	---
20514	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	0.72	---
20514	C&I	RET	RET	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	2.13	---
20515	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	0.60	---
20515	C&I	RET	RET	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	1.77	---
20617	C&I	RET	RET	Exit Sign Retrofits	E		Interior Lighting		Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	71.9%	0.46	---
20618	C&I	RET	RET	Exit Sign Retrofits with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	86.5%	0.39	---
20620	C&I	RET	RET	Interior Detriments	E		Interior Lighting		Remove fluorescent fixtures from multi-lamp fixtures in multi-space areas.	Existing fluorescent fixture in multi-space	Detriments fixture	2021	2030	13	65.1%	0.29	---
20621	C&I	RET	RET	Interior Detriments with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Remove fluorescent fixtures from multi-lamp fixtures in multi-space areas.	Existing fluorescent fixture in multi-space	Detriments fixture	2021	2030	13	102.4%	0.24	---
20622	C&I	RET	RET	Refrigerator/Freezer Case LEDs	E		Interior Lighting		Replace existing vertical and horizontal fluorescent refrigerated case lighting with more efficient LED lighting.	Vertical and horizontal fluorescent refrigerated case lighting	LED fixtures	2021	2030	8	83.8%	0.56	---
20624	C&I	RET	RET	Interior Lighting Controls	E		Interior Lighting		Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight illumination.	Manual control	Average of multiple control types	2021	2030	8	32.3%	1.28	---
20626	C&I	RET	RET	Interior Lighting Controls with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight illumination. This measure involves installing occupancy controls for refrigerated cases with internal LED lighting. Without occupancy sensors, case lighting typically turns on 100% power during the entire store day. Installing sensors allows lights to turn fully on only when motion is detected in the store aisle. When no motion is detected for a preset period of time, the lights automatically dim to a lower power state, generating substantial energy savings.	Manual control	Average of multiple control types	2021	2030	8	38.9%	1.06	---
20629	C&I	RET	RET	Refrigerator/Freezer Case Occupancy Controls	E		Interior Lighting		LED refrigerated case lighting with occupancy controls	LED refrigerated case lighting with occupancy controls	LED refrigerated case lighting with occupancy controls	2021	2030	8	46.2%	0.37	---
20631	C&I	MD	NC	Interior Lighting Design	E		Interior Lighting		Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	27.4%	0.99	---
20632	C&I	MD	NC	Interior Lighting Design with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	33.0%	0.82	---
20601	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of a new ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20601
20602	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of an ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20602
20603	C&I	MD	NC,RENO,REPL	ENERGY STAR Dehumidifier	E		Other		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Old or previously non-existent dehumidifier	New ENERGY STAR dehumidifier	2021	2030	12	21.9%	0.29	---
20604	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	1.60	20604
20606	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20606
20607	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.86	20608
20610	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
20611	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20610
20613	C&I	MD	NC,RENO,REPL	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.19	---
20613	C&I	RET	RET	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Existing, standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.93	---
20614	C&I	MD	NC,RENO,REPL	Motors	E		Other		This measure includes one-for-one replacement of working or failed/motor failure 1-200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/motor failure motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.21	---
20614	C&I	RET	RET	Motors	E		Other		This measure includes one-for-one replacement of working or failed/motor failure 1-200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/motor failure motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	4.6%	1.09	---
20615	C&I	RET	RET	VFDs on HVAC Pumps	E		Other		Installation of VSD on Chilled Water and Hot Water Pumps in HVAC Applications	Weighted average of no control, bypass valves, and variable speed drives on HVAC pumps.	Variable Speed Drives on HVAC pumps	2021	2030	15	41.8%	0.09	---
20616	C&I	RET	RET	Industrial Process, Other Improvements	E		Other		Increase the efficiency of other misc. process measures.	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.66	---
20617	C&I	RET	RET	Industrial Non-Process, Other Improvements	E		Other		Increase the electrical efficiency of non-process end uses other than lighting and space heat & cool throughout facility.	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.66	---
20701	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	---
20701	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	---
20702	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APS) use an external sensor paired with a configurable countdown timer to manage both active and standby power loads for controlled devices in a complete system. Tier 2 APS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled socket; those with a master control socket sense power for the device connected to the control socket. The external sensor of a Tier 2 APS may utilize an infrared-only sensor, or it may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APS device. Both versions of external sensor use IR filtering to prevent inappropriate switching events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.69	---

Appendix D1. Measure Characterizations

Table D5: FE: Penelac - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#	
20702	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APSS) use an external sensor paired with a configurable countdown timer to manage both active and standby power loads for controlled devices in a complete system. Tier 2 APSS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled sockets; those with a master control socket sense power for the device control socket. The external sensor of a Tier 2 APSS may utilize an infrared-only sensor, or it may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APSS device. Both versions of external sensor use IR filtering to prevent inappropriate activating events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.76	--	
20703	C&I	RET	RET	Computer Power Management	E		Plug Loads		This measure characterizes average savings from adjustment of computer power management settings by a direct install technician. Computer power management settings, when properly enabled, automatically put the computer and monitor in a low power state when no activity is detected for a certain period of time.	Computer power management controls set by user	Power Management controls set by IT on a top down bases	2021	2030	5	36.0%	0.22	--	
20704	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing laptops with ENERGY STAR certified laptops	Non-ENERGY STAR certified laptops	ENERGY STAR certified laptops	2021	2030	4	41.8%	0.00	--	
20705	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing PCs with ENERGY STAR certified PCs	Non-ENERGY STAR certified PCs	ENERGY STAR certified PCs	2021	2030	4	43.5%	0.00	--	
20706	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing monitors with ENERGY STAR certified monitors	Non-ENERGY STAR certified monitors	ENERGY STAR certified monitors	2021	2030	7	15.4%	0.00	--	
20707	C&I	RET	RET	Vending Machine Controls	E		Plug Loads		Installation of automatic shutoff control on non-refrigerated snack vending machines. Controls must include a passive infrared sensor to shut off lighting when the area surrounding the vending machine is unoccupied for fifteen (15) minutes. Controls must be capable of powering up the machine on IR activation to highlight the product offerings.	No Controls on the vending machines	Occupancy sensors turn off lights when no one is around	2021	2030	5	46.0%	0.00	--	
20708	C&I	RET	RET	Vending Machine Controls	E		Plug Loads		Installation of automatic shutoff control on refrigerated vending machines. Controls must include a passive infrared sensor to shut off lighting and compressor. Controls must be capable of periodically powering up the machine to maintain product temperature and provide compressor protection.	No Controls on the vending machines	Occupancy sensors and timers turn off lights and refrigeration when no one is around	2021	2030	5	38.0%	0.13	--	
20801	C&I	MD	NC, RENO, REPL	ENERGY STAR Refrigerator and Freezer	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in commercial buildings, as well as installation of high efficiency refrigerators and freezers in new buildings. New units will include at least no-sweat door controls, evaporator fan motor controls, ECM motors, etc	Federal standard efficiency vertical closed and horizontal closed commercial refrigerators with transparent or solid doors and self-contained condensing units	ENERGY STAR vertical closed and horizontal closed commercial refrigerators with transparent or solid doors and self-contained condensing units	2021	2030	12	24.1%	0.32	--	
20802	C&I	MD	NC, RENO, REPL	ENERGY STAR Ice Machine	E		Refrigeration		Commercial ice machines are used in restaurants, hospitals, hotels, schools, offices and grocery stores. ENERGY STAR rates air-cooled ice machines. ENERGY STAR ice machines are designed with higher efficiency compressors and use less water than standard ice machines.	Federal standard (manufactured on or after January 28, 2018) compliant commercial ice machine	ENERGY STAR ice machine	2021	2030	8	19.0%	0.09	--	
20803	C&I	MD	NC, RENO	High Efficiency Built Up Refrigeration with Gas Secondary	E	G	Refrigeration	Space Heating	High-efficiency built-up refrigeration systems for grocery and refrigerated warehouses. This potentially includes HE compressors, better design and controls, HE motors and VFDs.	Standard efficiency built-up refrigeration systems	High efficiency built-up refrigeration systems	2021	2030	10	25.3%	0.48	--	
20803	C&I	RET	RET	High Efficiency Built Up Refrigeration with Gas Secondary	E	G	Refrigeration	Space Heating	High-efficiency built-up refrigeration systems for grocery and refrigerated warehouses. This potentially includes HE compressors, better design and controls, HE motors and VFDs.	Standard efficiency built-up refrigeration systems	High efficiency built-up refrigeration systems	2021	2030	10	31.4%	2.12	--	
20805	C&I	RET	RET	ECM Compressor Condenser Fan Motors	E		Refrigeration		Replacing existing shaded-pole condenser motors with high efficiency electronically commutated motors (ECM) in a commercial refrigeration system compressor or condensing unit	Existing shaded pole or PSC compressor or condensing unit fan motor	ECM compressor or condensing unit fan motors	2021	2030	15	52.4%	0.10	--	
20806	C&I	RET	RET	Evaporator Fan Motor Replacement	E		Refrigeration		Replacement of an existing, working standard efficiency shaded-pole evaporator fan motor in refrigerated/freezer display cases or walk-in coolers with a high efficiency electronically commutated motor (ECM)	Existing, working standard efficiency shaded-pole evaporator fan motor in refrigerated/freezer display cases or walk-in coolers	ECM evaporator fan motor in refrigerated/freezer display cases or walk-in coolers	2021	2030	15	58.7%	0.19	--	
20807	C&I	MD	NC, RENO	Evaporator Fan Speed Controls	E		Refrigeration		This measure adds controls to vary the speed of evaporator fan motors in walk-in coolers and freezers. The evaporator fans are used to both provide cooling when the compressor is running and to provide air circulation when the compressor is off. The controls provide a lower fan speed during periods when the compressor is off. Alternative control strategy of simple ON/OFF also characterized.	Uncontrolled ECM evaporator fan motors in walk-in coolers and freezers	Controlled ECM evaporator fan motors in walk-in coolers and freezers	2021	2030	15	42.5%	0.20	--	
20807	C&I	RET	RET	Evaporator Fan Speed Controls	E		Refrigeration		This measure adds controls to vary the speed of evaporator fan motors in walk-in coolers and freezers. The evaporator fans are used to both provide cooling when the compressor is running and to provide air circulation when the compressor is off. The controls provide a lower fan speed during periods when the compressor is off. Alternative control strategy of simple ON/OFF also characterized.	Uncontrolled PSC, SP, or ECM evaporator fan motors in walk-in coolers and freezers	Controlled PSC, SP, or ECM evaporator fan motors in walk-in coolers and freezers	2021	2030	15	42.2%	0.20	--	
20808	C&I	RET	RET	Evaporator Coil Defrost Control	E		Refrigeration		A freezer refrigeration system with electric defrost is set to run the defrost cycle periodically throughout the day. A defrost control uses temperature and pressure sensors to monitor system processes and statistical modeling to determine when defrost is required. When the system calls for a defrost cycle, the controller determines if it is necessary and skips the cycle if it is not.	Freezer refrigeration system with no defrost controls	Freezer refrigeration system with defrost controls	2021	2030	10	44.6%	0.32	--	
20809	C&I	RET	RET	Floating Head Pressure Controls	E		Refrigeration		By installing a floating head pressure control (FHPC) condenser system, the refrigeration system can change condensing temperatures in response to different outdoor temperatures.	No floating head pressure control	Install floating head pressure control	2021	2030	15	11.9%	0.10	--	
20811	C&I	RET	RET	Anti-Sweat Heat Control	E		Refrigeration		Glass doors on refrigerator and freezer cases can have anti-sweat or anti-condensate heaters in the frames and millions of the case. These heaters operate continuously in order to prevent condensation/frosting on the glass and frame that occurs when the surface temperature is below the dew point of the surrounding air. Anti-sweat heater controls control the operation of these heaters so that they do not run continuously when not needed (lower dew point in the air, typically occurs in winter).	Reach-in coolers and freezers with standard, low, or no-heat doors	Reach-in coolers and freezers with anti-sweat heat control	2021	2030	12	57.2%	0.43	--	
20818	C&I	RET	RET	Low Heat and No Heat Doors	E		Refrigeration		Replaces standard refrigerated case doors which incorporate electric resistance heaters in the door to prevent condensation from forming on the glass and frost from forming on the door frames with more efficient doors that have a smaller electric resistance heater (low heat) or no heater at all (no heat). Low heat and no heat doors are more efficient due to having three panes of glass, a low conductivity filler gas (such as argon), and/or a low-E coating on the glass.	Standard refrigerated case doors with electric resistance heaters	Refrigerated case low-heat and no-heat doors	2021	2030	12	41.8%	0.18	--	
20821	C&I	RET	RET	Walk In Cooler Retrofit	E		Refrigeration		Retrofit of a walk-in cooler to improve system energy efficiency	Standard efficiency existing stock walk-in refrigeration systems	High efficiency walk-in refrigeration systems	2021	2030	15	32.0%	0.56	--	
20910	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Space Heating		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	5.1%	0.00	20303	
20910	C&I	RET	RET	Unitary Heat Pump	E		Space Heating		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing, standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	5.1%	0.00	20303	
20911	C&I	MD	RET	AC Tuneup	E		Space Heating		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.00	20304	
20913	C&I	RET	REPL	Minisplit Ductless HP	E		Space Heating		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	71.6%	0.49	20308	
20913	C&I	RET	RET	Minisplit Ductless HP	E		Space Heating		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	71.6%	0.00	20308	
20914	C&I	MD	NC, RENO, REPL	Packaged Terminal Heat Pump	E		Space Heating		Replacement of non-working and working packaged terminal heat pump (PTHP) equipment. This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency packaged terminal heat pump (PTHP) equipment	High-efficiency packaged terminal heat pump (PTHP) equipment	2021	2030	15	17.4%	0.00	20310	
20914	C&I	RET	RET	Packaged Terminal Heat Pump	E		Space Heating		Replacement of non-working and working packaged terminal heat pump (PTHP) equipment. This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing, standard efficiency packaged terminal heat pump (PTHP) equipment	High-efficiency packaged terminal heat pump (PTHP) equipment	2021	2030	15	17.4%	0.00	20310	
20915	C&I	MD	REPL	Ground Source Heat Pump	E		Space Heating		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of standard efficiency unitary air source heat pump (ASHP) and electric resistance heat (ASHRP)	High-efficiency ground source heat pump (GSHP)	2021	2030	15	70.7%	0.00	20314	
20915	C&I	RET	RET	Ground Source Heat Pump	E		Space Heating		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Existing, standard efficiency unitary air source heat pump (ASHP) and electric resistance heat	High-efficiency ground source heat pump (GSHP)	2021	2030	15	70.7%	0.00	20314	
20916	C&I	MD	NC	VRF Heat Pump	E		Space Heating		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application.	ASHPs	VRF Heat Pump	2021	2030	15	2.7%	0.00	20311	
20917	C&I	MD	NC, RENO	Optimized Unitary AC Distribution/Control System	E		Space Heating		High efficiency distribution systems for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is mainly a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321	
20919	C&I	RET	RET	Demand Control Ventilation	E		Space Heating		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX water cooled systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318	
20921	C&I	RET	RET	Guest Room EM	E		Space Heating		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	15.3%	0.00	20324	
20923	C&I	MD	NC, RENO, REPL	Kitchen DCV - MD	E		Space Heating		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	41.3%	0.00	21007	
20923	C&I	RET	RET	Kitchen DCV - MD	E		Space Heating		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	41.3%	0.00	21007	
20925	C&I	MD	NC, RENO	Programmable Tstat	E		Space Heating		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	6.8%	0.00	20326	
20927	C&I	MD	NC, RENO	Smart Tstat MD	E		Space Heating		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, preferencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	19.3%	0.00	20328	
20927	C&I	RET	RET	Smart Tstat MD	E		Space Heating		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, preferencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	19.3%	0.00	20328	
20929	C&I	RET	RET	Duct Sealing Regulated	E		Space Heating		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol products	Over a very broad set of buildings, we measured average duct leakage at 8%.	Generally aerosol duct sealing can seal to less than 2% duct leakage.	2021	2030	15	5.2%	0.00	21009	
20932	C&I	MD	NC, RENO	Windows	E		Space Heating		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	8.6%	0.00	20333	
20934	C&I	RET	RET	Window Film	E		Space Heating		Auto window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	-27.3%	0.00	20335	

## Appendix D1. Measure Characterizations

Table D5: FE: Penelac - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh of MMBtu Saved	Links with Meas#
20398	C&I	MD	NC.RENO	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
20398	C&I	RET	RET	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
21001	C&I	MD	NC.RENO.REPL	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.30	---
21001	C&I	RET	RET	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.54	---
21002	C&I	RET	RET	VFD on HVAC System	E		Ventilation		Installation of a variable speed drives on HVAC fans and pumps to vary the speed of the motor in a HVAC application with a diversified load	Weighted average of baseline control type on HVAC motor	VFD on HVAC motor	2021	2030	15	53.4%	0.11	---
21003	C&I	RET	RET	ECM Furnace Motors	E		Ventilation		Repair standard fan motor in furnace with ECM motor	PSC Furnace motors	ECM Furnace Motors	2021	2030	15	39.0%	0.18	---
21005	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
21006	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20319
21007	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.22	21007
21007	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.23	21007
21008	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based on cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.00	21008
21008	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based on cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.00	21008
21009	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol gaskets	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21009
21010	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol gaskets	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21010
21013	C&I	MD	NC.RENO.REPL	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≤ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters	Storage-type electric resistance water heater (≤ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21013	C&I	RET	RET	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≤ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters	Storage-type electric resistance water heater (≤ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21017	C&I	RET	RET	Faucet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing, inefficient faucet aerator	Low-flow faucet aerator	2021	2030	10	31.8%	0.01	---
21109	C&I	RET	RET	Pre-Rinse Sprayers	E		Water Heating		Retrofit of working standard pre-rinse sprayers with low-flow, pre-rinse sprayers in commercial kitchen applications.	Existing, inefficient pre-rinse sprayer	Low-flow pre-rinse sprayer	2021	2030	8	47.9%	0.05	---
21114	C&I	MD	NC.RENO.REPL	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20604
21114	C&I	RET	RET	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
21116	C&I	RET	RET	Onsite Laundry	E		Water Heating		On-site laundry systems for laundromats and facilities with on-site laundry	Laundry systems without ozone technology	Laundry systems with ozone technology	2021	2030	10	81.0%	0.11	---
21118	C&I	MD	NC.RENO.REPL	Commercial ENERGY STAR Dishwasher	E		Water Heating		Installation of an ENERGY STAR commercial dishwasher	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	24.3%	0.00	20601
21201	C&I	RET	RET	Industrial Process, Drives Improvements	E		Drives		Optimized drive systems for energy efficiency	Existing industrial drive systems	High efficiency industrial drive systems	2021	2030	15	32.5%	0.59	---
21401	C&I	RET	RET	Industrial Process, Compressed Air Systems Improvements	E		Compressed Air Systems		Increase efficiency of compressed air systems	Existing industrial compressed air systems	High efficiency industrial compressed air systems	2021	2030	15	45.0%	0.35	---
21501	C&I	RET	RET	Industrial Process, Process Cooling and Refrigeration Improvements	E		Process Cooling and Refrigeration		Increase the efficiency of industrial process cooling	Existing industrial process cooling systems	High efficiency industrial process cooling systems	2021	2030	15	55.0%	0.17	---
21601	C&I	RET	RET	Industrial Process, Process Heating Improvements	E		Process Heating		Increase efficiency of process heating	Existing industrial process heating systems	High efficiency industrial process heating systems	2021	2030	62	12.6%	0.26	---
21701	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.08	---
21702	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.12	21702
21703	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.49	---
21704	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.25	---
21705	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.76	21705
21706	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.39	21706
21707	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.23	---
21708	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.00	21708
21709	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fan coils, an 8:1 turnaround ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turnaround ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	1.34	---
21710	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fan coils, an 8:1 turnaround ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turnaround ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	0.00	21710
21711	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.40	---
21711	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.87	---
21712	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.00	21712
21712	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.00	21712
21713	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.56	---
21713	C&I	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	0.45	---
21714	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.88	21714

Appendix D1. Measure Characterizations

Table D5: FE: Penelec - Measure Characteristics Summary

Measure#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Measure#
21714	CAI	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building services. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	1.39	21714
21715	CAI	RET	RET	Industrial Strategic Energy Management	E		Total Electric		Industrial Strategic Energy Management	No SEM	SEM implemented	2021	2030	3	5.0%	0.13	---



## Appendix D1. Measure Characterizations

Table D6: FE: Psm Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
10101	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Appliances		This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	10101
10102	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher with Gas Secondary Fuel	E	G	Appliances	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR dishwasher with gas water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	--
10103	Res	MD	NC, RENO, REPL	ENERGY STAR Dehumidifier	E		Appliances		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Existing or dehumidifier or new standard dehumidifier meeting the federal minimum standard	New ENERGY STAR dehumidifier	2021	2030	12	27.3%	0.02	--
10105	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	30.8%	1.37	10105
10107	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	30.8%	1.37	--
10108	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Appliances	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and gas drying	2021	2030	11	47.0%	7.65	10108
10109	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	29.5%	0.39	10109
10111	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	29.5%	0.39	--
10301	Res	MD	NC, RENO, REPL	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing or baseline central AC system with SEER 13	High efficiency central AC system with SEER 16	2021	2030	15	21.3%	2.21	--
10301	Res	RET	RET	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing central AC system with SEER 12.1	High efficiency central AC system with SEER 16	2021	2030	15	24.4%	11.25	--
10303	Res	RET	RET	Central Air Conditioner Tune Up	E		Cooling		Residential split system air conditioning tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing CAC system that has not received a tune-up within the last 3 years	Existing CAC tune-up	2021	2030	3	5.0%	0.97	--
10305	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10305
10305	Res	RET	RET	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with SEER 13.6	High efficiency air source heat pump system with SEER 18	2021	2030	15	25.0%	0.00	10305
10306	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10306
10309	Res	RET	RET	Air Source Heat Pump Tune Up	E		Cooling		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.00	10309
10311	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Split or Central A/C with SEER 13	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	44.6%	0.00	10311
10311	Res	RET	RET	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Split or Central A/C with SEER 12.1	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	48.4%	0.00	10311
10313	Res	MD	NC, RENO, REPL	Energy Star Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in residential homes, as well as installation of high efficiency room air conditioning systems in new homes.	Failed or working non-Energy Star Room AC with weighted average Federal standards CEER of 9.9	New Energy Star Room AC with weighted average ENERGY STAR CEER of 11	2021	2030	9	9.6%	1.25	--
10314	Res	MD	NC	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	2.01	--
10314	Res	RET	RET	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	1.74	--
10315	Res	MD	NC	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	0.00	10918
10315	Res	RET	RET	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	0.00	10918
10316	Res	RET	RET	Duct Sealing	E		Cooling		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system of homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	10.0%	0.00	10919
10318	Res	RET	RET	Wall Insulation	E		Cooling		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Wall Insulation with R-value of 8.6	Wall insulation with R-value of 14.6	2021	2030	15	41.1%	0.00	10921
10319	Res	RET	RET	Attic Insulation	E		Cooling		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Attic Insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	0.00	10922
10404	Res	RET	RET	ENERGY STAR LED Outdoor Fixture	E		Exterior Lighting		ENERGY STAR LED outdoor fixtures replace less efficient incandescent fixtures in retrofits or new construction. Fixtures are hardwired and use either pin based or screw in lamps.	80W General service incandescent fixtures	34W ENERGY STAR LED exterior fixtures	2021	2030	15	42.6%	0.54	--
10405	Res	RET	RET	LED Holiday Lights	E		Exterior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to exterior lighting end use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New exterior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	--
10406	Res	RET	RET	Lighting Controls	E		Exterior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When movement is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.25	--
10509	Res	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Weighted average of existing T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	5	44.2%	0.31	--
10510	Res	RET	RET	LED Holiday Lights	E		Interior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to interior lighting end use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New interior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	--
10512	Res	RET	RET	Lighting Controls	E		Interior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When movement is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.83	--
10601	Res	RET	RET	ENERGY STAR Ceiling Fan	E		Other		ENERGY STAR qualified ceiling fan has no light units or are over 50% more efficient than conventional fans. They also use improved motors and blade designs. Includes fan-only options.	Existing Non-ENERGY STAR Ceiling Fan	ENERGY STAR Ceiling Fan	2021	2030	15	8.7%	24.40	--
10602	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electronically commutated (EC) circulation pumps are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	1.35	--
10603	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electronically commutated (EC) circulators (pumps) are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	0.24	--
10604	Res	RET	RET	ECM Blower Motor	E		Other		A retrofit of a less efficient (PSC) motor to a 2 stage BPM or ECM motor in an existing furnace. For retrofits, the target age range for existing furnaces is 10-12 years. This measure characterizes only the electric savings associated with the fan and could be coupled with gas savings associated with a more efficient furnace. Savings improve when the blower is used for cooling as well and when it is used for continuous ventilation, but only if the non-ECM motor would have been used for continuous ventilation.	Existing furnace with less efficient PSC motor	Existing furnace with 2 stage BPM or ECM motor	2021	2030	15	25.0%	2.07	--
10605	Res	MD	NC, REPL	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Failed or baseline Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.53	--
10605	Res	RET	RET	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Working Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.66	--
10701	Res	RET	RET	Advanced Tier 2 Power Strips	E		Plug Loads		Advanced power strips are power strips that contain a number of controlled sockets and at least one uncontrolled socket. When the appliance that is plugged into the controlled socket is turned off, the power strips shuts off the appliances that are plugged into the controlled sockets. These have recently been renamed Tier 1 power strips. Tier 2 power strips expand on the functionality by using algorithms to monitor the power of all controlled devices, whereas Tier 1 power strips only monitor the master device and turns off peripheral devices accordingly. Tier 2 power strips use infrared (IR) sensing and Root Mean Squared (RMS) power sensing to detect energy consumption from connected devices; Tier 1 power strips only use current sensing. After 1 hour of inactivity, energy savings are delivered by turning off power to inactive devices.	Audio-visual home entertainment systems connected to wall outlet or standard power strip.	Audio-visual home entertainment systems connected to advanced tier 2 power strip.	2021	2030	5	30.0%	0.23	--
10801	Res	MD	NC, RENO, REPL	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Baseline or Failed non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12,875	9.8%	0.44	--
10801	Res	RET	RET	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Existing non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12,875	41.5%	2.97	--
10802	Res	RET	RET	Secondary Refrigerator and Freezer Removal	E		Refrigeration		This measure reflects recycling of refrigerators or freezers without replacement.	Existing functional secondary refrigerators or freezers	Remove and recycle secondary refrigerator or freezer	2021	2030	4,584,325	100.0%	0.17	--
10910	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with HSPF 8.2	High efficiency air source heat pump system with HSPF 12	2021	2030	15	31.7%	1.29	10305

## Appendix D1. Measure Characterizations

Table D6: FE: Perm Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
10910	Res	RET	RET	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with HSPF 8.2 with HSPF 12	High efficiency air source heat pump system with HSPF 12	2021	2030	15	31.7%	3.16	10305
10911	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing electric resistance heating system with HSPF 3.412	High efficiency air source heat pump system with HSPF 18	2021	2030	15	71.6%	0.24	10306
10914	Res	RET	RET	Air Source Heat Pump Tune Up	E		Space Heating		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.42	10309
10915	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.06	10311
10916	Res	RET	RET	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.37	10311
10918	Res	MD	NC, RENO, REPL	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing or baseline Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.18	10312
10918	Res	RET	RET	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.18	10312
10918	Res	MD	NC	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	6.4%	0.29	10918
10918	Res	RET	RET	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	7.9%	0.39	10918
10919	Res	RET	RET	Duct Sealing	E		Space Heating		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system of homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	2.0%	0.78	10919
10920	Res	RET	RET	Air Sealing	E		Space Heating		This measure characterizes increased air sealing for reduction of thermal losses through the building envelope. This measure captures heating savings.	Existing building envelope without additional air sealing	Building envelope with improved air sealing	2021	2030	15	15.0%	0.26	10920
10921	Res	RET	RET	Wall Insulation	E		Space Heating		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Wall Insulation with R-value of 8.6	Wall insulation with R-value of 14.6	2021	2030	15	41.1%	3.41	10921
10922	Res	RET	RET	Attic Insulation	E		Space Heating		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Attic Insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	3.29	10922
11103	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
11103	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
11104	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
11104	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
11105	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
11105	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	66.6%	1.16	--
11106	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
11106	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	66.6%	1.16	--
11109	Res	RET	RET	Water Heater Setback	E		Water Heating		This measure involves turning the water heater set point to 70°F in a non-ENERGY STAR storage type heat pump water heaters. Savings do not occur in applications such as in a shower or faucet where the user adjusts the hot water flow to make up for the lower temperature. Clothes washer hot water use and water heater tank losses are included in the savings calculation, but shower, faucet, and dishwasher use are not included due to expected behavioral and automatic dishwasher adjustments in response to lower water temperature. It is expected that the net energy use for the dish washer hot water will remain the same after a temperature reduction because dishwashers will adjust hot water temperature to necessary levels using internal heating elements. The existing temperature set point is assumed to be 119°F.	Water heater with set point temperature of 130°F	Water heater with set point temperature of 119°F	2021	2030	2	8.5%	0.00	--
11112	Res	RET	RET	Thermostatic Restriction Valve	E		Water Heating		This measure involves installing a thermostatically restricting shower valve that reduces the amount of excess hot shower water during warm-up periods.	Shower with no thermostatic restriction valve	Shower with thermostatic restriction valve	2021	2030	15	12.0%	0.31	--
11117	Res	RET	RET	Pipe Insulation	E		Water Heating		This measure includes installing 3/4" foam insulation on exposed pipe in unconditioned space.	Un-insulated piping of an electric water heating system	Insulated piping of an electric water heating system	2021	2030	13	3.0%	0.34	--
11118	Res	RET	RET	Water Heater Jacket Insulation	E		Water Heating		This measure includes installing a water heater blanket on an electric water storage water heater.	Electric water heater with no insulation jacket	Electric water heater with insulation jacket	2021	2030	7	43.1%	0.18	--
11121	Res	RET	RET	Low Flow Showerhead	E		Water Heating		This measure involves replacing a standard showerhead with a low flow showerhead.	Existing 2.5 GPM showerhead	Low-flow 1.5 GPM showerhead	2021	2030	9	40.0%	0.04	--
11124	Res	RET	RET	Faucet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing 2.2 GPM faucet aerator	Low-flow 1.5 GPM faucet aerator	2021	2030	10	31.8%	0.03	--
11126	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Water Heating	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	29.7%	0.00	10101
11127	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	12.9%	0.00	10105
11128	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	12.9%	0.00	10106
11130	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	11.3%	0.00	10109
11131	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	11.3%	0.00	10110
11702	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.7%	0.06	11702
11703	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.7%	0.06	11702
11704	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.3%	0.00	11702
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	0.8%	0.00	11702
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	0.3%	0.00	11702
20001	C&I	MD	NC, RENO, REPL	ENERGY STAR Ovens	E		Cooking		Replacement of failed or working electric ovens and ranges with new high efficiency ovens and ranges	Baseline Oven	ENERGY STAR Ovens	2021	2030	12	16.1%	0.07	--
20002	C&I	MD	NC, RENO, REPL	ENERGY STAR Griddles	E		Cooking		Replacement of failed or working electric griddles with new high efficiency griddles	Baseline Griddle	ENERGY STAR Griddle	2021	2030	12	16.2%	0.33	--
20004	C&I	MD	NC, RENO, REPL	ENERGY STAR Steamers	E		Cooking		Replacement of failed or working electric steamers with new high efficiency steamers	Baseline Steamer	ENERGY STAR Steamer	2021	2030	12	57.0%	0.19	--
20006	C&I	MD	NC, RENO, REPL	ENERGY STAR Fryers	E		Cooking		Replacement of failed or working electric fryers with new high efficiency fryers	Baseline Fryers	ENERGY STAR Fryers	2021	2030	12	17.2%	0.10	--
20028	C&I	MD	NC, RENO, REPL	Hot Food Holding Cabinet	E		Cooking		Replacement of failed or working electric hot food holding cabinets with new high efficiency hot food holding cabinets	Baseline Hot Food Holding Cabinet	ENERGY STAR Hot Food Holding Cabinet	2021	2030	12	52.7%	0.52	--
20301	C&I	MD	NC, RENO, REPL	Efficient Unitary AC	E		Cooling		Installation of electric DX split-packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency unitary AC	High-efficiency unitary AC	2021	2030	15	18.2%	0.88	--
20301	C&I	RET	RET	Efficient Unitary AC	E		Cooling		Installation of electric DX split-packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency unitary AC	High-efficiency unitary AC	2021	2030	15	18.2%	10.35	--
20302	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air conditioning rooftop unit involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.77	--
20303	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	2.60	20303
20303	C&I	RET	RET	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	19.96	20303
20304	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.90	20304
20308	C&I	MD	REPL	Mini-split Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	35.0%	0.00	20308
20308	C&I	RET	RET	Mini-split Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	48.2%	8.47	20308
20309	C&I	MD	NC, RENO, REPL	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency PTAC	High-efficiency PTAC	2021	2030	15	17.2%	0.78	--
20309	C&I	RET	RET	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency PTAC	High-efficiency PTAC	2021	2030	15	29.3%	3.71	--
20311	C&I	MD	NC	VRF Heat Pump	E		Cooling		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application.	ASHPs	VRF Heat Pump	2021	2030	15	23.1%	0.95	20311
20312	C&I	MD	NC, RENO, REPL	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high efficiency room air conditioners in new buildings.	Standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	9.4%	0.20	--
20312	C&I	RET	RET	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high efficiency room air conditioners in new buildings.	Existing standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	15.1%	2.46	--

Appendix D1. Measure Characterizations

Table D6: FE: Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20313	C&I	MD	NC.RENO.REPL	Computer Room Air Conditioner	E		Cooling		This measure analyzes the space cooling savings potential for the replacement or new commissioning of a computer room air conditioner (CRAC). CRACs are installed to meet cooling requirements for computers, servers, and other electronic components.	Standard efficiency CRAC	High-efficiency CRAC	2021	2030	15	23.1%	0.36	---
20314	C&I	MD	REPL	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	3.34	20314
20314	C&I	RET	RET	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of existing, standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	6.75	20314
20315	C&I	MD	NC.RENO.REPL	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	22.6%	1.25	---
20315	C&I	RET	RET	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Existing, standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	54.5%	0.29	---
20316	C&I	RET	RET	Chiller Tuneup	E		Cooling		Commercial air cooled or water chiller tune-up completed in accordance with the following recommended tune-up requirements: - Clean condenser coils/tubes - Check cooling tower for scale or buildup - Check contactors condition - Check evaporator condition - Check low-pressure controls - Check high-pressure controls - Check filter, replace as needed - Check belt, replace as needed - Check crankcase heater operation - Check economizer operation	Existing air cooled or water chiller	Tuned-up existing air cooled or water chiller	2021	2030	5	5.0%	1.28	---
20317	C&I	RET	RET	Unitary Equipment Economizer	E		Cooling		Retrofit of existing equipment or the optional addition of an air-side economizer on new equipment where not required by code. This measure analyzes the cooling savings potential of the installation of an air side economizer on unitary equipment. This measure is applicable to dx and water cooled air	Existing unitary equipment without a functional air side economizer	Existing unitary equipment with a functional air side economizer	2021	2030	10	30.7%	0.82	---
20318	C&I	RET	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20318
20319	C&I	RET	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20319
20320	C&I	RET	RET	Controls for Unitary AC	E		Cooling		Unitary packaged (RTU) systems	Existing RTU without advanced controls	Existing RTU with advanced controls	2021	2030	10	15.0%	0.47	---
20321	C&I	MD	NC.RENO	Optimized UnitaryAC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is primarily a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321
20322	C&I	MD	NC.RENO	Optimized UnitaryAC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is primarily a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20322
20323	C&I	MD	NC.RENO	Optimized Chiller Distribution/Control System	E		Cooling		High efficiency distribution system for chiller systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, better design, etc.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	15	36.0%	0.48	---
20324	C&I	RET	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	15.8%	0.30	20324
20325	C&I	RET	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	15.7%	0.31	20325
20326	C&I	MD	NC.RENO	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.09	20326
20327	C&I	MD	NC.RENO	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.09	20327
20327	C&I	RET	RET	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.09	20327
20328	C&I	MD	NC.RENO	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.9%	0.62	20328
20328	C&I	RET	RET	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.9%	0.62	20328
20329	C&I	MD	NC.RENO	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.9%	0.62	20329
20329	C&I	RET	RET	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.9%	0.62	20329
20330	C&I	RET	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aesopel process.	Over a very broad set of buildings, we measured average duct leakage at 8%.	Generally zero-seal duct sealing can seal to less than 2% duct leakage.	2021	2030	15	13.0%	0.00	21009
20331	C&I	RET	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aesopel process on pre-screened buildings for high savings	A subset of buildings have high leakage, nominally 29%. Screening procedures can identify these buildings with good success.	High leakage buildings were sealed from 29% duct leakage to 6% duct leakage	2021	2030	15	13.0%	0.00	21010
20332	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	15.7%	7.80	20332
20334	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows	Standard Windows	High Efficiency Windows	2021	2030	20	15.7%	7.80	20334
20335	C&I	RET	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain	Window film	Window film	2021	2030	10	21.1%	5.28	20335
20336	C&I	RET	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	21.1%	5.28	20336
20337	C&I	MD	NC.RENO.REPL	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	---
20337	C&I	RET	RET	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	---
20338	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20338
20338	C&I	RET	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20338
20339	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20339
20339	C&I	RET	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20339
20401	C&I	MD	NC.REPL	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.6%	0.10	---
20401	C&I	RET	RET	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.6%	0.29	---
20402	C&I	MD	NC.REPL	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	---
20402	C&I	RET	RET	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	---
20403	C&I	MD	NC	Improved Exterior Lighting Design	E		Exterior Lighting		Reduced light levels and better outdoor lighting design. Includes reduced wattage lamps, better spacing and use of cut-offs and shields to better control light and minimize glare.	Unoptimized exterior lighting design	Optimized exterior lighting design	2021	2030	15	65.5%	0.10	---
20404	C&I	RET	RET	Exterior Lighting Controls	E		Exterior Lighting		Optimized exterior lighting controls.	Existing exterior lighting controls	Existing exterior lighting controls	2021	2030	8	9.0%	0.17	---
20508	C&I	MD	NC.REPL	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	0.99	---
20508	C&I	RET	RET	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	2.65	---

Appendix D1. Measure Characterizations  
Table D6: FE: Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20509	C&I	MD	NC, REPL	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	0.82	--
20508	C&I	RET	RET	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	2.20	--
20511	C&I	MD	REPL	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.21	--
20511	C&I	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.78	--
20512	C&I	MD	REPL	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.18	--
20512	C&I	RET	RET	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.65	--
20514	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	0.72	--
20514	C&I	RET	RET	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	2.13	--
20515	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	0.60	--
20515	C&I	RET	RET	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	1.77	--
20617	C&I	RET	RET	Exit Sign Retrofits	E		Interior Lighting		Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	71.9%	0.46	--
20618	C&I	RET	RET	Exit Sign Retrofits with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	86.5%	0.39	--
20620	C&I	RET	RET	Interior Detriments	E		Interior Lighting		Remove fluorescent ballasts from multiple fixtures in specific areas.	Existing fluorescent fixture in specific areas	Detrimented fixture	2021	2030	13	65.1%	0.29	--
20621	C&I	RET	RET	Interior Detriments with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Remove fluorescent ballasts from multiple fixtures in specific areas.	Existing fluorescent fixture in specific areas	Detrimented fixture	2021	2030	13	102.4%	0.24	--
20622	C&I	RET	RET	Refrigerator/Freezer Case LEDs	E		Interior Lighting		Replace existing vertical and horizontal fluorescent refrigerated case lighting with more efficient LED lighting.	Vertical and horizontal fluorescent refrigerated case lighting	LED fixtures	2021	2030	8	83.8%	0.56	--
20624	C&I	RET	RET	Interior Lighting Controls	E		Interior Lighting		Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration.	Manual control	Average of multiple control types	2021	2030	8	32.3%	1.28	--
20626	C&I	RET	RET	Interior Lighting Controls with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration. This measure involves installing occupancy controls for refrigerated case lighting with internal LED lighting. Without occupancy sensors, case lighting typically runs at 100% power during a control period. Occupancy sensors allow lights to turn fully on only when motion is detected in the store aisle. When no motion is detected for a preset period of time, the lights automatically dim to a lower power state, generating substantial energy savings.	Manual control	Average of multiple control types	2021	2030	8	38.9%	1.06	--
20629	C&I	RET	RET	Refrigerator/Freezer Case Occupancy Controls	E		Interior Lighting		LED refrigerated case lighting with occupancy controls	LED refrigerated case lighting with occupancy controls	LED refrigerated case lighting with occupancy controls	2021	2030	8	46.2%	0.37	--
20631	C&I	MD	NC	Interior Lighting Design	E		Interior Lighting		Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	27.4%	0.99	--
20632	C&I	MD	NC	Interior Lighting Design with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	33.0%	0.82	--
20601	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of a new ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20601
20602	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of an ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20602
20603	C&I	MD	NC,RENO,REPL	ENERGY STAR Dehumidifier	E		Other		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Old or previously non-existent dehumidifier	New ENERGY STAR dehumidifier	2021	2030	12	21.9%	0.29	--
20604	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	1.60	20604
20606	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20606
20607	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20608
20610	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
20611	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20610
20613	C&I	MD	NC,RENO,REPL	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.19	--
20613	C&I	RET	RET	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Existing, standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.80	--
20614	C&I	MD	NC,RENO,REPL	Motors	E		Other		This measure includes one-for-one replacement of working or failed/inefficient 1,200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/inefficient motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.23	--
20614	C&I	RET	RET	Motors	E		Other		This measure includes one-for-one replacement of working or failed/inefficient 1,200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/inefficient motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	4.6%	1.16	--
20615	C&I	RET	RET	VFDs on HVAC Pumps	E		Other		Installation of VSD on Chilled Water and Hot Water Pumps in HVAC Applications	Weighted average of no control, bypass valves, and fixed speed drives on HVAC pumps.	Variable Speed Drives on HVAC pumps	2021	2030	15	41.8%	0.09	--
20616	C&I	RET	RET	Industrial Process, Other Improvements	E		Other		Increase the efficiency of other misc. process measures	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	--
20617	C&I	RET	RET	Industrial Non-Process, Other Improvements	E		Other		Increase the electrical efficiency of non-process end uses other than lighting and space heat & cool throughout facility	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	--
20701	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	--
20701	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	--
20702	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APS) use an external sensor paired with a configurable countdown timer to manage both active and standby loads for controlled devices in a complete system. Tier 2 APS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled socket; those with a master control socket sense power for the device connected to the control socket. The external sensor of a Tier 2 APS may utilize an infrared-only sensor, or a multi-sensor which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APS device. Both versions of external sensor use IR filtering to prevent inappropriate switching events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.69	--

Appendix D1. Measure Characterizations

Table D6: FE: Perm Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20702	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APS) use an external sensor paired with a configurable countdown timer to manage both active and standby power loads for controlled devices in a complete system. Tier 2 APS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled sockets, those with a master control socket sense power for the device control socket. The external sensor of a Tier 2 APS may utilize an infrared-only sensor, or may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APS device. Both versions of external sensor use IR filtering to prevent inappropriate activating events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.76	--
20703	C&I	RET	RET	Computer Power Management	E		Plug Loads		This measure characterizes average savings from adjustment of computer power management settings by a direct install technician. Computer power management settings, when properly enabled, automatically put the computer and monitor in a low power state when no activity is detected for a certain period of time.	Computer power management controls set by user	Power Management controls set by IT on a top down basis	2021	2030	5	36.0%	0.22	--
20704	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing laptops with ENERGY STAR certified laptops	Non-ENERGY STAR certified laptops	ENERGY STAR certified laptops	2021	2030	4	41.8%	0.00	--
20705	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of or replacement of existing PCs with ENERGY STAR certified PCs	Non-ENERGY STAR certified PCs	ENERGY STAR certified PCs	2021	2030	4	43.5%	0.00	--
20706	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing monitors with ENERGY STAR certified monitors	Non-ENERGY STAR certified monitors	ENERGY STAR certified monitors	2021	2030	7	15.4%	0.00	--
20707	C&I	RET	RET	Vending Machine Controls	E		Plug Loads		Installation of automatic shutoff control on non-refrigerated snack vending machines. Controls must include a passive infrared sensor to shut off lighting when the area surrounding the vending machine is unoccupied for fifteen (15) minutes. Controls must be capable of powering up the machine on IR activation to highlight the product offerings.	No Controls on the vending machines	Occupancy sensors turn off lights when no one is around	2021	2030	5	46.0%	0.00	--
20708	C&I	RET	RET	Vending Machine Controls	E		Plug Loads		Installation of automatic shutoff control on refrigerated vending machines. Controls must include a passive infrared sensor to shut off lighting and compressor. Controls must be capable of periodically powering up the machine to maintain product temperature and provide compressor protection.	No Controls on the vending machines	Occupancy sensors and timers turn off lights and refrigeration when no one is around	2021	2030	5	38.0%	0.13	--
20801	C&I	MD	NC, RENO, REPL	ENERGY STAR Refrigerator and Freezer	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in commercial buildings, as well as installation of high efficiency refrigerators and freezers in new buildings. New units will include at least no-sweat door controls, evaporator fan motor controls, ECM motors, etc	Federal standard efficiency vertical closed and horizontal closed commercial refrigerators with transparent or solid doors and self-contained condensing units	ENERGY STAR vertical closed and horizontal closed commercial refrigerators with transparent or solid doors and self-contained condensing units	2021	2030	12	24.1%	0.32	--
20802	C&I	MD	NC, RENO, REPL	ENERGY STAR Ice Machine	E		Refrigeration		Commercial ice machines are used in restaurants, hospitals, hotels, schools, offices and grocery stores. ENERGY STAR rates air-cooled ice machines. ENERGY STAR ice machines are designed with higher efficiency compressors and use less water than standard ice machines.	Federal standard (manufactured on or after January 28, 2018) compliant commercial ice machine	ENERGY STAR ice machine	2021	2030	8	19.0%	0.09	--
20803	C&I	MD	NC, RENO	High Efficiency Built Up Refrigeration with Gas Secondary	E	G	Refrigeration	Space Heating	High-efficiency built-up refrigeration systems for grocery and refrigerated warehouses. This potentially includes HE compressors, better design and controls, HE motors and VFDs.	Standard efficiency built-up refrigeration systems	High efficiency built-up refrigeration systems	2021	2030	10	25.3%	0.48	--
20803	C&I	RET	RET	High Efficiency Built Up Refrigeration with Gas Secondary	E	G	Refrigeration	Space Heating	High-efficiency built-up refrigeration systems for grocery and refrigerated warehouses. This potentially includes HE compressors, better design and controls, HE motors and VFDs.	Standard efficiency built-up refrigeration systems	High efficiency built-up refrigeration systems	2021	2030	10	31.4%	2.12	--
20805	C&I	RET	RET	ECM Compressor Condenser Fan Motors	E		Refrigeration		Replacing existing shaded pole condenser motors with high efficiency electronically commutated motors (ECM) in a commercial refrigeration system compressor or condensing unit	Existing shaded pole or PSC compressor or condensing unit fan motors	ECM compressor or condensing unit fan motors	2021	2030	15	52.4%	0.10	--
20806	C&I	RET	RET	Evaporator Fan Motor Replacement	E		Refrigeration		Replacement of an existing, working standard efficiency shaded-pole evaporator fan motor in refrigerated/freezer display cases or walk-in coolers with a high efficiency electronically commutated motor (ECM).	Existing, working standard efficiency shaded-pole evaporator fan motor in refrigerated/freezer display cases or walk-in coolers	ECM evaporator fan motor in refrigerated/freezer display cases or walk-in coolers	2021	2030	15	58.7%	0.19	--
20807	C&I	MD	NC, RENO	Evaporator Fan Speed Controls	E		Refrigeration		This measure adds controls to vary the speed of evaporator fan motors in walk-in coolers and freezers. The evaporator fans are used to both provide cooling when the compressor is running and to provide air circulation when the compressor is off. The controls provide a lower fan speed during periods when the compressor is off. Alternative control strategy of simple ON/OFF also characterized.	Uncontrolled ECM evaporator fan motors in walk-in coolers and freezers	Controlled ECM evaporator fan motors in walk-in coolers and freezers	2021	2030	15	42.5%	0.20	--
20807	C&I	RET	RET	Evaporator Fan Speed Controls	E		Refrigeration		This measure adds controls to vary the speed of evaporator fan motors in walk-in coolers and freezers. The evaporator fans are used to both provide cooling when the compressor is running and to provide air circulation when the compressor is off. The controls provide a lower fan speed during periods when the compressor is off. Alternative control strategy of simple ON/OFF also characterized.	Uncontrolled PSC, SP, or ECM evaporator fan motors in walk-in coolers and freezers	Controlled PSC, SP, or ECM evaporator fan motors in walk-in coolers and freezers	2021	2030	15	42.2%	0.20	--
20808	C&I	RET	RET	Evaporator Coil Defrost Control	E		Refrigeration		A freezer refrigeration system with electric defrost is set to run the defrost cycle periodically throughout the day. A defrost control uses temperature and pressure sensors to monitor system processes and statistical modeling to determine when the defrost cycle is required. When the system calls for a defrost cycle, the controller determines if it is necessary and skips the cycle if it is not.	Freezer refrigeration system with no defrost controls	Freezer refrigeration system with defrost controls	2021	2030	10	44.6%	0.32	--
20809	C&I	RET	RET	Floating Head Pressure Controls	E		Refrigeration		By installing a floating head pressure control (FHPC) condenser system, the refrigeration system can change condensing temperatures in response to different outdoor temperatures.	No floating head pressure control	Install floating head pressure control	2021	2030	15	11.4%	0.11	--
20811	C&I	RET	RET	Anti-Sweat Head Control	E		Refrigeration		Glass doors on refrigerator and freezer cases can have anti-sweat or anti-condensate heaters in the frames and millions of the case. These heaters operate continuously in order to prevent condensation/ frosting on the glass and frame that occurs when the surface temperature is below the dew point of the surrounding air. Anti-sweat heater controls control the operation of these heaters so that they do not run continuously when not needed (lower dew point in the air, typically occurs in winter).	Reach-in coolers and freezers with standard, low, or no-heat doors	Reach-in coolers and freezers with anti-sweat heat control	2021	2030	12	57.2%	0.43	--
20818	C&I	RET	RET	Low Heat and No Heat Doors	E		Refrigeration		Replaces standard refrigerated case doors which incorporate electric resistance heaters in the door to prevent condensation from forming on the glass and frost from forming on the door frames with more efficient doors that have a smaller electric resistance heater (low heat) or no heater at all (no heat). Low heat and no heat doors are more efficient due to having three panes of glass, a low conductivity filler gas (such as argon), and/or a low-E coating on the glass.	Standard refrigerated case doors with electric resistance heaters	Refrigerated case low-heat and no-heat doors	2021	2030	12	41.8%	0.18	--
20821	C&I	RET	RET	Walk In Cooler Retrofit	E		Refrigeration		Retrofit of a walk-in cooler to improve system energy efficiency	Standard efficiency existing stock walk-in refrigeration systems	High efficiency walk-in refrigeration systems	2021	2030	15	32.0%	0.56	--
20910	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Space Heating		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	5.1%	0.00	20303
20910	C&I	RET	RET	Unitary Heat Pump	E		Space Heating		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing, standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	5.1%	0.00	20303
20911	C&I	RET	RET	AC Tuneup	E		Space Heating		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.00	20304
20913	C&I	MD	REPL	Mini Split Ductless HP	E		Space Heating		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system.	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	71.6%	0.51	20308
20913	C&I	RET	RET	Mini Split Ductless HP	E		Space Heating		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system.	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	71.6%	0.00	20308
20914	C&I	MD	NC, RENO, REPL	Packaged Terminal Heat Pump	E		Space Heating		Replacement of non-working and working packaged terminal heat pump (PTHP) equipment. This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency packaged terminal heat pump (PTHP) equipment	High-efficiency packaged terminal heat pump (PTHP) equipment	2021	2030	15	17.4%	0.00	20310
20914	C&I	RET	RET	Packaged Terminal Heat Pump	E		Space Heating		Replacement of non-working and working packaged terminal heat pump (PTHP) equipment. This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing standard efficiency packaged terminal heat pump (PTHP) equipment	High-efficiency packaged terminal heat pump (PTHP) equipment	2021	2030	15	17.4%	0.00	20310
20915	C&I	MD	REPL	Ground Source Heat Pump	E		Space Heating		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of standard efficiency unitary air source heat pump (ASHP) and electric resistance heat (ASHP)	High-efficiency ground source heat pump (GSHP)	2021	2030	15	70.7%	0.00	20314
20915	C&I	RET	RET	Ground Source Heat Pump	E		Space Heating		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Existing standard efficiency unitary air source heat pump (ASHP) and electric resistance heat	High-efficiency ground source heat pump (GSHP)	2021	2030	15	70.7%	0.00	20314
20916	C&I	MD	NC	VRF Heat Pump	E		Space Heating		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application.	ASHPs	VRF Heat Pump	2021	2030	15	2.7%	0.00	20311
20917	C&I	MD	NC, RENO	Optimized Unitary AC Distribution/Control System	E		Space Heating		High efficiency distribution systems for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is mainly a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321
20919	C&I	RET	RET	Demand Control Ventilation	E		Space Heating		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX water-cooled systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
20921	C&I	RET	RET	Guest Room EM	E		Space Heating		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	15.8%	0.00	20324
20923	C&I	MD	NC, RENO, REPL	Kitchen DCV - MD	E		Space Heating		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	41.3%	0.00	21007
20923	C&I	RET	RET	Kitchen DCV - MD	E		Space Heating		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	41.3%	0.00	21007
20925	C&I	MD	NC, RENO	Programmable Tstat	E		Space Heating		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	6.8%	0.00	20326
20927	C&I	MD	NC, RENO	Smart Tstat MD	E		Space Heating		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, preference, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.9%	0.00	20328
20927	C&I	RET	RET	Smart Tstat MD	E		Space Heating		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, preference, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.9%	0.00	20328
20929	C&I	RET	RET	Duct Sealing Regulated	E		Space Heating		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aersol locost	Over a very broad set of buildings, we measured average duct leakage at 8%.	Generally aerosol duct sealing can seal to less than 2% duct leakage.	2021	2030	15	5.2%	0.00	21009
20932	C&I	MD	NC, RENO	Windows	E		Space Heating		Install high efficiency windows.	Standard Windows	High Efficiency Windows	2021	2030	20	8.6%	0.00	20333
20934	C&I	RET	RET	Window Film	E		Space Heating		Auto window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	-27.3%	0.00	20335

## Appendix D1. Measure Characterizations

Table D6: FE: Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20398	C&I	MD	NC.RENO	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
20398	C&I	RET	RET	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
21001	C&I	MD	NC.RENO.REPL	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.31	---
21001	C&I	RET	RET	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.55	---
21002	C&I	RET	RET	VFD on HVAC System	E		Ventilation		Installation of a variable speed drives on HVAC fans and pumps to vary the speed of the motor in a HVAC application with a diversified load	Weighted average of baseline control type on HVAC motor	VFD on HVAC motor	2021	2030	15	53.4%	0.11	---
21003	C&I	RET	RET	ECM Furnace Motors	E		Ventilation		Replace standard fan motor in furnace with ECM motor	PSC Furnace motors	ECM Furnace Motors	2021	2030	15	39.0%	0.18	---
21005	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
21006	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20319
21007	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.22	21007
21007	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.23	21007
21008	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based on cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.00	21008
21008	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based on cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.00	21008
21009	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol sprayers	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21009
21010	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol sprayers	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21010
21103	C&I	MD	NC.RENO.REPL	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≤ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters.	Storage-type electric resistance water heater (≤ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21103	C&I	RET	RET	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≤ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters.	Existing storage-type electric resistance water heater (≤ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21107	C&I	RET	RET	Facet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing, inefficient faucet aerator	Low-flow faucet aerator	2021	2030	10	31.8%	0.01	---
21109	C&I	RET	RET	Pre-Rinse Sprayers	E		Water Heating		Retrofit of working standard pre-rinse sprayers with low-flow, pre-rinse sprayers in commercial kitchen applications.	Existing, inefficient pre-rinse sprayer	Low-flow pre-rinse sprayer	2021	2030	8	47.9%	0.05	---
21114	C&I	MD	NC.RENO.REPL	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20604
21114	C&I	RET	RET	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20600
21116	C&I	RET	RET	Onsite Laundry	E		Water Heating		Onsite laundry systems for large laundromats and facilities with on-site laundry.	Laundry systems without ozone technology	Laundry systems with ozone technology	2021	2030	10	81.0%	0.11	---
21118	C&I	MD	NC.RENO.REPL	Commercial ENERGY STAR Dishwasher	E		Water Heating		Installation of an ENERGY STAR commercial dishwasher	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	24.3%	0.00	20601
21201	C&I	RET	RET	Industrial Process, Drives Improvements	E		Drives		Optimized drive systems for energy efficiency	Existing industrial drive systems	High efficiency industrial drive systems	2021	2030	15	32.5%	0.59	---
21401	C&I	RET	RET	Industrial Process, Compressed Air Systems Improvement	E		Compressed Air Systems		Increase efficiency of compressed air systems	Existing industrial compressed air systems	High efficiency industrial compressed air systems	2021	2030	15	45.0%	0.35	---
21501	C&I	RET	RET	Industrial Process, Process Cooling and Refrigeration Improvement	E		Process Cooling and Refrigeration		Increase the efficiency of industrial process cooling	Existing industrial process cooling systems	High efficiency industrial process cooling systems	2021	2030	15	55.0%	0.17	---
21601	C&I	RET	RET	Industrial Process, Process Heating Improvements	E		Process Heating		Increase efficiency of process heating	Existing industrial process heating systems	High efficiency industrial process heating systems	2021	2030	62	12.6%	0.26	---
21701	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.08	---
21702	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.12	21702
21703	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.48	---
21704	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.25	---
21705	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.76	21705
21706	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.39	21706
21707	C&I	RET	RET	Recommissioning	E		Total Electric		Recommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.23	---
21708	C&I	RET	RET	Recommissioning	E		Total Electric		Recommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.00	21708
21709	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fan coils, an 8:1 turndown ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turndown ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	1.34	---
21710	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fan coils, an 8:1 turndown ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turndown ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	0.00	21710
21711	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.40	---
21711	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.87	---
21712	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.00	21712
21712	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.00	21712
21713	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.56	---
21713	C&I	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	0.45	---
21714	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.88	21714

Appendix D1: Measure Characterizations

Table D6: FE: Penn Power - Measure Characteristics Summary

Measure	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Measure
21714	CAI	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building services. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	1.39	21714
21715	CAI	RET	RET	Industrial Strategic Energy Management	E		Total Electric		Industrial Strategic Energy Management	No SEM	SEM implemented	2021	2030	3	5.0%	0.13	---

## Appendix D1. Measure Characterizations

Table D7: FE: West Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
10101	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Appliances		This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	10101
10102	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher with Gas Secondary Fuel	E	G	Appliances	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR dishwasher with gas water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	12.0%	0.14	--
10103	Res	MD	NC, RENO, REPL	ENERGY STAR Dehumidifier	E		Appliances		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Existing or dehumidifier or new standard dehumidifier meeting the federal minimum standard	New ENERGY STAR dehumidifier	2021	2030	12	27.3%	0.02	--
10105	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	30.8%	1.37	10105
10107	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	30.8%	1.37	--
10108	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Appliances	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and gas drying	2021	2030	11	47.0%	7.65	10108
10109	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Appliances		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	29.5%	0.39	10109
10111	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer with Gas Secondary Fu	E	G	Appliances	Water Heating	This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use gas water heating and electric drying.	Existing or new Non-ENERGY STAR Clothes Washer with gas water heating and electric drying	ENERGY STAR Clothes Washer with gas water heating and electric drying	2021	2030	11	29.5%	0.39	--
10301	Res	MD	NC, RENO, REPL	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing or baseline central AC system with SEER 13	High efficiency central AC system with SEER 16	2021	2030	15	21.3%	2.09	--
10301	Res	RET	RET	Central Air Conditioner	E		Cooling		This measure includes replacement of failed central AC system in existing homes with high efficiency units, as well as installation of high efficiency AC systems in new homes.	Existing central AC system with SEER 12.1	High efficiency central AC system with SEER 16	2021	2030	15	24.4%	10.63	--
10303	Res	RET	RET	Central Air Conditioner Tune Up	E		Cooling		Residential split system air conditioning tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing CAC system that has not received a tune-up within the last 3 years	Existing CAC tune-up	2021	2030	3	5.0%	0.91	--
10305	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10305
10305	Res	RET	RET	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with SEER 13.6	High efficiency air source heat pump system with SEER 18	2021	2030	15	25.0%	0.00	10305
10306	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Cooling		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with SEER 14	High efficiency air source heat pump system with SEER 18	2021	2030	15	24.7%	0.00	10306
10309	Res	RET	RET	Air Source Heat Pump Tune Up	E		Cooling		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.00	10309
10311	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Split or Central A/C with SEER 13	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	44.8%	0.00	10311
10311	Res	RET	RET	Ductless Mini Split Heat Pump	E		Cooling		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Split or Central A/C with SEER 12.1	High efficiency ductless mini split heat pump with SEER 23	2021	2030	15	48.4%	0.00	10311
10313	Res	MD	NC, RENO, REPL	Energy Star Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in residential homes, as well as installation of high efficiency room air conditioning systems in new homes.	Failed or working non-Energy Star Room AC with weighted average Federal standard CEER of 9.9	New Energy Star Room AC with weighted average ENERGYSTAR CEER of 11	2021	2030	9	9.6%	1.18	--
10314	Res	MD	NC	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	1.90	--
10314	Res	RET	RET	Smart Thermostat with Gas Secondary Fuel	E	G	Cooling	Space Heating	This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	1.64	--
10315	Res	MD	NC	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	4.8%	0.00	10918
10315	Res	RET	RET	Smart Thermostat	E		Cooling		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric cooling system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	9.3%	0.00	10918
10316	Res	RET	RET	Duct Sealing	E		Cooling		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system of homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	10.0%	0.00	10919
10318	Res	RET	RET	Wall Insulation	E		Cooling		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Wall insulation with R-value of 8.6	Wall insulation with R-value of 14.6	2021	2030	15	41.1%	0.00	10921
10319	Res	RET	RET	Attic Insulation	E		Cooling		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space sealing.	Attic insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	0.00	10922
10404	Res	RET	RET	ENERGY STAR LED Outdoor Fixture	E		Exterior Lighting		ENERGY STAR LED outdoor fixtures replace less efficient incandescent fixtures in retrofits or new construction. Fixtures are hardwired and use either pin based or screw in lamps.	80W General service incandescent fixtures	34W ENERGY STAR LED exterior fixtures	2021	2030	15	41.7%	0.55	--
10405	Res	RET	RET	LED Holiday Lights	E		Exterior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to exterior lighting and use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New exterior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	--
10406	Res	RET	RET	Lighting Controls	E		Exterior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When motion is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.25	--
10509	Res	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Weighted average of existing T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	5	44.2%	0.31	--
10510	Res	RET	RET	LED Holiday Lights	E		Interior Lighting		This measure includes replacement of failed or working incandescent holiday light strings with new LED holiday light strings. Applicable to interior lighting and use.	Failed or working interior incandescent holiday light strings. Assumes 50 bulbs per string with a weighted average of 174.5W per string.	New interior LED holiday light strings. Assumes 50 bulbs per string with a weighted average of 33W per string.	2021	2030	10	82.5%	0.04	--
10512	Res	RET	RET	Lighting Controls	E		Interior Lighting		Occupancy sensors represent an energy-efficient way to control lighting use in low occupancy areas such as halls, storage rooms, and restrooms. Instead of relying on people to remember to switch lights off when they leave a space, occupancy sensors perform this task. They measure the movement of people within a space. When motion is detected, the lights turn on automatically; they then shut off when they no longer sense movement. Each unit's shut-off time can be preset, given the needs of the space being controlled.	Lighting with no controls	Lighting with controls	2021	2030	10	30.0%	1.83	--
10601	Res	RET	RET	ENERGY STAR Ceiling Fan	E		Other		ENERGY STAR qualified ceiling fan with no light units are over 50% more efficient than conventional fans. They also use improved motors and blade designs. Includes fan-only options.	Existing Non-ENERGY STAR Ceiling Fan	ENERGY STAR Ceiling Fan	2021	2030	15	8.7%	24.49	--
10602	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electronically commutated (EC) circulators (pumps) are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	1.36	--
10603	Res	MD	NC, REPL	ECM Circulation Pump	E		Other		Electronically commutated (EC) circulators (pumps) are high-efficiency brushless DC motors. They are typically fractional horsepower motors that enjoy several benefits over the more common permanent split capacitor (PSC) fractional horsepower motor.	Pump without ECM	ECM Pump	2021	2030	15	82.0%	0.24	--
10604	Res	RET	RET	ECM Blower Motor	E		Other		A retrofit of a less efficient (PSC) motor to a 2-stage BPM or ECM motor in an existing furnace. For retrofits, the target age range for existing furnaces is 10-12 years. This measure characterizes only the electric savings associated with the fan and could be coupled with gas savings associated with a more efficient furnace. Savings improve when the blower is used for cooling as well and when it is used for continuous ventilation, but only if the non-ECM motor would have been used for continuous ventilation too.	Existing furnace with less efficient PSC motor	Existing furnace with 2-stage BPM or ECM motor	2021	2030	15	25.0%	2.05	--
10605	Res	MD	NC, REPL	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Failed or baseline Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.53	--
10605	Res	RET	RET	Variable Speed Pool Pump	E		Other		This measure involves installation of variable speed pool pumps to replace failed single speed units or new installations in place of single speed units.	Working Single speed pool pump	Variable speed pool pump	2021	2030	10	74.3%	0.65	--
10701	Res	RET	RET	Advanced Tier 2 Power Strips	E		Plug Loads		Advanced power strips are power strips that contain a number of controlled sockets and at least one uncontrolled socket. When the appliance that is plugged into the controlled socket is turned off, the power strips shuts off the appliances that are plugged into the controlled sockets. These have recently been renamed Tier 1 power strips. Tier 2 power strips expand on the functionality by using algorithms to monitor the power of all controlled devices, whereas Tier 1 power strips only monitor the master device and turns off peripheral devices accordingly. Tier 2 power strips use infrared (IR) sensing and Root Mean Squared (RMS) power sensing to detect energy consumption from connected devices; Tier 1 power strips only use current sensing. After 1 hour of inactivity, energy savings are delivered by turning off power to inactive devices.	Audio-visual home entertainment systems connected to wall outlet or standard power strip.	Audio-visual home entertainment system connected to advanced Tier 2 power strip.	2021	2030	5	30.0%	0.23	--
10801	Res	MD	NC, RENO, REPL	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Baseline or Failed non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12,875	9.8%	0.44	--
10801	Res	RET	RET	Energy Star Refrigerators and Freezers	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in residential homes, as well as installation of high efficiency refrigerators and freezers in new homes.	Existing non-ENERGY STAR refrigerators or freezers	ENERGY STAR Refrigerator or Freezer	2021	2030	12,875	41.5%	2.97	--
10802	Res	RET	RET	Secondary Refrigerator and Freezer Removal	E		Refrigeration		This measure reflects recycling of refrigerators or freezers without replacement	Existing functional secondary refrigerators or freezers	Remove and recycle secondary refrigerator or freezer	2021	2030	4,584,325	100.0%	0.17	--
10910	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing or baseline air source heat pump system with HSPF 8.2	High efficiency air source heat pump system with HSPF 12	2021	2030	15	31.7%	1.31	10305



## Appendix D1. Measure Characterizations

Table D7. FE: West Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
10910	Res	RET	RET	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed ASHP in existing homes with high efficiency units, as well as installation of ASHP systems in new homes.	Existing air source heat pump system with HSPF 8.2 with HSPF 12.	High efficiency air source heat pump system with HSPF 12.	2021	2030	15	31.7%	3.22	10305
10911	Res	MD	NC, RENO, REPL	Air Source Heat Pump	E		Space Heating		This measure includes replacement of failed Central Air Conditioners in existing homes with electric resistance heat with high efficiency air source heat pump units, as well as installation of ASHP systems in new homes.	Existing electric resistance heating system with HSPF 3.412	High efficiency air source heat pump system with HSPF 18	2021	2030	15	71.6%	0.24	10306
10914	Res	RET	RET	Air Source Heat Pump Tune Up	E		Space Heating		Residential air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing ASHP system that has not received a tune-up within the last 3 years	Existing ASHP tune-up	2021	2030	3	5.0%	0.42	10309
10915	Res	MD	NC, RENO, REPL	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing or baseline Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.06	10311
10916	Res	RET	RET	Ductless Mini Split Heat Pump	E		Space Heating		New or Replacement of Electric Resistance Heating System and Split Central A/C with Ductless Mini Split Heat Pump	Existing Electric Resistance Heating System with HSPF 3.412	High efficiency ductless mini split heat pump with HSPF 12	2021	2030	15	71.8%	0.38	10311
10918	Res	MD	NC, RENO, REPL	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing or baseline Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.19	10312
10918	Res	RET	RET	Ground Source Heat Pump	E		Space Heating		New or Replacement of Electric Heating System and Split Central A/C with Ground Source Heat Pump	Existing Electric Heating System with HSPF 3.412	High efficiency Ground Source Heat Pump with HSPF 10.3	2021	2030	15	66.8%	1.19	10312
10918	Res	MD	NC	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	6.4%	0.29	10918
10918	Res	RET	RET	Smart Thermostat	E		Space Heating		This measure includes the installation of an ENERGY STAR certified connected thermostat in new homes in place of a standard manual or conventional programmable thermostat. The savings associated with this measure assume an electric heating system.	Manual or conventional programmable thermostat	ENERGY STAR certified connected thermostat	2021	2030	11	7.9%	0.39	10918
10919	Res	RET	RET	Duct Sealing	E		Space Heating		Duct Sealing reduces the exfiltration of supply air and infiltration of return air. Sealing of duct work can be accomplished through application of mastic sealant or metal tape to the distribution system of homes with either central air conditioning or a ducted heating system.	Ducted heating and cooling systems with high exfiltration and infiltration	Sealed duct work	2021	2030	15	2.0%	0.79	10919
10920	Res	RET	RET	Air Sealing	E		Space Heating		This measure characterizes increased air sealing for reduction of thermal losses through the building envelope. This measure captures heating savings.	Existing building envelope without additional air sealing	Building envelope with improved air sealing	2021	2030	15	15.0%	0.26	10920
10921	Res	RET	RET	Wall Insulation	E		Space Heating		This measure characterizes increased wall insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Wall insulation with R-value of 8.6	Wall insulation with R-value of 14.6	2021	2030	15	41.1%	3.43	10921
10922	Res	RET	RET	Attic Insulation	E		Space Heating		This measure characterizes increased attic insulation for reduction of thermal losses through the building envelope. This measure captures space heating savings.	Attic insulation with R-value of 18.6	Attic insulation with R-value of 49	2021	2030	15	62.0%	3.31	10922
11103	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
11103	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
11104	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	26.3%	1.81	--
11104	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	68.4%	1.03	--
11105	Res	MD	NC, RENO, REPL	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
11105	Res	RET	RET	Heat Pump Water Heater	E		Water Heating		This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with electric space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	66.6%	1.16	--
11106	Res	MD	NC, RENO, REPL	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Failed or baseline storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	65.5%	0.54	--
11106	Res	RET	RET	Heat Pump Water Heater with Gas Secondary Fuel	E	G	Water Heating	Space Heating	This measure includes replacement of existing storage-type electric resistance water heaters in residential and multifamily buildings with gas space heating with more efficient storage-type electric heat pump water heaters.	Working storage electric water heater with federal minimum efficiency standard (>55 gal)	Efficient storage electric heat pump water heater (>55 gal)	2021	2030	10	66.6%	1.16	--
11109	Res	RET	RET	Water Heater Setback	E		Water Heating		This measure involves turning the water heater set point to 120°F in a residential electric storage water heater. Savings do not occur in applications such as in a shower or faucet where the user adjusts the hot water flow to make up for the lower temperature. Clothes washer hot water use and water heater tank losses are included in the savings calculation, but shower, faucet, and dishwasher use are not included due to expected behavioral and automatic dishwasher adjustments in response to lower water temperature. It is expected that the net energy use for the dish washer hot water will remain the same after a temperature reduction because dishwashers will adjust hot water temperature to necessary levels using internal heating elements. The existing temperature set point is assumed to be 119°F.	Water heater with set point temperature of 130°F	Water heater with set point temperature of 119°F	2021	2030	2	8.5%	0.00	--
11112	Res	RET	RET	Thermostatic Restriction Valve	E		Water Heating		This measure involves installing a thermostatically restricting shower valve that reduces the amount of excess hot shower water during warm-up periods.	Shower with no thermostatic restriction valve	Shower with thermostatic restriction valve	2021	2030	15	12.0%	0.31	--
11117	Res	RET	RET	Pipe Insulation	E		Water Heating		This measure includes installing 3/4" foam insulation on exposed pipe in unconditioned space.	Un-insulated piping of an electric water heating system	Insulated piping of an electric water heating system	2021	2030	13	3.0%	0.34	--
11118	Res	RET	RET	Water Heater Jacket Insulation	E		Water Heating		This measure includes installing a water heater blanket on an electric water storage water heater.	Electric water heater with no insulation jacket	Electric water heater with insulation jacket	2021	2030	7	43.1%	0.18	--
11121	Res	RET	RET	Low Flow Showerhead	E		Water Heating		This measure involves replacing a standard showerhead with a low flow showerhead.	Existing 2.5 GPM showerhead	Low-flow 1.5 GPM showerhead	2021	2030	9	40.0%	0.02	--
11124	Res	RET	RET	Faucet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing 2.2 GPM faucet aerator	Low-flow 1.5 GPM faucet aerator	2021	2030	10	31.8%	0.03	--
11126	Res	MD	NC, RENO, REPL	ENERGY STAR Dishwasher	E		Water Heating	Water Heating	This measure includes installation of a new ENERGY STAR Dishwasher or replacement of an old dishwasher with an ENERGY STAR unit. This measure applies to dishwashers with electric water heating.	Baseline or Existing Non-ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	2021	2030	10	29.7%	0.00	10101
11127	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	12.9%	0.00	10105
11128	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	12.9%	0.00	10106
11130	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and electric drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and electric drying	ENERGY STAR Clothes Washer with electric water heating and electric drying	2021	2030	11	11.3%	0.00	10109
11131	Res	MD	NC, RENO, REPL	ENERGY STAR Clothes Washer	E		Water Heating		This measure includes replacement of failed or working clothes washer in existing homes with ENERGY STAR clothes washers, or installation of an ENERGY STAR clothes washer in a new home. This measure applies to clothes washers that use electric water heating and gas drying.	Existing or non-ENERGY STAR Clothes Washer with electric water heating and gas drying	ENERGY STAR Clothes Washer with electric water heating and gas drying	2021	2030	11	11.3%	0.00	10110
11702	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.7%	0.06	11702
11703	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.7%	0.06	11702
11704	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	1.3%	0.05	11702
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	0.8%	0.00	11702
11706	Res	RET	RET	Home Energy Reports	E		Total Electric		Delivery of asynchronous feedback energy reports on a monthly basis to residential homes	Typical home not receiving HEERs	Typical home receiving HEERs	2021	2030	1	0.3%	0.00	11702
20001	C&I	MD	NC, RENO, REPL	ENERGY STAR Ovens	E		Cooking		Replacement of failed or working electric ovens and ranges with new high efficiency ovens and ranges	Baseline Oven	ENERGY STAR Ovens	2021	2030	12	16.1%	0.07	--
20002	C&I	MD	NC, RENO, REPL	ENERGY STAR Griddles	E		Cooking		Replacement of failed or working electric griddles with new high efficiency griddles	Baseline Griddle	ENERGY STAR Griddle	2021	2030	12	16.2%	0.03	--
20004	C&I	MD	NC, RENO, REPL	ENERGY STAR Steamers	E		Cooking		Replacement of failed or working electric steamers with new high efficiency steamers	Baseline Steamer	ENERGY STAR Steamer	2021	2030	12	57.0%	0.19	--
20006	C&I	MD	NC, RENO, REPL	ENERGY STAR Fryers	E		Cooking		Replacement of failed or working electric fryers with new high efficiency fryers	Baseline Fryers	ENERGY STAR Fryers	2021	2030	12	17.2%	0.10	--
20026	C&I	MD	NC, RENO, REPL	Hot Food Holding Cabinet	E		Cooking		Replacement of failed or working electric hot food holding cabinets with new high efficiency hot food holding cabinets	Baseline Hot Food Holding Cabinet	ENERGY STAR Hot Food Holding Cabinet	2021	2030	12	52.7%	0.52	--
20301	C&I	MD	NC, RENO, REPL	Efficient Unitary AC	E		Cooling		Installation of electric DX split-packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency unitary AC	High-efficiency unitary AC	2021	2030	15	18.2%	0.84	--
20301	C&I	RET	RET	Efficient Unitary AC	E		Cooling		Installation of electric DX split-packaged systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency unitary AC	High-efficiency unitary AC	2021	2030	15	18.2%	9.85	--
20302	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air conditioning rooftop unit involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.74	--
20303	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing RTU system unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	2.48	20303
20303	C&I	RET	RET	Unitary Heat Pump	E		Cooling		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	12.1%	19.00	20303
20304	C&I	RET	RET	AC Tuneup	E		Cooling		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.87	20304
20308	C&I	MD	REPL	MiniSplit Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	35.0%	0.00	20308
20308	C&I	RET	RET	MiniSplit Ductless HP	E		Cooling		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	48.2%	8.07	20308
20309	C&I	MD	NC, RENO, REPL	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Standard efficiency PTAC	High-efficiency PTAC	2021	2030	15	17.2%	0.74	--
20309	C&I	RET	RET	Packaged Terminal AC	E		Cooling		Installation of electric PTAC systems in replacement and new construction applications. This measure analyzes the cooling savings potential of the installation of higher efficiency air-conditioning equipment.	Existing standard efficiency PTAC	High-efficiency PTAC	2021	2030	15	29.3%	3.54	--
20311	C&I	MD	NC	VRF Heat Pump	E		Cooling		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application	ASHPs	VRF Heat Pump	2021	2030	15	23.1%	0.90	20311
20312	C&I	MD	NC, RENO, REPL	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high-efficiency room air conditioners in new buildings.	Standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	9.4%	0.20	--
20312	C&I	RET	RET	Room Air Conditioner	E		Cooling		This measure includes the replacement of failed or working room air conditioners in commercial buildings, as well as installation of high-efficiency room air conditioners in new buildings.	Existing standard efficiency (non-ENERGY STAR) Room AC	High Efficiency (ENERGY STAR) Room AC	2021	2030	9	15.1%	2.46	--

Appendix D1. Measure Characterizations

Table D7. FE: West Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20313	C&I	MD	NC.RENO.REPL	Computer Room Air Conditioner	E		Cooling		This measure analyzes the space cooling savings potential for the replacement or new commissioning of a computer room air conditioner (CRAC). CRACs are installed to meet cooling requirements for computers, servers, and other electronic components.	Standard efficiency CRAC	High-efficiency CRAC	2021	2030	15	23.1%	0.36	---
20314	C&I	MD	REPL	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	3.18	20314
20314	C&I	RET	RET	Ground Source Heat Pump	E		Cooling		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of existing, standard efficiency unitary AC and air source HP	High-efficiency ground source heat pump (GSHP)	2021	2030	15	54.3%	6.43	20314
20315	C&I	MD	NC.RENO.REPL	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	22.6%	1.19	---
20315	C&I	RET	RET	Chiller Systems	E		Cooling		This measure analyzes the space cooling savings potential of the installation of high efficiency chillers including: all air cooled chillers, water cooled screw, scroll, and centrifugal chillers. This measure is applicable to chillers with efficiencies provided at AHRI conditions. The incremental cost is associated with base equipment cost and does not include any installation costs.	Existing, standard efficiency chiller systems	High-efficiency chiller systems	2021	2030	15	54.5%	0.28	---
20316	C&I	RET	RET	Chiller Tuneup	E		Cooling		Commercial air cooled or water chiller tune-up completed in accordance with the following recommended tune-up requirements: <ul style="list-style-type: none"> <li>- Clean condenser coils/tubes</li> <li>- Check cooling tower for scale or buildup</li> <li>- Check contactors condition</li> <li>- Check evaporator condition</li> <li>- Check low-pressure controls</li> <li>- Check high-pressure controls</li> <li>- Check filter, replace as needed</li> <li>- Check belt, replace as needed</li> <li>- Check crankcase heater operation</li> <li>- Check economizer operation</li> </ul>	Existing air cooled or water chiller	Tuned-up existing air cooled or water chiller	2021	2030	5	5.0%	1.28	---
20317	C&I	RET	RET	Unitary Equipment Economizer	E		Cooling		Retrofit of existing equipment or the optional addition of an air-side economizer on new equipment where not required by code. This measure analyzes the cooling savings potential of the installation of an air side economizer on unitary equipment. This measure is applicable to dx and water cooled air systems.	Existing unitary equipment without a functional air side economizer	Existing unitary equipment with a functional air side economizer	2021	2030	10	29.2%	0.82	---
20318	C&I	RET	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20318
20319	C&I	RET	RET	Demand Control Ventilation	E		Cooling		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.88	20319
20320	C&I	RET	RET	Controls for Unitary AC	E		Cooling		Unitary packaged (RTU) systems	Existing RTU without advanced controls	Existing RTU with advanced controls	2021	2030	10	15.0%	0.47	---
20321	C&I	MD	NC.RENO	Optimized UnitaryAC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is mainly a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321
20322	C&I	MD	NC.RENO	Optimized UnitaryAC Distribution/Control System	E		Cooling		High efficiency distribution system for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is mainly a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20322
20323	C&I	MD	NC.RENO	Optimized Chiller Distribution/Control System	E		Cooling		High efficiency distribution system for chiller systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, better design, etc.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	15	35.0%	0.48	---
20324	C&I	RET	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	16.4%	0.30	20324
20325	C&I	RET	RET	Guest Room EM	E		Cooling		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	16.3%	0.31	20325
20326	C&I	MD	NC.RENO	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.04	20326
20327	C&I	MD	NC.RENO	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.04	20327
20327	C&I	RET	RET	Programmable Tstat	E		Cooling		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule without manual intervention. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	9.0%	1.04	20327
20328	C&I	MD	NC.RENO	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.1%	0.62	20328
20328	C&I	RET	RET	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.1%	0.62	20328
20329	C&I	MD	NC.RENO	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.1%	0.62	20329
20329	C&I	RET	RET	Smart Tstat MD	E		Cooling		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, geofencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.1%	0.62	20329
20330	C&I	RET	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aeroseal process.	Over a very broad set of buildings, we measured average duct leakage at 8%.	Generally aerosol duct sealing can seal to less than 2% duct leakage.	2021	2030	15	13.0%	0.00	21009
20331	C&I	RET	RET	Duct Sealing Regulated	E		Cooling		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aeroseal process on pre-screened buildings for high savings.	A subset of buildings have high leakage, nominally 29%. Screening procedures can identify these buildings with good success.	High leakage buildings were sealed from 29% duct leakage to 6% duct leakage.	2021	2030	15	13.0%	0.00	21010
20333	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows.	Standard Windows	High Efficiency Windows	2021	2030	20	15.7%	7.80	20333
20334	C&I	MD	NC.RENO	Windows	E		Cooling		Install high efficiency windows.	Standard Windows	High Efficiency Windows	2021	2030	20	15.7%	7.80	20334
20335	C&I	RET	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain.	Window film	Window film	2021	2030	10	21.1%	5.28	20335
20336	C&I	RET	RET	Window Film	E		Cooling		Add window film to existing windows to reduce solar heat gain.	No window film	Window film	2021	2030	10	21.1%	5.28	20336
20337	C&I	MD	NC.RENO.REPL	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	---
20337	C&I	RET	RET	Fast Acting Doors	E		Cooling		This measure looks at savings from installing fast acting doors separating refrigerated spaces from non-refrigerated spaces.	No Barrier or Strip Curtains or standard door	Fast Acting Doors	2021	2030	12	66.8%	0.69	---
20338	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads.	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20338
20338	C&I	RET	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads.	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20338
20339	C&I	MD	NC.RENO	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads.	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	3.70	20339
20339	C&I	RET	RET	Cool Roof - MD	E		Cooling		White roofing material or coating, to reflect the sun and reduce air-conditioning loads.	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	9.4%	9.62	20339
20401	C&I	MD	NC.REPL	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source.	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.6%	0.10	---
20401	C&I	RET	RET	Exterior Area Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for general area illumination in place of a high-intensity discharge light source.	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	77.6%	0.29	---
20402	C&I	MD	NC.REPL	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source.	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	---
20402	C&I	RET	RET	Street Lighting	E		Exterior Lighting		Installation of an LED outdoor pole/arm- or wall-mounted luminaire or retrofit kit for parking lot or street illumination in place of a high-intensity discharge light source.	Outdoor pole/arm- or wall-mounted luminaire with a high intensity discharge light-source	Outdoor pole/arm- or wall-mounted luminaire with an LED light-source	2021	2030	15	50.0%	0.91	---
20403	C&I	MD	NC	Improved Exterior Lighting Design	E		Exterior Lighting		Reduced light levels and better outdoor lighting design. Includes reduced wattage lamps, better spacing and use of cut-offs and shields to better control light and minimize glare.	Unoptimized exterior lighting design	Optimized exterior lighting design	2021	2030	15	65.5%	0.10	---
20404	C&I	RET	RET	Exterior Lighting Controls	E		Exterior Lighting		Optimized exterior lighting controls.	Existing exterior lighting controls	Optimized exterior lighting controls	2021	2030	8	9.0%	0.17	---
20508	C&I	MD	NC.REPL	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	0.99	---
20508	C&I	RET	RET	LED Linear Fixtures	E		Interior Lighting		LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	43.6%	2.65	---

## Appendix D1. Measure Characterizations

Table D7: FE: West Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20509	C&I	MD	NC, REPL	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	0.82	---
20508	C&I	RET	RET	LED Linear Fixtures with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED linear fixtures are an energy efficient alternative to linear fluorescent fixtures. The LED integrated fixtures offer similar light output with a reduction of energy consumption. Integrated LED fixtures also offer controllability beyond capabilities of linear fluorescent technology and integration with many complex control systems.	Average of typical T8 fluorescent fixtures	LED Linear fluorescent fixture	2021	2030	15	52.5%	2.20	---
20511	C&I	MD	REPL	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.21	---
20511	C&I	RET	RET	LED Tube Replacement Lamps	E		Interior Lighting		LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	48.4%	0.78	---
20512	C&I	MD	REPL	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.18	---
20512	C&I	RET	RET	LED Tube Replacement Lamps with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	LED Tube replacement lamps offer an energy efficient alternative to traditional linear fluorescent lamps. These are available in three types: Underwriters Laboratory (UL) Type A (direct replacement), UL Type B (hard wired), or UL Type C (remote driver). The three variations allow for a retrofit in nearly every linear fluorescent application. Type A tubes contain an internal driver that allows the tube to operate directly from an existing fluorescent ballast. Type B tubes contain an integrated driver that is designed to be powered directly from line voltage supplied to the existing fluorescent fixture. Type C tubes are designed to be powered from a remote driver.	Average of typical T8 fluorescent fixtures	LED tube replacement lamps	2021	2030	12.3333333	58.3%	0.65	---
20514	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	0.72	---
20514	C&I	RET	RET	LED High-bay and Low-bay Systems	E		Interior Lighting		LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	35.6%	2.13	---
20515	C&I	MD	NC, REPL	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	0.60	---
20515	C&I	RET	RET	LED High-bay and Low-bay Systems with Gas Secondary	E	G	Interior Lighting	Space Heating	LED high bay fixtures offer increased efficiency with nearly equivalent light output as compared to linear fluorescent high bay systems. Integrated LED high bays also offer advanced controllability leading to an even greater increase in efficiency.	Average of typical fluorescent high bay fixtures	LED high bay fixtures	2021	2030	15	42.9%	1.77	---
20617	C&I	RET	RET	Exit Sign Retrofits	E		Interior Lighting		Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	71.9%	0.46	---
20618	C&I	RET	RET	Exit Sign Retrofits with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Replace a non-LED exit sign with an LED sign (or replace the lights therein).	Non-LED Exit Sign	LED Exit Sign	2021	2030	15	86.5%	0.39	---
20620	C&I	RET	RET	Interior Detriments	E		Interior Lighting		Remove fluorescent fixtures from multi-lamp fixtures in wall/ceiling areas.	Existing fluorescent fixture in wall/ceiling	Detriments fixture	2021	2030	13	65.1%	0.29	---
20621	C&I	RET	RET	Interior Detriments with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Remove fluorescent fixtures from multi-lamp fixtures in wall/ceiling areas.	Existing fluorescent fixture in wall/ceiling	Detriments fixture	2021	2030	13	102.4%	0.24	---
20622	C&I	RET	RET	Refrigerator/Freezer Case LEDs	E		Interior Lighting		Replace existing vertical and horizontal fluorescent refrigerated case lighting with more efficient LED lighting.	Vertical and horizontal fluorescent refrigerated case lighting	LED fixtures	2021	2030	8	83.8%	0.56	---
20624	C&I	RET	RET	Interior Lighting Controls	E		Interior Lighting		Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration.	Manual control	Average of multiple control types	2021	2030	8	32.3%	1.28	---
20626	C&I	RET	RET	Interior Lighting Controls with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Installation of occupancy sensors and/or daylight sensor lighting controls in perimeter building spaces (open spaces within 10' to 15' of windows) or other areas that have access to daylight infiltration. This measure involves installing occupancy controls for refrigerated cases with internal LED lighting. Without occupancy sensors, case lighting typically runs at 100% power during a control period. Occupancy sensors allow lights to turn fully on only when motion is detected in the store aisle. When no motion is detected for a preset period of time, the lights automatically dim to a lower power state, generating substantial energy savings.	Manual control	Average of multiple control types	2021	2030	8	38.9%	1.06	---
20629	C&I	RET	RET	Refrigerator/Freezer Case Occupancy Controls	E		Interior Lighting		LED refrigerated case lighting with occupancy controls	LED refrigerated case lighting with occupancy controls	LED refrigerated case lighting with occupancy controls	2021	2030	8	46.2%	0.37	---
20631	C&I	MD	NC	Interior Lighting Design	E		Interior Lighting		Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	27.4%	0.99	---
20632	C&I	MD	NC	Interior Lighting Design with Gas Secondary Fuel	E	G	Interior Lighting	Space Heating	Emerging technologies (e.g., LEDs, advanced controls) combined with emphasis on increased overall system efficiency.	Unoptimized interior lighting design	Optimized interior lighting design	2021	2030	15	33.0%	0.82	---
20601	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of a new ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20601
20602	C&I	MD	NC,RENO,REPL	Commercial ENERGY STAR Dishwasher	E		Other		Installation of an ENERGY STAR commercial dishwasher.	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	12.1%	0.34	20602
20603	C&I	MD	NC,RENO,REPL	ENERGY STAR Dehumidifier	E		Other		This measure includes installation of a new ENERGY STAR Dehumidifier or replacement of an old dehumidifier with an ENERGY STAR unit.	Old or previously non-existent dehumidifier	New ENERGY STAR dehumidifier	2021	2030	12	21.9%	0.29	---
20604	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	1.60	20604
20606	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20606
20607	C&I	MD	NC,RENO,REPL	Clothes Washer Gas WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20608
20610	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
20611	C&I	MD	NC,RENO,REPL	Clothes Washer Elec WH	E		Other		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application.	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	8.5%	0.85	20610
20613	C&I	MD	NC,RENO,REPL	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.19	---
20613	C&I	RET	RET	Clothes Dryer	E		Other		High efficiency commercial clothes dryers with moisture sensors.	Existing, standard efficiency (Non-ENERGY STAR) Clothes Washer	High-efficiency (ENERGY STAR) Clothes Washer	2021	2030	14	18.9%	0.93	---
20614	C&I	MD	NC,RENO,REPL	Motors	E		Other		This measure includes one-for-one replacement of working or failed/inefficient 1,200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/inefficient motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.24	---
20614	C&I	RET	RET	Motors	E		Other		This measure includes one-for-one replacement of working or failed/inefficient 1,200 hp motors with motors that meet or exceed NEMA Premium Efficiency levels in industrial and non-industrial applications, as well as installation of motors in new construction. For replacement of working motors, the new motor efficiency must be at least NEMA Premium Efficiency. For replacement of failed/inefficient motors or new construction, the new motor efficiency must exceed NEMA Premium Efficiency.	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	4.6%	1.22	---
20615	C&I	RET	RET	VFDs on HVAC Pumps	E		Other		Installation of VSD on Chilled Water and Hot Water Pumps in HVAC Applications	Weighted average of no control, bypass valves, and fixed speed drives on HVAC pumps.	Variable Speed Drives on HVAC pumps	2021	2030	15	41.8%	0.09	---
20616	C&I	RET	RET	Industrial Process, Other Improvements	E		Other		Increase the efficiency of other misc. process measures	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	---
20617	C&I	RET	RET	Industrial Non-Process, Other Improvements	E		Other		Increase the electrical efficiency of non process end uses other than lighting and space heat & cool throughout facility	Existing industrial misc. systems	High efficiency industrial misc. systems	2021	2030	15	12.6%	0.06	---
20701	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	---
20701	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 1 Advanced Power Strips are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting the standby load of the controlled devices, the overall load of a centralized group of equipment (e.g. a desk workstation) can be reduced.	Standard Power Strip with no controls	Tier 1 Power Strip	2021	2030	7	14.3%	0.00	---
20702	C&I	MD	NC,RENO,REPL	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APS) use an external sensor paired with a configurable countdown timer to manage both active and standby power loads for controlled devices in a complete system. Tier 2 APS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled socket; those with a master control socket sense power for the device connected to the control socket. The external sensor of a Tier 2 APS may utilize an infrared-only sensor, or it may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APS device. Both versions of external sensor use IR filtering to prevent inappropriate switching events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.69	---

## Appendix D1. Measure Characterizations

Table D7. FE: West Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20702	C&I	RET	RET	Advanced Power Strip	E		Plug Loads		Tier 2 Advanced Power Strips (APSS) use an external sensor paired with a configurable countdown timer to manage both active and standby power loads for controlled devices in a complete system. Tier 2 APSS may operate either with or without a master control socket. Those without a master control socket sense power of all devices connected to the controlled sockets; those with a master control socket sense power for the device control socket. The external sensor of a Tier 2 APSS may utilize an infrared-only sensor, or it may utilize a "multi-sensor" which detects both infrared (IR) remote control signals and motion to determine device inactivity and deliver additional savings as compared to a Tier 1 APSS device. Both versions of external sensor use IR filtering to prevent inappropriate activating events which may have otherwise resulted from natural interference such as sunlight or CFL light bulbs.	Standard Power Strip with no controls	Tier 2 Advanced Power Strip	2021	2030	7	17.0%	0.76	--
20703	C&I	RET	RET	Computer Power Management	E		Plug Loads		This measure characterizes average savings from adjustment of computer power management settings by a direct install technician. Computer power management settings, when properly enabled, automatically put the computer and monitor in a low power state when no activity is detected for a certain period of time.	Computer power management controls set by user	Power Management controls set by IT on a top down bases	2021	2030	5	36.0%	0.22	--
20704	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing laptops with ENERGY STAR certified laptops	Non-ENERGY STAR certified laptops	ENERGY STAR certified laptops	2021	2030	4	41.6%	0.00	--
20705	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing PCs with ENERGY STAR certified PCs	Non-ENERGY STAR certified PCs	ENERGY STAR certified PCs	2021	2030	4	43.5%	0.00	--
20706	C&I	MD	REPL	ENERGY STAR Office Equipment	E		Plug Loads		Installation of, or replacement of existing monitors with ENERGY STAR certified monitors	Non-ENERGY STAR certified monitors	ENERGY STAR certified monitors	2021	2030	7	15.4%	0.00	--
20707	C&I	RET	RET	Vending Machine Controls	E		Plug Loads		Installation of automatic shutoff control on non-refrigerated snack vending machines. Controls must include a passive infrared sensor to shut off lighting when the area surrounding the vending machine is unoccupied for fifteen (15) minutes. Controls must be capable of powering up the machine on IR activation to highlight the product offerings.	No Controls on the vending machines	Occupancy sensors turn off lights when no one is around	2021	2030	5	46.0%	0.00	--
20708	C&I	RET	RET	Vending Machine Controls	E		Plug Loads		Installation of automatic shutoff control on refrigerated vending machines. Controls must include a passive infrared sensor to shut off lighting and compressor. Controls must be capable of periodically powering up the machine to maintain product temperature and provide compressor protection.	No Controls on the vending machines	Occupancy sensors and timers turn off lights and refrigeration when no one is around	2021	2030	5	38.0%	0.13	--
20801	C&I	MD	NC, RENO, REPL	ENERGY STAR Refrigerator and Freezer	E		Refrigeration		This measure includes the replacement of failed refrigerators or freezers in commercial buildings, as well as installation of high efficiency refrigerators and freezers in new buildings. New units will include at least no-sweat door controls, evaporator fan motor controls, ECM motors, etc	Federal standard efficiency vertical closed and horizontal closed commercial refrigerators with transparent or solid doors and self-contained condensing units	ENERGY STAR vertical closed and horizontal closed commercial refrigerators with transparent or solid doors and self-contained condensing units	2021	2030	12	24.1%	0.32	--
20802	C&I	MD	NC, RENO, REPL	ENERGY STAR Ice Machine	E		Refrigeration		Commercial ice machines are used in restaurants, hospitals, hotels, schools, offices and grocery stores. ENERGY STAR rates air-cooled ice machines. ENERGY STAR ice machines are designed with higher efficiency compressors and less water than standard ice machines.	Federal standard (manufactured on or after January 28, 2018) compliant commercial ice machine	ENERGY STAR ice machine	2021	2030	8	19.0%	0.09	--
20803	C&I	MD	NC, RENO	High Efficiency Built Up Refrigeration with Gas Seconda	E	G	Refrigeration	Space Heating	High efficiency built-up refrigeration systems for grocery and refrigerated warehouses. This potentially includes HE compressors, better design and controls, HE motors and VFDs.	Standard efficiency built-up refrigeration systems	High efficiency built-up refrigeration systems	2021	2030	10	25.3%	0.48	--
20803	C&I	RET	RET	High Efficiency Built Up Refrigeration with Gas Seconda	E	G	Refrigeration	Space Heating	High efficiency built-up refrigeration systems for grocery and refrigerated warehouses. This potentially includes HE compressors, better design and controls, HE motors and VFDs.	Standard efficiency built-up refrigeration systems	High efficiency built-up refrigeration systems	2021	2030	10	31.4%	2.12	--
20805	C&I	RET	RET	ECM Compressor Condenser Fan Motors	E		Refrigeration		Replacing an existing shaded-pole condenser motor with high efficiency electronically commutated motors (ECM) in a commercial refrigeration system compressor or condensing unit	Existing shaded pole or PSC compressor or condensing unit fan motor	ECM compressor or condensing unit fan motors	2021	2030	15	52.4%	0.10	--
20806	C&I	RET	RET	Evaporator Fan Motor Replacement	E		Refrigeration		Replacement of an existing, working standard-efficiency shaded-pole evaporator fan motor in refrigerated/freezer display cases or walk-in coolers with a high efficiency electronically commutated motor (ECM)	Existing, working standard-efficiency shaded-pole evaporator fan motor in refrigerated/freezer display cases or walk-in coolers	ECM evaporator fan motor in refrigerated/freezer display cases or walk-in coolers	2021	2030	15	58.7%	0.19	--
20807	C&I	MD	NC, RENO	Evaporator Fan Speed Controls	E		Refrigeration		This measure adds controls to vary the speed of evaporator fan motors in walk-in coolers and freezers. The evaporator fans are used to both provide cooling when the compressor is running and to provide air circulation when the compressor is off. The controls provide a lower fan speed during periods when the compressor is off. Alternative control strategy of simple ON/OFF also characterized.	Uncontrolled ECM evaporator fan motors in walk-in coolers and freezers	Controlled ECM evaporator fan motors in walk-in coolers and freezers	2021	2030	15	42.5%	0.20	--
20807	C&I	RET	RET	Evaporator Fan Speed Controls	E		Refrigeration		This measure adds controls to vary the speed of evaporator fan motors in walk-in coolers and freezers. The evaporator fans are used to both provide cooling when the compressor is running and to provide air circulation when the compressor is off. The controls provide a lower fan speed during periods when the compressor is off. Alternative control strategy of simple ON/OFF also characterized.	Uncontrolled PSC, SP, or ECM evaporator fan motors in walk-in coolers and freezers	Controlled PSC, SP, or ECM evaporator fan motors in walk-in coolers and freezers	2021	2030	15	42.2%	0.20	--
20808	C&I	RET	RET	Evaporator Coil Defrost Control	E		Refrigeration		A freezer refrigeration system with electric defrost is set to run the defrost cycle periodically throughout the day. A defrost control uses temperature and pressure sensors to monitor system processes and statistical modeling to determine when defrost is required. When the system calls for a defrost cycle, the controller determines if it is necessary and skips the cycle if it is not.	Freezer refrigeration system with no defrost controls	Freezer refrigeration system with defrost controls	2021	2030	10	44.6%	0.32	--
20809	C&I	RET	RET	Floating Head Pressure Controls	E		Refrigeration		By installing a floating head pressure control (FHPC) condenser system, the refrigeration system can change condensing temperatures in response to different outdoor temperatures.	No floating head pressure control	Install floating head pressure control	2021	2030	15	11.2%	0.11	--
20811	C&I	RET	RET	Anti-Sweat Heat Control	E		Refrigeration		Glass doors on refrigerator and freezer cases can have anti-sweat or anti-condensate heaters in the frames and millions of the cases. These heaters operate continuously in order to prevent condensation/ frosting on the glass and frame that occurs when the surface temperature is below the dew point of the surrounding air. Anti-sweat heater controls control the operation of these heaters so that they do not run continuously when not needed (lower dew point in the air, typically occurs in winter).	Reach-in coolers and freezers with standard, low, or no-heat doors	Reach-in coolers and freezers with anti-sweat heat control	2021	2030	12	57.2%	0.43	--
20818	C&I	RET	RET	Low Heat and No Heat Doors	E		Refrigeration		Replaces standard refrigerated case doors which incorporate electric resistance heaters in the door to prevent condensation from forming on the glass and frost from forming on the door frames with more efficient doors that have a smaller electric resistance heater (low heat) or no heater at all (no heat). Low heat and no heat doors are more efficient due to having three panes of glass, a low conductivity filler gas (such as argon), and/or a low-E coating on the glass.	Standard refrigerated case doors with electric resistance heaters	Refrigerated case low-heat and no-heat doors	2021	2030	12	41.8%	0.18	--
20821	C&I	RET	RET	Walk In Cooler Retrofit	E		Refrigeration		Retrofit of a walk-in cooler to improve system energy efficiency	Standard efficiency existing stock walk-in refrigeration systems	High efficiency walk-in refrigeration systems	2021	2030	15	32.0%	0.56	--
20910	C&I	MD	NC, RENO, REPL	Unitary Heat Pump	E		Space Heating		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	5.1%	0.00	20303
20910	C&I	RET	RET	Unitary Heat Pump	E		Space Heating		Replacement of non-working and working unitary air source heat pump (ASHP). This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing, standard efficiency unitary air source heat pump (ASHP)	High-efficiency unitary air source heat pump (ASHP)	2021	2030	15	5.1%	0.00	20303
20911	C&I	RET	RET	AC Tuneup	E		Space Heating		Commercial air-source heat pump tune-up involves inspection of mechanical/electrical components operation and coils cleaning.	Existing RTU system pre-tune-up	Existing RTU system post-tune-up	2021	2030	5	10.0%	0.00	20304
20913	C&I	MD	REPL	Minisplit Ductless HP	E		Space Heating		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	71.6%	0.54	20308
20913	C&I	RET	RET	Minisplit Ductless HP	E		Space Heating		Replace non-working and working thru-the-wall AC and baseboard electric resistance heat with mini split ductless HP system	Standard efficiency thru-the-wall AC and baseboard electric resistance heat	High-efficiency mini split ductless HP	2021	2030	15	71.6%	0.00	20308
20914	C&I	MD	NC, RENO, REPL	Packaged Terminal Heat Pump	E		Space Heating		Replacement of non-working and working packaged terminal heat pump (PTHP) equipment. This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Standard efficiency packaged terminal heat pump (PTHP) equipment	High-efficiency packaged terminal heat pump (PTHP) equipment	2021	2030	15	17.4%	0.00	20310
20914	C&I	RET	RET	Packaged Terminal Heat Pump	E		Space Heating		Replacement of non-working and working packaged terminal heat pump (PTHP) equipment. This measure analyzes the heating and cooling savings potential of the installation of higher efficiency packaged and split system heat pump equipment.	Existing standard efficiency packaged terminal heat pump (PTHP) equipment	High-efficiency packaged terminal heat pump (PTHP) equipment	2021	2030	15	17.4%	0.00	20310
20915	C&I	MD	REPL	Ground Source Heat Pump	E		Space Heating		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Weighted average of standard efficiency unitary air source heat pumps (ASHP) and electric resistance heat (ASHP)	High-efficiency ground source heat pump (GSHP)	2021	2030	15	70.7%	0.00	20314
20915	C&I	RET	RET	Ground Source Heat Pump	E		Space Heating		Replacement of Electric Heating System and Split Central AC with Ground Source Heat Pump	Existing standard efficiency unitary air source heat pump (ASHP) and electric resistance heat	High-efficiency ground source heat pump (GSHP)	2021	2030	15	70.7%	0.00	20314
20916	C&I	MD	NC	VRF Heat Pump	E		Space Heating		Installation of a variable refrigerant flow heat pump in place of a standard efficiency ASHP in a new construction application.	ASHPs	VRF Heat Pump	2021	2030	15	2.7%	0.00	20311
20917	C&I	MD	NC, RENO	Optimized Unitary AC Distribution/Control System	E		Space Heating		High efficiency distribution systems for unitary systems, based on mix of measures to optimize the total system efficiency. Potentially including controls, economizers, VFDs, VAV, better design, etc. This is mainly a design measure, applicable to NC and large renovation.	New construction standard efficiency unitary HVAC distribution system	New construction high efficiency unitary HVAC distribution system	2021	2030	10	19.3%	0.85	20321
20919	C&I	RET	RET	Demand Control Ventilation	E		Space Heating		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX water-cooled systems.	Existing DX or water cooled air systems without DCV equipment	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
20921	C&I	RET	RET	Guest Room EM	E		Space Heating		Installation of controls to minimize energy costs for guest room HVAC systems. Room temperatures are controlled to reduce energy consumption when a room is unoccupied.	Guest rooms without energy management controls (PTAC w/ electric resistance heat)	Guest rooms with energy management controls	2021	2030	15	16.4%	0.00	20324
20923	C&I	MD	NC, RENO, REPL	Kitchen DCV - MD	E		Space Heating		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	41.3%	0.00	21007
20923	C&I	RET	RET	Kitchen DCV - MD	E		Space Heating		Installation of controls for commercial kitchen hoods to vary the ventilation rate based upon cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	41.3%	0.00	21007
20925	C&I	MD	NC, RENO	Programmable Tstat	E		Space Heating		Replacement of failed or working manual thermostats in existing commercial businesses with programmable thermostats. New units must have the capability to adjust temperature setpoints according to a schedule. An estimate is provided for reduced heating energy consumption through temperature set-back during unoccupied or reduced demand times. Savings are provided for heating only as a literature review has not shown conclusive cooling savings.	Manual thermostat	Programmable thermostat	2021	2030	11	6.8%	0.00	20326
20927	C&I	MD	NC, RENO	Smart Tstat MD	E		Space Heating		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, preferencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.1%	0.00	20328
20927	C&I	RET	RET	Smart Tstat MD	E		Space Heating		Replacement of failed or working programmable thermostats in existing commercial businesses with smart thermostats. This measure includes installation of an analytics capable thermostat. An analytics capable thermostat has additional energy savings features, including coaching, HVAC diagnostics, preferencing, comparative information, demand response capabilities, and customer engagement features.	Non-wifi programmable thermostat	Smart thermostat	2021	2030	11	15.1%	0.00	20328
20929	C&I	RET	RET	Duct Sealing Regulated	E		Space Heating		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol products	Over a very broad set of buildings, we measured average duct leakage at 8%.	Generally aerosol duct sealing can seal to less than 2% duct leakage.	2021	2030	15	5.2%	0.00	21009
20932	C&I	MD	NC, RENO	Windows	E		Space Heating		Install high efficiency windows.	Standard Windows	High Efficiency Windows	2021	2030	20	8.6%	0.00	20333
20934	C&I	RET	RET	Window Film	E		Space Heating		Apply window film to existing windows to reduce solar heat gain	No window film	Window film	2021	2030	10	-27.3%	0.00	20335

## Appendix D1. Measure Characterizations

Table D7: FE: West Penn Power - Measure Characteristics Summary

Meas#	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Meas#
20396	C&I	MD	NC.RENO	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20396
20398	C&I	RET	RET	Cool Roof - MD	E		Space Heating		White roofing material or coating, to reflect the sun and reduce air-conditioning loads	Conventional dark-colored roofing materials	Cool roof materials with high solar reflectance and thermal emittance	2021	2030	15	-2.4%	0.00	20398
21001	C&I	MD	NC.RENO.REPL	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.31	---
21001	C&I	RET	RET	Motors and Fans	E		Ventilation		Replacement of existing motors with high efficiency	Baseline Efficiency per NJ 2018 Protocol p. 82	High Efficiency per NJ 2018 Protocol p. 82	2021	2030	15	2.4%	0.56	---
21002	C&I	RET	RET	VFD on HVAC System	E		Ventilation		Installation of a variable speed drives on HVAC fans and pumps to vary the speed of the motor in a HVAC application with a diversified load	Weighted average of baseline control type on HVAC motor	VFD on HVAC motor	2021	2030	15	53.4%	0.11	---
21003	C&I	RET	RET	ECM Furnace Motors	E		Ventilation		Replace standard fan motor in furnace with ECM motor	PSG Furnace motors	ECM Furnace Motors	2021	2030	15	39.0%	0.18	---
21005	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20318
21006	C&I	RET	RET	Demand Control Ventilation	E		Ventilation		Retrofit of existing equipment or the optional addition of demand control ventilation. This measure analyzes the cooling savings potential of the installation of demand control ventilation on unitary equipment. This measure is applicable to DX and water cooled air systems.	Existing DX or water cooled air systems without DCV	Existing DX or water cooled air systems with DCV	2021	2030	15	34.0%	0.00	20319
21007	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.22	21007
21007	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		DCV in kitchen cooking fan exhaust hoods use VSD and sensors to monitor cooking activity and vary exhaust fan speed based on real time ventilation requirements and reduces building heating and cooling requirements	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.23	21007
21008	C&I	MD	NC.RENO.REPL	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based on cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	58.2%	0.00	21008
21008	C&I	RET	RET	Kitchen DCV - MD	E		Ventilation		Installation of controls for commercial kitchen hoods to vary the ventilation rate based on cooling load, which varies throughout the day. By reducing the kitchen exhaust rate, fan energy savings are possible, and less make-up air is needed which results in heating savings.	No Demand Control Ventilation on Commercial Kitchen	Demand Control Ventilation on Commercial Kitchen	2021	2030	15	57.4%	0.00	21008
21009	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol sprayers	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21009
21010	C&I	RET	RET	Duct Sealing Regulated	E		Ventilation		Seal low and medium pressure ductwork upstream of VAV boxes and reheat coils using Aerosol sprayers	Over a very broad set of buildings, we measured average duct leakage at 8%	Generally airtight duct sealing can seal to less than 2% duct leakage	2021	2030	15	13.0%	1.49	21010
21103	C&I	MD	NC.RENO.REPL	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≥ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters.	Storage-type electric resistance water heater (≥ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21103	C&I	RET	RET	Heat Pump Water Heater	E		Water Heating		Replacement of failed or working storage-type electric resistance water heaters (≥ 120 gallons) in commercial facilities with more efficient storage-type heat pump water heaters.	Existing storage-type electric resistance water heater (≥ 120 gallons)	Storage-type heat pump water heater	2021	2030	10	53.8%	0.82	---
21107	C&I	RET	RET	Faucet Aerator	E		Water Heating		This measure includes replacing an existing faucet aerator with low-flow aerator.	Existing, inefficient faucet aerator	Low-flow faucet aerator	2021	2030	10	31.8%	0.01	---
21109	C&I	RET	RET	Pre-Rinse Sprayers	E		Water Heating		Retrofit of working standard pre-rinse sprayers with low-flow, pre-rinse sprayers in commercial kitchen applications.	Existing, inefficient pre-rinse sprayer	Low-flow pre-rinse sprayer	2021	2030	8	47.9%	0.05	---
21114	C&I	MD	NC.RENO.REPL	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20604
21114	C&I	RET	RET	Clothes Washer Elec WH	E		Water Heating		High efficiency commercial clothes washer replacing standard efficiency unit in a laundromat or institutional application	Existing Non-ENERGY STAR Clothes Washer	ENERGY STAR Clothes Washer	2021	2030	7.1	59.8%	0.00	20610
21116	C&I	RET	RET	Onsite Laundry	E		Water Heating		On-site laundry systems for laundromats and facilities with on-site laundry.	Laundry systems without ozone technology	Laundry systems with ozone technology	2021	2030	10	81.0%	0.11	---
21118	C&I	MD	NC.RENO.REPL	Commercial ENERGY STAR Dishwasher	E		Water Heating		Installation of an ENERGY STAR commercial dishwasher	Standard efficiency commercial dishwasher	ENERGY STAR commercial dishwasher	2021	2030	10	24.3%	0.00	20601
21201	C&I	RET	RET	Industrial Process, Drives Improvements	E		Drives		Optimized drive systems for energy efficiency	Existing industrial drive systems	High efficiency industrial drive systems	2021	2030	15	32.5%	0.59	---
21401	C&I	RET	RET	Industrial Process, Compressed Air Systems Improvements	E		Compressed Air Systems		Increase efficiency of compressed air systems	Existing industrial compressed air systems	High efficiency industrial compressed air systems	2021	2030	15	45.0%	0.35	---
21501	C&I	RET	RET	Industrial Process, Process Cooling and Refrigeration Improvements	E		Process Cooling and Refrigeration		Increase the efficiency of industrial process cooling	Existing industrial process cooling systems	High efficiency industrial process cooling systems	2021	2030	15	55.0%	0.17	---
21601	C&I	RET	RET	Industrial Process, Process Heating Improvements	E		Process Heating		Increase efficiency of process heating	Existing industrial process heating systems	High efficiency industrial process heating systems	2021	2030	62	12.6%	0.26	---
21701	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.08	---
21702	C&I	MD	NC.RENO	Integrated Building Design	E		Total Electric		Integrated Design is a collaborative method of designing buildings so that all the stakeholders' needs can be accounted for in the finished product. Using ID, the connected and interacting parts of a building are incorporated, so that the level to which one system (e.g. lighting) has an effect on another (e.g. cooling) is accounted for and made visible. This concept has been extended to include not just the design process, but the construction and operational phases of a new building including commissioning.	Code Compliant Building	Historically designed building leading to energy savings in new construction	2021	2030	15	22.0%	0.12	21702
21703	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute's and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.49	---
21704	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.25	---
21705	C&I	RET	RET	Deep Energy Retrofit	E		Total Electric		A deep energy retrofit is a whole-building analysis and construction process that achieves much larger energy cost savings than those of simpler energy retrofits such as upgrading lighting and HVAC equipment. In taking a whole-building approach, deep energy retrofits address many systems at once by combining energy efficient measures such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation, and solar control. Resources available to identify deep energy retrofit design opportunities are available from the Rocky Mountain Institute's and Advanced Energy Retrofit Guides are available from the Department of Energy, Office of Energy Efficiency & Renewable Energy.	Existing building with no retrofit	Aggressive retrofit aiming for deep savings	2021	2030	15	35.3%	0.76	21705
21706	C&I	MD	NC.RENO	Commissioning	E		Total Electric		Whole building commissioning of new buildings to ensure optimized design, installation and operation of systems.	Uncommissioned new building	Commissioned new building	2021	2030	8	13.0%	0.39	21706
21707	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.23	---
21708	C&I	RET	RET	RetroCommissioning	E		Total Electric		Retrocommissioning and energy management activities, focusing on operational savings	Current building operations	RCx to identify operational and low cost energy savings	2021	2030	8	6.0%	0.00	21708
21709	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fan coils, an 8:1 turnaround ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turnaround ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	1.34	---
21710	C&I	RET	RET	Replace Pneumatic controls with DDC	E		Total Electric		Solid-state sensors and controllers used in DDC systems have considerable energy-efficiency advantages over conventional pneumatic systems. Substantial advantages are realized in calibration and maintenance, but the critical value lies in the accuracy and reliability of the DDC systems. These features can yield operational energy savings of 15% and greater when compared to the conventional pneumatic system. The inherently precise positioning of valves and dampers with EMCS control loops and blocks are responsible for these energy savings. For instance, to realize the energy-savings opportunity offered by VAV fan coils, an 8:1 turnaround ratio of the exhaust airflow is required. Pneumatic airflow systems typically lose accuracy at 25% of their span, resulting in the capability of only a 4:1 turnaround ratio. Solid-state DDC systems provide the degree of precise airflow measurement and control that enables the operation of these VAV systems.	Pneumatic controls on HVAC system	Direct Digital Controls (DDC) on HVAC System	2021	2030	15	15.0%	0.00	21710
21711	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.40	---
21711	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.87	---
21712	C&I	MD	NC.RENO	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Data Center built to standard building practices	Data Center built with to optimize energy use	2021	2030	15	34.0%	0.00	21712
21712	C&I	RET	RET	Comprehensive Data Center	E		Total Electric		Comprehensive data center design or retrofit for energy efficiency	Existing datacenter	Holistic retrofit aimed at achieving significant energy savings	2021	2030	15	30.0%	0.00	21712
21713	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.56	---
21713	C&I	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	0.45	---
21714	C&I	MD	NC.RENO	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building service. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	17.5%	0.88	21714

Appendix D1. Measure Characterizations

Table D7: FE: West Penn Power - Measure Characteristics Summary

Measure	Sector	Market	Target Markets	Measure Name	Primary Fuel	Secondary Fuel	Primary End Use	Secondary End Use	Measure Description	Baseline Description	Efficient Description	Start Year	End Year	Life	Percent Savings (Primary Fuel)	Inc. Cost Per kWh or MMBtu Saved	Links with Measure
21714	CAI	RET	RET	EMS - MD	E		Total Electric		A BMS/EMS is a microprocessor-based system which provides the facility to control any building services. It works by using intelligent standalone controllers, or outstations, to accurately control plant such as boilers, pumps, fans, lights and security systems in response to changing conditions such as time, temperature and light levels.	No Energy Management System (EMS)	Energy Management System	2021	2030	15	22.0%	1.39	21714
21715	CAI	RET	RET	Industrial Strategic Energy Management	E		Total Electric		Industrial Strategic Energy Management	No SEM	SEM implemented	2021	2030	3	5.0%	0.13	---

## Appendix D2. Measure Characterization Sources

Source #	Source
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55	Northwest Power & Conservation Council Regional Technical Forum. June 3, 2019. "Regional Technical Forum Standard Information Workbook v 4.1". <a href="https://rtf.nwcouncil.org/standard-information-workbook">https://rtf.nwcouncil.org/standard-information-workbook</a>
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59	Northwest Power & Conservation Council Regional Technical Forum. June 3, 2019. "Regional Technical Forum Residential Heat Pump Water Heater V4.1". <a href="https://rtf.nwcouncil.org/measure/hpwh">https://rtf.nwcouncil.org/measure/hpwh</a>
60	Northeast Energy Efficiency Partnerships. May 28, 2014. "Incremental Cost Study Phase Three Final Report - A Report on Five Energy Efficiency Measure Incremental Costs in Six Northeast and Mid-Atlantic Markets". See NEEP ICS 3 Residential Heat Pum Water Heater excel file. <a href="https://neep.org/incremental-cost-study-phase-3-report">https://neep.org/incremental-cost-study-phase-3-report</a>
61	U.S. Energy Information Administration (EIA). 2015. "2015 Residential Energy Consumption Survey". <a href="https://www.eia.gov/consumption/residential/data/2015/">https://www.eia.gov/consumption/residential/data/2015/</a>



## Appendix D2. Measure Characterization Sources

Source #	Source
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63	California Energy Commission. December 2018. "2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings". <a href="https://ww2.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf">https://ww2.energy.ca.gov/2018publications/CEC-400-2018-020/CEC-400-2018-020-CMF.pdf</a>
64	Northeast Energy Efficiency Partnerships. January 2015. "LED Street Lighting Assessment and Strategies for the Northeast and Mid-Atlantic". <a href="https://neep.org/sites/default/files/resources/DOE_LED%20Street%20Lighting%20Assessment%20and%20Strategies%20for%20the%20Northeast%20and%20Mid-Atlantic_1-27-15.pdf">https://neep.org/sites/default/files/resources/DOE_LED%20Street%20Lighting%20Assessment%20and%20Strategies%20for%20the%20Northeast%20and%20Mid-Atlantic_1-27-15.pdf</a>
65	Pacific Northwest National Laboratory. October 2015. "Exterior LED Lighting Projects at Princeton University". Solid-State Lighting Program Building Technologies Office, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy. <a href="https://www.energy.gov/sites/prod/files/2015/10/f27/2015_gateway_princeton-exterior.pdf">https://www.energy.gov/sites/prod/files/2015/10/f27/2015_gateway_princeton-exterior.pdf</a>













## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Single Family_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Duquesne_Single Family_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Duquesne_Single Family_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
Duquesne_Single Family_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Duquesne_Single Family_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Duquesne_Single Family_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Duquesne_Single Family_Cooling_10301	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10303	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10305	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10306	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10309	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10311	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10313	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10314	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Duquesne_Single Family_Cooling_10315	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Duquesne_Single Family_Cooling_10316	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10318	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Cooling_10319	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
Duquesne_Single Family_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Duquesne_Single Family_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Duquesne_Single Family_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730
Duquesne_Single Family_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Duquesne_Single Family_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
Duquesne_Single Family_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.369	0.369
Duquesne_Single Family_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
Duquesne_Single Family_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
Duquesne_Single Family_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Duquesne_Single Family_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Duquesne_Single Family_Space Heating_10910	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Space Heating_10911	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Space Heating_10914	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Space Heating_10915	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Space Heating_10918	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Space Heating_10919	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Space Heating_10920	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Space Heating_10921	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Space Heating_10922	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family_Total Electric_11702	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family_Total Electric_11703	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family_Total Electric_11704	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family_Total Electric_11705	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family_Total Electric_11706	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Single Family_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Duquesne_Single Family_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
Duquesne_Single Family_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Duquesne_Single Family_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Duquesne_Single Family_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
Duquesne_Single Family_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Duquesne_Single Family_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Duquesne_Multifamily_Appliances_10101	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
Duquesne_Multifamily_Appliances_10102	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
Duquesne_Multifamily_Appliances_10103	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.405	0.405
Duquesne_Multifamily_Appliances_10105	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily_Appliances_10107	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily_Appliances_10108	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily_Appliances_10109	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily_Appliances_10111	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily_Cooling_10301	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Cooling_10303	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Cooling_10305	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Cooling_10306	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Cooling_10309	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Cooling_10311	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Cooling_10313	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Cooling_10314	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Duquesne_Multifamily_Cooling_10315	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Duquesne_Multifamily_Cooling_10318	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Cooling_10319	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
Duquesne_Multifamily_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Duquesne_Multifamily_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Duquesne_Multifamily_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
Duquesne_Multifamily_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Duquesne_Multifamily_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Duquesne_Multifamily_Other_10601	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.106	0.106
Duquesne_Multifamily_Other_10602	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.000	0.000
Duquesne_Multifamily_Other_10603	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.625	0.625
Duquesne_Multifamily_Other_10604	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.369	0.369
Duquesne_Multifamily_Other_10605	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.310	0.310
Duquesne_Multifamily_Plug Loads_10701	21.4%	20.5%	12.8%	11.9%	17.1%	16.4%	0.410	0.410
Duquesne_Multifamily_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Duquesne_Multifamily_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Duquesne_Multifamily_Space Heating_10910	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Multifamily_Space Heating_10911	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily_Space Heating_10914	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily_Space Heating_10915	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily_Space Heating_10916	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily_Space Heating_10918	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily_Space Heating_10920	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily_Space Heating_10921	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily_Space Heating_10922	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Duquesne_Multifamily_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
Duquesne_Multifamily_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Duquesne_Multifamily_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Duquesne_Multifamily_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
Duquesne_Multifamily_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Duquesne_Multifamily_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Duquesne_Multifamily_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Duquesne_Multifamily_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Duquesne_Single Family LI_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Duquesne_Single Family LI_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Duquesne_Single Family LI_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
Duquesne_Single Family LI_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Duquesne_Single Family LI_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Duquesne_Single Family LI_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Duquesne_Single Family LI_Cooling_10301	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10303	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10305	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10306	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10309	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10311	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10313	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10314	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Duquesne_Single Family LI_Cooling_10315	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Duquesne_Single Family LI_Cooling_10316	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10318	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Cooling_10319	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Single Family LI_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
Duquesne_Single Family LI_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Duquesne_Single Family LI_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Duquesne_Single Family LI_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Single Family LI_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Duquesne_Single Family LI_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
Duquesne_Single Family LI_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.369	0.369
Duquesne_Single Family LI_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
Duquesne_Single Family LI_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
Duquesne_Single Family LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Duquesne_Single Family LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Duquesne_Single Family LI_Space Heating_10910	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Space Heating_10911	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Space Heating_10914	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Space Heating_10915	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Space Heating_10918	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Space Heating_10919	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Space Heating_10920	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Space Heating_10921	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Space Heating_10922	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Duquesne_Single Family LI_Total Electric_11702	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family LI_Total Electric_11703	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family LI_Total Electric_11704	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family LI_Total Electric_11705	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family LI_Total Electric_11706	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Duquesne_Single Family LI_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family LI_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family LI_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family LI_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family LI_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family LI_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Duquesne_Single Family LI_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Duquesne_Single Family LI_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
Duquesne_Single Family LI_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Duquesne_Single Family LI_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Duquesne_Single Family LI_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
Duquesne_Single Family LI_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Duquesne_Single Family LI_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Duquesne_Multifamily LI_Appliances_10101	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
Duquesne_Multifamily LI_Appliances_10102	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
Duquesne_Multifamily LI_Appliances_10103	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.405	0.405
Duquesne_Multifamily LI_Appliances_10105	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily LI_Appliances_10107	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily LI_Appliances_10108	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily LI_Appliances_10109	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily LI_Appliances_10111	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Duquesne_Multifamily LI_Cooling_10301	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily LI_Cooling_10303	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily LI_Cooling_10305	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Multifamily LI_Cooling_10306	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily LI_Cooling_10309	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily LI_Cooling_10311	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily LI_Cooling_10313	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily LI_Cooling_10314	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Duquesne_Multifamily LI_Cooling_10315	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Duquesne_Multifamily LI_Cooling_10318	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily LI_Cooling_10319	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.369	0.369
Duquesne_Multifamily LI_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
Duquesne_Multifamily LI_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Duquesne_Multifamily LI_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Duquesne_Multifamily LI_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
Duquesne_Multifamily LI_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Duquesne_Multifamily LI_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Duquesne_Multifamily LI_Other_10601	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.106	0.106
Duquesne_Multifamily LI_Other_10602	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.000	0.000
Duquesne_Multifamily LI_Other_10603	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.625	0.625
Duquesne_Multifamily LI_Other_10604	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.369	0.369
Duquesne_Multifamily LI_Other_10605	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.310	0.310
Duquesne_Multifamily LI_Plug Loads_10701	21.4%	20.5%	12.8%	11.9%	17.1%	16.4%	0.410	0.410
Duquesne_Multifamily LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Duquesne_Multifamily LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Duquesne_Multifamily LI_Space Heating_10910	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Space Heating_10911	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Space Heating_10914	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Space Heating_10915	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Space Heating_10916	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Space Heating_10918	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Space Heating_10920	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Space Heating_10921	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Space Heating_10922	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Duquesne_Multifamily LI_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily LI_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily LI_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily LI_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily LI_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily LI_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Duquesne_Multifamily LI_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Duquesne_Multifamily LI_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
Duquesne_Multifamily LI_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Duquesne_Multifamily LI_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Duquesne_Multifamily LI_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
Duquesne_Multifamily LI_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Duquesne_Multifamily LI_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Duquesne_Multifamily LI_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Multifamily LI_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Duquesne_Small Education - College/University_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - College/University_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - College/University_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - College/University_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - College/University_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - College/University_Cooling_20301	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20302	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20303	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20304	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20308	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20309	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20311	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20312	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20313	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	1.000	1.000
Duquesne_Small Education - College/University_Cooling_20314	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20315	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20316	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20317	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20318	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20319	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20320	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20321	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20322	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20323	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20326	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20327	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20328	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20329	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20330	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20331	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20333	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20334	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20335	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20336	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20338	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Cooling_20339	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.480	0.480
Duquesne_Small Education - College/University_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Education - College/University_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Education - College/University_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Education - College/University_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Education - College/University_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - College/University_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - College/University_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - College/University_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Education - College/University_Total Electric_21701	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21702	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21703	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21704	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21705	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21706	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21707	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21708	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21709	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21710	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21711	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
Duquesne_Small Education - College/University_Total Electric_21712	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
Duquesne_Small Education - College/University_Total Electric_21713	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Total Electric_21714	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - College/University_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.420	0.420
Duquesne_Small Education - College/University_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.420	0.420
Duquesne_Small Education - College/University_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.420	0.420
Duquesne_Small Education - College/University_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.420	0.420
Duquesne_Small Education - College/University_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.420	0.420
Duquesne_Small Education - College/University_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Duquesne_Small Education - College/University_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Duquesne_Small Education - College/University_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Duquesne_Small Education - College/University_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Duquesne_Small Education - College/University_Water Heating_21103	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - College/University_Water Heating_21107	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - College/University_Water Heating_21109	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - College/University_Water Heating_21114	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - College/University_Water Heating_21115	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - College/University_Water Heating_21116	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - College/University_Water Heating_21118	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.900	0.900
Duquesne_Small Education - Other_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - Other_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - Other_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - Other_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - Other_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Duquesne_Small Education - Other_Cooling_20301	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20302	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20303	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20304	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20308	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20309	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20311	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20312	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20313	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	1.000	1.000
Duquesne_Small Education - Other_Cooling_20314	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Education - Other_Cooling_20315	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20316	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20317	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20318	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20319	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20320	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20321	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20322	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20323	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20326	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20327	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20328	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20329	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20330	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20331	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20333	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20334	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20335	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20336	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20338	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Cooling_20339	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.180	0.180
Duquesne_Small Education - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Education - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Education - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Education - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Education - Other_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
Duquesne_Small Education - Other_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
Duquesne_Small Education - Other_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
Duquesne_Small Education - Other_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
Duquesne_Small Education - Other_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Duquesne_Small Education - Other_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Duquesne_Small Education - Other_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Duquesne_Small Education - Other_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Duquesne_Small Education - Other_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Education - Other_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Duquesne_Small Education - Other_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Duquesne_Small Education - Other_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Duquesne_Small Education - Other_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Duquesne_Small Education - Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Education - Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Education - Other_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Education - Other_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Education - Other_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
Duquesne_Small Education - Other_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Education - Other_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Education - Other_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Duquesne_Small Education - Other_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Education - Other_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Education - Other_Space Heating_20910	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20911	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20913	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20914	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20915	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20916	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20917	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20919	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20923	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20925	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20927	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20929	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20932	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20934	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Space Heating_20936	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
Duquesne_Small Education - Other_Total Electric_21701	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21702	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21703	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21704	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21705	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21706	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21707	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21708	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21709	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21710	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21711	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
Duquesne_Small Education - Other_Total Electric_21712	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
Duquesne_Small Education - Other_Total Electric_21713	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Total Electric_21714	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
Duquesne_Small Education - Other_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180
Duquesne_Small Education - Other_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Education - Other_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180
Duquesne_Small Education - Other_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180
Duquesne_Small Education - Other_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180
Duquesne_Small Education - Other_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Duquesne_Small Education - Other_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Duquesne_Small Education - Other_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Duquesne_Small Education - Other_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Duquesne_Small Education - Other_Water Heating_21103	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - Other_Water Heating_21107	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - Other_Water Heating_21109	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - Other_Water Heating_21114	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - Other_Water Heating_21115	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - Other_Water Heating_21116	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
Duquesne_Small Education - Other_Water Heating_21118	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.900	0.900
Duquesne_Small Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Duquesne_Small Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Duquesne_Small Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Duquesne_Small Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Duquesne_Small Grocery_Cooling_20301	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20302	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20303	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20304	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20308	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20309	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20311	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20312	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20313	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	1.000	1.000
Duquesne_Small Grocery_Cooling_20317	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20318	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20319	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20320	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20321	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20322	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20326	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20327	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20328	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20329	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20330	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20331	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20333	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20334	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20335	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20336	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20338	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270
Duquesne_Small Grocery_Cooling_20339	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.270	0.270

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Grocery_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Grocery_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Grocery_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Grocery_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Duquesne_Small Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Duquesne_Small Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Duquesne_Small Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Duquesne_Small Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Small Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Grocery_Refrigeration_20803	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Duquesne_Small Grocery_Refrigeration_20805	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Duquesne_Small Grocery_Refrigeration_20806	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Duquesne_Small Grocery_Refrigeration_20807	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.094	0.094
Duquesne_Small Grocery_Refrigeration_20808	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Duquesne_Small Grocery_Refrigeration_20811	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.403	0.403
Duquesne_Small Grocery_Refrigeration_20818	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Duquesne_Small Grocery_Space Heating_20910	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20911	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20913	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20915	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20916	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20917	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20919	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20923	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20925	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20927	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Grocery_Space Heating_20929	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20932	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20934	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Space Heating_20936	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
Duquesne_Small Grocery_Total Electric_21701	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21702	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21703	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21704	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21705	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21706	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21707	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21708	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21709	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21710	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21711	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	1.000	1.000
Duquesne_Small Grocery_Total Electric_21712	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	1.000	1.000
Duquesne_Small Grocery_Total Electric_21713	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Total Electric_21714	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
Duquesne_Small Grocery_Ventilation_21001	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.290	0.290
Duquesne_Small Grocery_Ventilation_21002	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.290	0.290
Duquesne_Small Grocery_Ventilation_21003	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.290	0.290
Duquesne_Small Grocery_Ventilation_21005	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.290	0.290
Duquesne_Small Grocery_Ventilation_21006	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.290	0.290
Duquesne_Small Grocery_Ventilation_21007	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
Duquesne_Small Grocery_Ventilation_21008	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
Duquesne_Small Grocery_Ventilation_21009	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
Duquesne_Small Grocery_Ventilation_21010	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
Duquesne_Small Grocery_Water Heating_21103	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Small Grocery_Water Heating_21107	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Small Grocery_Water Heating_21109	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Small Grocery_Water Heating_21114	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Small Grocery_Water Heating_21115	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Small Grocery_Water Heating_21118	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
Duquesne_Small Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Small Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Small Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Small Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Small Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Small Health - Hospital_Cooling_20301	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20302	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20303	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20304	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20308	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20309	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20311	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Health - Hospital_Cooling_20312	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20313	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	1.000	1.000
Duquesne_Small Health - Hospital_Cooling_20314	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20315	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20316	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20317	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20318	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20319	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20320	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20321	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20322	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20323	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20326	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20327	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20328	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20329	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20330	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20331	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20333	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20334	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20335	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20336	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20338	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Cooling_20339	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Small Health - Hospital_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Health - Hospital_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Health - Hospital_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Health - Hospital_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Duquesne_Small Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Duquesne_Small Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Duquesne_Small Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Duquesne_Small Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Small Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Duquesne_Small Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
Duquesne_Small Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Small Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Small Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Small Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Small Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Small Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Small Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Small Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Small Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Small Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Small Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Small Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Small Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Small Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Small Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Small Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Small Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Small Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Small Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Small Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Small Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Duquesne_Small Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Small Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Small Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Duquesne_Small Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Small Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Small Health - Hospital_Space Heating_20910	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20911	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20913	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20914	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20915	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20916	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20917	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20919	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20923	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20925	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20927	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20929	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20932	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20934	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Space Heating_20936	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Small Health - Hospital_Total Electric_21701	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21702	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Health - Hospital_Total Electric_21703	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21704	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21705	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21706	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21707	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21708	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21709	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21710	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21711	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
Duquesne_Small Health - Hospital_Total Electric_21712	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
Duquesne_Small Health - Hospital_Total Electric_21713	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Total Electric_21714	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Small Health - Hospital_Ventilation_21001	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Small Health - Hospital_Ventilation_21002	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Small Health - Hospital_Ventilation_21003	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Small Health - Hospital_Ventilation_21005	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Small Health - Hospital_Ventilation_21006	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Small Health - Hospital_Ventilation_21007	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
Duquesne_Small Health - Hospital_Ventilation_21008	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
Duquesne_Small Health - Hospital_Ventilation_21009	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
Duquesne_Small Health - Hospital_Ventilation_21010	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
Duquesne_Small Health - Hospital_Water Heating_21103	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Small Health - Hospital_Water Heating_21107	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Small Health - Hospital_Water Heating_21114	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Small Health - Hospital_Water Heating_21115	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Small Health - Hospital_Water Heating_21116	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Small Health - Hospital_Water Heating_21118	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.900	0.900
Duquesne_Small Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Small Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Small Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Small Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Small Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Small Health - Other_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
Duquesne_Small Health - Other_Cooling_20314	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Health - Other_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20326	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20327	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20328	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20329	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Small Health - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Health - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Health - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Health - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Duquesne_Small Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Duquesne_Small Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Duquesne_Small Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Duquesne_Small Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Small Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Duquesne_Small Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Duquesne_Small Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Duquesne_Small Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Health - Other_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20914	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20925	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20927	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Health - Other_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Duquesne_Small Health - Other_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Duquesne_Small Health - Other_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Health - Other_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Small Health - Other_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Small Health - Other_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Health - Other_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Small Health - Other_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Small Health - Other_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Small Health - Other_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Small Health - Other_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Small Health - Other_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Small Health - Other_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Health - Other_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Health - Other_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Health - Other_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Health - Other_Water Heating_21116	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Health - Other_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
Duquesne_Small Industrial Manufacturing_ Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Industrial Manufacturing_ Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Industrial Manufacturing_ Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Industrial Manufacturing_ Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Small Industrial Manufacturing_ Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Institutional/Public Service_Cooling_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Small Institutional/Public Service_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
Duquesne_Small Institutional/Public Service_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Institutional/Public Service_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20326	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20327	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20328	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20329	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Small Institutional/Public Service_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Institutional/Public Service_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Institutional/Public Service_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Institutional/Public Service_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Duquesne_Small Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Duquesne_Small Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Duquesne_Small Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Duquesne_Small Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Small Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Duquesne_Small Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Duquesne_Small Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Duquesne_Small Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Small Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Small Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Duquesne_Small Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Duquesne_Small Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Institutional/Public Service_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20925	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20927	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Small Institutional/Public Service_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Institutional/Public Service_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Duquesne_Small Institutional/Public Service_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Duquesne_Small Institutional/Public Service_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Small Institutional/Public Service_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Small Institutional/Public Service_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Small Institutional/Public Service_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Small Institutional/Public Service_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Small Institutional/Public Service_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Small Institutional/Public Service_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Small Institutional/Public Service_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Small Institutional/Public Service_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Small Institutional/Public Service_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Small Institutional/Public Service_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Institutional/Public Service_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Institutional/Public Service_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Institutional/Public Service_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Institutional/Public Service_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Institutional/Public Service_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
Duquesne_Small Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Small Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Small Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Small Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Small Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Small Lodging_Cooling_20301	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20302	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20303	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20304	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20308	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20309	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20311	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20312	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20313	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Duquesne_Small Lodging_Cooling_20315	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20316	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20317	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20318	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20319	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20320	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20321	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20322	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20323	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20324	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20325	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20326	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Lodging_Cooling_20327	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20328	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20329	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20330	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20331	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20333	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20334	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20335	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20336	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20338	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Cooling_20339	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.830	0.830
Duquesne_Small Lodging_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Lodging_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Lodging_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Lodging_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Duquesne_Small Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Duquesne_Small Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Duquesne_Small Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Duquesne_Small Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Small Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Duquesne_Small Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Duquesne_Small Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
Duquesne_Small Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Small Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Small Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Small Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Small Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Small Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Small Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Small Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Small Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Small Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Small Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Small Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Small Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Small Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Small Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Small Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Small Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Small Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Small Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Small Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Duquesne_Small Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Small Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Small Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Duquesne_Small Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Small Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Small Lodging_Space Heating_20910	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20911	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20913	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20914	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20915	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20916	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20917	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20919	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20921	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20923	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20925	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20927	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20929	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20932	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20934	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Space Heating_20936	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
Duquesne_Small Lodging_Total Electric_21701	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21702	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21703	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21704	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21705	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21706	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21707	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21708	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21709	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21710	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21711	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	1.000	1.000
Duquesne_Small Lodging_Total Electric_21712	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	1.000	1.000
Duquesne_Small Lodging_Total Electric_21713	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
Duquesne_Small Lodging_Total Electric_21714	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Lodging_Ventilation_21001	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.730	0.730
Duquesne_Small Lodging_Ventilation_21002	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.730	0.730
Duquesne_Small Lodging_Ventilation_21003	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.730	0.730
Duquesne_Small Lodging_Ventilation_21005	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.730	0.730
Duquesne_Small Lodging_Ventilation_21006	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.730	0.730
Duquesne_Small Lodging_Ventilation_21007	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Duquesne_Small Lodging_Ventilation_21008	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Duquesne_Small Lodging_Ventilation_21009	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Duquesne_Small Lodging_Ventilation_21010	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Duquesne_Small Lodging_Water Heating_21103	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Small Lodging_Water Heating_21107	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Small Lodging_Water Heating_21109	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Small Lodging_Water Heating_21114	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Small Lodging_Water Heating_21115	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Small Lodging_Water Heating_21116	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Small Lodging_Water Heating_21118	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.900	0.900
Duquesne_Small Miscellaneous/Other_Cooling_20301	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20302	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20303	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20304	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20308	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20309	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20311	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20312	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20313	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	1.000	1.000
Duquesne_Small Miscellaneous/Other_Cooling_20317	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20318	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20319	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20320	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20321	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20322	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20326	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20327	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20328	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20329	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20330	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20331	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20333	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20334	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20335	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20336	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20338	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Cooling_20339	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
Duquesne_Small Miscellaneous/Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Miscellaneous/Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Miscellaneous/Other_ Exterior Lighting_ 20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Miscellaneous/Other_ Exterior Lighting_ 20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Interior Lighting_ 20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Duquesne_Small Miscellaneous/Other_ Other_ 20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Duquesne_Small Miscellaneous/Other_ Other_ 20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Duquesne_Small Miscellaneous/Other_ Other_ 20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
Duquesne_Small Miscellaneous/Other_ Other_ 20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Miscellaneous/Other_ Other_ 20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Miscellaneous/Other_ Other_ 20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Miscellaneous/Other_ Other_ 20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Miscellaneous/Other_ Other_ 20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Miscellaneous/Other_ Other_ 20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Miscellaneous/Other_ Other_ 20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Miscellaneous/Other_ Other_ 20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Miscellaneous/Other_ Plug Loads_ 20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Miscellaneous/Other_ Plug Loads_ 20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Miscellaneous/Other_ Plug Loads_ 20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Miscellaneous/Other_ Plug Loads_ 20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Miscellaneous/Other_ Plug Loads_ 20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Miscellaneous/Other_ Plug Loads_ 20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Miscellaneous/Other_ Plug Loads_ 20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Miscellaneous/Other_ Plug Loads_ 20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Miscellaneous/Other_ Refrigeration_ 20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Miscellaneous/Other_ Refrigeration_ 20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Miscellaneous/Other_ Space Heating_ 20910	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_ Space Heating_ 20911	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_ Space Heating_ 20913	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_ Space Heating_ 20915	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_ Space Heating_ 20916	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_ Space Heating_ 20917	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Miscellaneous/Other_Space Heating_20919	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_Space Heating_20923	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_Space Heating_20925	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_Space Heating_20927	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_Space Heating_20929	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_Space Heating_20932	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_Space Heating_20934	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_Space Heating_20936	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Miscellaneous/Other_Total Electric_21701	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21702	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21703	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21704	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21705	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21706	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21707	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21708	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21709	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21710	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21711	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
Duquesne_Small Miscellaneous/Other_Total Electric_21712	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
Duquesne_Small Miscellaneous/Other_Total Electric_21713	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Total Electric_21714	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Miscellaneous/Other_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.419	0.419
Duquesne_Small Miscellaneous/Other_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.419	0.419
Duquesne_Small Miscellaneous/Other_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.419	0.419
Duquesne_Small Miscellaneous/Other_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.419	0.419
Duquesne_Small Miscellaneous/Other_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.419	0.419
Duquesne_Small Miscellaneous/Other_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
Duquesne_Small Miscellaneous/Other_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
Duquesne_Small Miscellaneous/Other_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
Duquesne_Small Miscellaneous/Other_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
Duquesne_Small Miscellaneous/Other_Water Heating_21103	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Miscellaneous/Other_Water Heating_21107	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Miscellaneous/Other_Water Heating_21109	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Miscellaneous/Other_Water Heating_21114	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Miscellaneous/Other_Water Heating_21115	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Miscellaneous/Other_Water Heating_21118	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.900	0.900
Duquesne_Small Office_Cooking_20201	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Duquesne_Small Office_Cooking_20202	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Duquesne_Small Office_Cooking_20206	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Duquesne_Small Office_Cooling_20301	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20302	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20303	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20304	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20308	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Office_Cooling_20309	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20311	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20312	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20313	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	1.000	1.000
Duquesne_Small Office_Cooling_20314	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20315	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20316	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20317	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20318	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20319	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20320	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20321	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20322	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20323	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20326	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20327	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20328	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20329	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20330	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20331	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20333	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20334	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20335	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20336	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20338	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Cooling_20339	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.350	0.350
Duquesne_Small Office_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Office_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Office_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Office_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Office_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Duquesne_Small Office_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Duquesne_Small Office_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Duquesne_Small Office_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Duquesne_Small Office_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Office_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Duquesne_Small Office_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Duquesne_Small Office_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Duquesne_Small Office_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
Duquesne_Small Office_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Office_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Office_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Office_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Office_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Office_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Office_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Office_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Duquesne_Small Office_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Office_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Office_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Office_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Office_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Office_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Office_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Office_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Duquesne_Small Office_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Small Office_Space Heating_20910	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20911	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20913	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20914	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20915	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20916	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20917	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20919	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20923	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20925	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20927	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20929	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20932	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20934	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Space Heating_20936	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
Duquesne_Small Office_Total Electric_21701	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21702	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21703	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21704	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21705	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21706	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21707	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21708	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21709	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Office_Total Electric_21710	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21711	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
Duquesne_Small Office_Total Electric_21712	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
Duquesne_Small Office_Total Electric_21713	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Total Electric_21714	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
Duquesne_Small Office_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.350	0.350
Duquesne_Small Office_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.350	0.350
Duquesne_Small Office_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.350	0.350
Duquesne_Small Office_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.350	0.350
Duquesne_Small Office_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.350	0.350
Duquesne_Small Office_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
Duquesne_Small Office_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
Duquesne_Small Office_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
Duquesne_Small Office_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
Duquesne_Small Office_Water Heating_21103	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Office_Water Heating_21107	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Office_Water Heating_21109	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Office_Water Heating_21114	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Office_Water Heating_21115	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
Duquesne_Small Office_Water Heating_21118	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.900	0.900
Duquesne_Small Restaurant_Cooking_20201	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Duquesne_Small Restaurant_Cooking_20202	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Duquesne_Small Restaurant_Cooking_20204	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Duquesne_Small Restaurant_Cooking_20206	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Duquesne_Small Restaurant_Cooking_20208	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Duquesne_Small Restaurant_Cooling_20301	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20302	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20303	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20304	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20308	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20309	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20311	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20312	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20313	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	1.000	1.000
Duquesne_Small Restaurant_Cooling_20317	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20318	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20319	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20320	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20321	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20322	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20326	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20327	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20328	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20329	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20330	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Restaurant_Cooling_20331	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20333	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20334	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20335	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20336	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20338	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Cooling_20339	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.490	0.490
Duquesne_Small Restaurant_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Restaurant_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Restaurant_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Restaurant_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Restaurant_Interior Lighting_20508	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20509	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20511	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20512	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20514	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20515	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20517	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
Duquesne_Small Restaurant_Interior Lighting_20518	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
Duquesne_Small Restaurant_Interior Lighting_20520	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20521	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20522	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
Duquesne_Small Restaurant_Interior Lighting_20524	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20525	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20529	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
Duquesne_Small Restaurant_Interior Lighting_20531	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Interior Lighting_20532	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Duquesne_Small Restaurant_Other_20601	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
Duquesne_Small Restaurant_Other_20602	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
Duquesne_Small Restaurant_Other_20603	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.405	0.405
Duquesne_Small Restaurant_Other_20604	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Duquesne_Small Restaurant_Other_20606	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Duquesne_Small Restaurant_Other_20607	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Duquesne_Small Restaurant_Other_20610	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Duquesne_Small Restaurant_Other_20611	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Duquesne_Small Restaurant_Other_20613	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Duquesne_Small Restaurant_Other_20614	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Duquesne_Small Restaurant_Other_20615	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Duquesne_Small Restaurant_Plug Loads_20701	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Restaurant_Plug Loads_20702	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Restaurant_Plug Loads_20703	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Restaurant_Plug Loads_20704	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Restaurant_Plug Loads_20705	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Restaurant_Plug Loads_20706	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Restaurant_Plug Loads_20707	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Restaurant_Plug Loads_20708	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Small Restaurant_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Duquesne_Small Restaurant_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Duquesne_Small Restaurant_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Duquesne_Small Restaurant_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Duquesne_Small Restaurant_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Duquesne_Small Restaurant_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Duquesne_Small Restaurant_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Duquesne_Small Restaurant_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Duquesne_Small Restaurant_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Duquesne_Small Restaurant_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Duquesne_Small Restaurant_Space Heating_20910	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20911	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20913	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20914	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20915	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20916	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20917	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20923	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20925	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20927	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20929	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20932	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20934	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Space Heating_20936	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
Duquesne_Small Restaurant_Total Electric_21701	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21702	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21703	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21704	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21705	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21706	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21707	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21708	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21709	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21710	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21711	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	1.000	1.000
Duquesne_Small Restaurant_Total Electric_21712	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	1.000	1.000
Duquesne_Small Restaurant_Total Electric_21713	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Total Electric_21714	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
Duquesne_Small Restaurant_Ventilation_21001	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.490	0.490
Duquesne_Small Restaurant_Ventilation_21002	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.490	0.490
Duquesne_Small Restaurant_Ventilation_21003	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.490	0.490
Duquesne_Small Restaurant_Ventilation_21007	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
Duquesne_Small Restaurant_Ventilation_21008	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
Duquesne_Small Restaurant_Ventilation_21009	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Restaurant_Ventilation_21010	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
Duquesne_Small Restaurant_Water Heating_21103	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
Duquesne_Small Restaurant_Water Heating_21107	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
Duquesne_Small Restaurant_Water Heating_21109	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
Duquesne_Small Restaurant_Water Heating_21114	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
Duquesne_Small Restaurant_Water Heating_21115	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
Duquesne_Small Restaurant_Water Heating_21118	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.900	0.900
Duquesne_Small Retail_Cooking_20201	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Duquesne_Small Retail_Cooking_20202	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Duquesne_Small Retail_Cooking_20204	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Duquesne_Small Retail_Cooking_20206	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Duquesne_Small Retail_Cooking_20208	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Duquesne_Small Retail_Cooling_20301	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20302	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20303	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20304	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20308	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20309	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20311	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20312	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20313	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	1.000	1.000
Duquesne_Small Retail_Cooling_20317	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20318	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20319	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20320	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20321	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20322	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20326	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20327	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20328	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20329	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20330	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20331	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20333	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20334	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20335	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20336	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20338	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Cooling_20339	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.560	0.560
Duquesne_Small Retail_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Retail_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Retail_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Retail_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Retail_Interior Lighting_20508	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20509	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Retail_Interior Lighting_20511	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20512	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20514	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20515	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20517	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
Duquesne_Small Retail_Interior Lighting_20518	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
Duquesne_Small Retail_Interior Lighting_20520	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20521	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20522	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
Duquesne_Small Retail_Interior Lighting_20524	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20525	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20529	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
Duquesne_Small Retail_Interior Lighting_20531	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Interior Lighting_20532	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Duquesne_Small Retail_Other_20601	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
Duquesne_Small Retail_Other_20602	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
Duquesne_Small Retail_Other_20603	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.405	0.405
Duquesne_Small Retail_Other_20604	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Duquesne_Small Retail_Other_20606	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Duquesne_Small Retail_Other_20607	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Duquesne_Small Retail_Other_20610	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Duquesne_Small Retail_Other_20611	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Duquesne_Small Retail_Other_20613	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Duquesne_Small Retail_Other_20614	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Duquesne_Small Retail_Other_20615	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Duquesne_Small Retail_Plug Loads_20701	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Duquesne_Small Retail_Plug Loads_20702	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Duquesne_Small Retail_Plug Loads_20703	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Duquesne_Small Retail_Plug Loads_20704	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Duquesne_Small Retail_Plug Loads_20705	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Duquesne_Small Retail_Plug Loads_20706	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Duquesne_Small Retail_Plug Loads_20707	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Duquesne_Small Retail_Plug Loads_20708	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Duquesne_Small Retail_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Retail_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Retail_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Retail_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Duquesne_Small Retail_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Retail_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Retail_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Duquesne_Small Retail_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Retail_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Small Retail_Space Heating_20910	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20911	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20913	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Retail_Space Heating_20915	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20916	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20917	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20919	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20923	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20925	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20927	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20929	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20932	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20934	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Space Heating_20936	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
Duquesne_Small Retail_Total Electric_21701	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21702	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21703	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21704	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21705	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21706	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21707	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21708	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21709	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21710	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21711	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	1.000	1.000
Duquesne_Small Retail_Total Electric_21712	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	1.000	1.000
Duquesne_Small Retail_Total Electric_21713	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Total Electric_21714	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
Duquesne_Small Retail_Ventilation_21001	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.540	0.540
Duquesne_Small Retail_Ventilation_21002	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.540	0.540
Duquesne_Small Retail_Ventilation_21003	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.540	0.540
Duquesne_Small Retail_Ventilation_21005	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.540	0.540
Duquesne_Small Retail_Ventilation_21006	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.540	0.540
Duquesne_Small Retail_Ventilation_21007	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
Duquesne_Small Retail_Ventilation_21008	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
Duquesne_Small Retail_Ventilation_21009	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
Duquesne_Small Retail_Ventilation_21010	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
Duquesne_Small Retail_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Retail_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Retail_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Retail_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Retail_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Small Retail_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
Duquesne_Small Warehouse_Cooling_20301	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20302	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20303	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20304	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20308	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Warehouse_Cooling_20309	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20311	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20312	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20313	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Duquesne_Small Warehouse_Cooling_20314	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20315	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20316	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20317	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20318	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20319	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20320	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20321	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20322	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20323	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20326	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20327	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20328	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20329	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20330	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20331	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20333	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20334	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20335	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20336	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20337	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20338	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Cooling_20339	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Small Warehouse_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Warehouse_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Small Warehouse_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Warehouse_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Small Warehouse_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Duquesne_Small Warehouse_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Duquesne_Small Warehouse_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Small Warehouse_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Warehouse_Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Duquesne_Small Warehouse_Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Duquesne_Small Warehouse_Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
Duquesne_Small Warehouse_Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Warehouse_Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Warehouse_Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Warehouse_Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Warehouse_Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Warehouse_Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Warehouse_Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Warehouse_Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Small Warehouse_Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Small Warehouse_Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Small Warehouse_Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Small Warehouse_Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Small Warehouse_Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Small Warehouse_Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Small Warehouse_Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Small Warehouse_Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Small Warehouse_Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Small Warehouse_Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Small Warehouse_Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Small Warehouse_Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
Duquesne_Small Warehouse_Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Small Warehouse_Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
Duquesne_Small Warehouse_Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Small Warehouse_Space Heating_20910	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20911	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20913	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20914	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20915	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20916	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20917	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20919	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20923	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20925	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20927	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20929	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20932	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20934	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Space Heating_20936	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Small Warehouse_Total Electric_21701	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21702	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21703	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21704	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Small Warehouse_Total Electric_21705	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21706	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21707	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21708	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21709	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21710	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21711	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
Duquesne_Small Warehouse_Total Electric_21712	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
Duquesne_Small Warehouse_Total Electric_21713	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Total Electric_21714	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Small Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Small Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Small Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Small Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Small Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Small Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Duquesne_Small Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Duquesne_Small Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Duquesne_Small Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Duquesne_Small Warehouse_Water Heating_21103	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Small Warehouse_Water Heating_21107	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Small Warehouse_Water Heating_21109	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Small Warehouse_Water Heating_21114	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Small Warehouse_Water Heating_21115	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Small Warehouse_Water Heating_21118	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.900	0.900
Duquesne_Large Education - College/University_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - College/University_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - College/University_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - College/University_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - College/University_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - College/University_Cooling_20301	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20302	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20303	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20304	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20308	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20309	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20311	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20312	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20313	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	1.000	1.000
Duquesne_Large Education - College/University_Cooling_20314	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20315	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20316	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20317	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20318	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20319	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Education - College/University_Cooling_20320	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20321	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20322	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20323	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20330	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20331	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20333	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20334	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20335	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20336	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20338	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Cooling_20339	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.480	0.480
Duquesne_Large Education - College/University_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Education - College/University_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Education - College/University_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Education - College/University_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Education - College/University_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Duquesne_Large Education - College/University_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Duquesne_Large Education - College/University_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Duquesne_Large Education - College/University_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Duquesne_Large Education - College/University_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - College/University_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - College/University_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - College/University_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - College/University_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - College/University_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - College/University_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - College/University_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - College/University_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - College/University_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - College/University_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - College/University_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - College/University_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - College/University_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Education - College/University_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - College/University_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - College/University_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Duquesne_Large Education - College/University_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - College/University_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - College/University_Space Heating_20910	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20911	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20913	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20914	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20915	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20916	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20917	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20919	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20923	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20929	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20932	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20934	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Space Heating_20936	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - College/University_Total Electric_21701	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21702	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21703	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21704	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21705	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21706	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21707	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21708	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21709	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21710	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21711	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
Duquesne_Large Education - College/University_Total Electric_21712	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
Duquesne_Large Education - College/University_Total Electric_21713	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Total Electric_21714	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - College/University_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.420	0.420
Duquesne_Large Education - College/University_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.420	0.420
Duquesne_Large Education - College/University_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.420	0.420
Duquesne_Large Education - College/University_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.420	0.420
Duquesne_Large Education - College/University_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.420	0.420
Duquesne_Large Education - College/University_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Duquesne_Large Education - College/University_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Duquesne_Large Education - College/University_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Duquesne_Large Education - College/University_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Duquesne_Large Education - College/University_Water Heating_21103	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - College/University_Water Heating_21107	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - College/University_Water Heating_21109	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - College/University_Water Heating_21114	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Education - College/University_Water Heating_21115	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - College/University_Water Heating_21116	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - College/University_Water Heating_21118	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
Duquesne_Large Education - Other_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - Other_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - Other_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - Other_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - Other_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Duquesne_Large Education - Other_Cooling_20301	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20302	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20303	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20304	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20308	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20309	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20311	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20312	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20313	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	1.000	1.000
Duquesne_Large Education - Other_Cooling_20314	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20315	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20316	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20317	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20318	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20319	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20320	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20321	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20322	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20323	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20330	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20331	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20333	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20334	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20335	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20336	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20338	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Cooling_20339	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.180	0.180
Duquesne_Large Education - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Education - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Education - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Education - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Education - Other_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Education - Other_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Duquesne_Large Education - Other_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Duquesne_Large Education - Other_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Duquesne_Large Education - Other_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Duquesne_Large Education - Other_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Duquesne_Large Education - Other_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - Other_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - Other_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - Other_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - Other_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - Other_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - Other_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - Other_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Duquesne_Large Education - Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - Other_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - Other_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - Other_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
Duquesne_Large Education - Other_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - Other_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - Other_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Duquesne_Large Education - Other_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - Other_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Education - Other_Space Heating_20910	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20911	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20913	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20914	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20915	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20916	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20917	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20919	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20923	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20929	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20932	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20934	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Space Heating_20936	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
Duquesne_Large Education - Other_Total Electric_21701	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21702	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21703	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21704	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Education - Other_Total Electric_21705	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21706	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21707	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21708	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21709	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21710	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21711	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
Duquesne_Large Education - Other_Total Electric_21712	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
Duquesne_Large Education - Other_Total Electric_21713	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Total Electric_21714	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
Duquesne_Large Education - Other_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
Duquesne_Large Education - Other_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
Duquesne_Large Education - Other_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
Duquesne_Large Education - Other_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
Duquesne_Large Education - Other_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
Duquesne_Large Education - Other_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Duquesne_Large Education - Other_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Duquesne_Large Education - Other_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Duquesne_Large Education - Other_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Duquesne_Large Education - Other_Water Heating_21103	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - Other_Water Heating_21107	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - Other_Water Heating_21109	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - Other_Water Heating_21114	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - Other_Water Heating_21115	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - Other_Water Heating_21116	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
Duquesne_Large Education - Other_Water Heating_21118	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
Duquesne_Large Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Duquesne_Large Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Duquesne_Large Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Duquesne_Large Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Duquesne_Large Grocery_Cooling_20301	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20302	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20303	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20304	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20308	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20309	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20311	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20312	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20313	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	1.000	1.000
Duquesne_Large Grocery_Cooling_20317	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20318	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20319	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20320	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20321	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20322	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Grocery_Cooling_20330	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20331	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20333	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20334	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20335	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20336	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20338	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Cooling_20339	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.270	0.270
Duquesne_Large Grocery_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Grocery_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Grocery_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Grocery_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Duquesne_Large Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Duquesne_Large Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Duquesne_Large Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Duquesne_Large Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Duquesne_Large Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Large Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Large Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Large Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Large Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Large Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Large Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Large Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Duquesne_Large Grocery_Refrigeration_20803	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Duquesne_Large Grocery_Refrigeration_20805	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Duquesne_Large Grocery_Refrigeration_20806	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Duquesne_Large Grocery_Refrigeration_20807	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.094	0.094
Duquesne_Large Grocery_Refrigeration_20808	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Duquesne_Large Grocery_Refrigeration_20811	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.403	0.403
Duquesne_Large Grocery_Refrigeration_20818	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Duquesne_Large Grocery_Space Heating_20910	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20911	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Grocery_Space Heating_20913	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20915	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20916	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20917	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20919	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20923	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20929	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20932	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20934	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Space Heating_20936	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
Duquesne_Large Grocery_Total Electric_21701	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21702	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21703	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21704	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21705	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21706	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21707	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21708	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21709	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21710	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21711	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	1.000	1.000
Duquesne_Large Grocery_Total Electric_21712	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	1.000	1.000
Duquesne_Large Grocery_Total Electric_21713	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Total Electric_21714	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
Duquesne_Large Grocery_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.290	0.290
Duquesne_Large Grocery_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.290	0.290
Duquesne_Large Grocery_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.290	0.290
Duquesne_Large Grocery_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.290	0.290
Duquesne_Large Grocery_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.290	0.290
Duquesne_Large Grocery_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Duquesne_Large Grocery_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Duquesne_Large Grocery_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Duquesne_Large Grocery_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Duquesne_Large Grocery_Water Heating_21103	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Large Grocery_Water Heating_21107	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Large Grocery_Water Heating_21109	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Large Grocery_Water Heating_21114	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Large Grocery_Water Heating_21115	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
Duquesne_Large Grocery_Water Heating_21118	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
Duquesne_Large Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Large Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Large Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Large Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Large Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Duquesne_Large Health - Hospital_Cooling_20301	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Health - Hospital_Cooling_20302	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20303	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20304	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20308	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20309	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20311	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20312	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20313	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	1.000	1.000
Duquesne_Large Health - Hospital_Cooling_20314	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20315	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20316	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20317	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20318	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20319	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20320	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20321	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20322	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20323	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20330	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20331	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20333	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20334	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20335	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20336	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20338	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Cooling_20339	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.390	0.390
Duquesne_Large Health - Hospital_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Health - Hospital_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Health - Hospital_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Health - Hospital_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Duquesne_Large Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Duquesne_Large Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Duquesne_Large Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Duquesne_Large Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Duquesne_Large Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Duquesne_Large Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Duquesne_Large Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
Duquesne_Large Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Large Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Large Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Large Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Large Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Large Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Large Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Large Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Duquesne_Large Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Large Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Large Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Large Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Large Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Large Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Large Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Large Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Duquesne_Large Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Large Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Large Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Large Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Large Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Duquesne_Large Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Large Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Large Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Duquesne_Large Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Large Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Duquesne_Large Health - Hospital_Space Heating_20910	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20911	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20913	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20914	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20915	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20916	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20917	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20919	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20923	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20929	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20932	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20934	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Space Heating_20936	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
Duquesne_Large Health - Hospital_Total Electric_21701	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21702	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Health - Hospital_Total Electric_21703	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21704	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21705	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21706	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21707	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21708	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21709	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21710	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21711	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
Duquesne_Large Health - Hospital_Total Electric_21712	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
Duquesne_Large Health - Hospital_Total Electric_21713	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Total Electric_21714	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
Duquesne_Large Health - Hospital_Ventilation_21001	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Large Health - Hospital_Ventilation_21002	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Large Health - Hospital_Ventilation_21003	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Large Health - Hospital_Ventilation_21005	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Large Health - Hospital_Ventilation_21006	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.450	0.450
Duquesne_Large Health - Hospital_Ventilation_21007	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
Duquesne_Large Health - Hospital_Ventilation_21008	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
Duquesne_Large Health - Hospital_Ventilation_21009	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
Duquesne_Large Health - Hospital_Ventilation_21010	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
Duquesne_Large Health - Hospital_Water Heating_21103	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Large Health - Hospital_Water Heating_21107	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Large Health - Hospital_Water Heating_21114	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Large Health - Hospital_Water Heating_21115	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Large Health - Hospital_Water Heating_21116	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
Duquesne_Large Health - Hospital_Water Heating_21118	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.900	0.900
Duquesne_Large Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Large Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Large Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Large Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Large Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Large Health - Other_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
Duquesne_Large Health - Other_Cooling_20314	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Health - Other_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.320	0.320
Duquesne_Large Health - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Health - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Health - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Health - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Duquesne_Large Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Duquesne_Large Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Duquesne_Large Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Duquesne_Large Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Duquesne_Large Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Duquesne_Large Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Duquesne_Large Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Duquesne_Large Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Health - Other_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20914	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Health - Other_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Duquesne_Large Health - Other_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Duquesne_Large Health - Other_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Health - Other_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Large Health - Other_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Large Health - Other_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Large Health - Other_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Large Health - Other_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.290	0.290
Duquesne_Large Health - Other_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Large Health - Other_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Large Health - Other_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Large Health - Other_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Health - Other_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Health - Other_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Health - Other_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Health - Other_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Health - Other_Water Heating_21116	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Health - Other_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
Duquesne_Large Industrial Manufacturing_ Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Industrial Manufacturing_ Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Industrial Manufacturing_ Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Industrial Manufacturing_ Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Duquesne_Large Industrial Manufacturing_ Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Institutional/Public Service_Cooling_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Duquesne_Large Institutional/Public Service_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
Duquesne_Large Institutional/Public Service_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Institutional/Public Service_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.560	0.560
Duquesne_Large Institutional/Public Service_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Institutional/Public Service_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Institutional/Public Service_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Institutional/Public Service_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Duquesne_Large Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Duquesne_Large Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Duquesne_Large Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Duquesne_Large Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Duquesne_Large Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Duquesne_Large Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Duquesne_Large Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Duquesne_Large Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Duquesne_Large Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Duquesne_Large Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Duquesne_Large Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Duquesne_Large Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Duquesne_Large Institutional/Public Service_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
Duquesne_Large Institutional/Public Service_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Duquesne_Large Institutional/Public Service_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Duquesne_Large Institutional/Public Service_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
Duquesne_Large Institutional/Public Service_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Large Institutional/Public Service_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Large Institutional/Public Service_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Large Institutional/Public Service_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Large Institutional/Public Service_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.560	0.560
Duquesne_Large Institutional/Public Service_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Large Institutional/Public Service_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Large Institutional/Public Service_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Institutional/Public Service_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
Duquesne_Large Institutional/Public Service_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Institutional/Public Service_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Institutional/Public Service_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Institutional/Public Service_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Institutional/Public Service_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
Duquesne_Large Institutional/Public Service_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
Duquesne_Large Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Large Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Large Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Large Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Large Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Duquesne_Large Lodging_Cooling_20301	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20302	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20303	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20304	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20308	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20309	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20311	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20312	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20313	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	1.000	1.000
Duquesne_Large Lodging_Cooling_20315	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20316	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20317	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20318	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20319	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20320	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20321	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20322	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20323	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20324	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20325	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20330	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20331	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20333	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20334	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20335	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20336	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20338	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Cooling_20339	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.830	0.830
Duquesne_Large Lodging_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Lodging_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Lodging_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Lodging_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Duquesne_Large Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Duquesne_Large Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Duquesne_Large Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Duquesne_Large Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Duquesne_Large Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Duquesne_Large Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Duquesne_Large Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
Duquesne_Large Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Large Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Large Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Large Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Large Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Large Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Large Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Large Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Duquesne_Large Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Large Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Large Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Large Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Large Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Large Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Large Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Large Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Duquesne_Large Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Large Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Large Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Large Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Large Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Duquesne_Large Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Large Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Large Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Duquesne_Large Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Large Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Duquesne_Large Lodging_Space Heating_20910	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Lodging_Space Heating_20911	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20913	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20914	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20915	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20916	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20917	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20919	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20921	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20923	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20929	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20932	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20934	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Space Heating_20936	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
Duquesne_Large Lodging_Total Electric_21701	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21702	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21703	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21704	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21705	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21706	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21707	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21708	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21709	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21710	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21711	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	1.000	1.000
Duquesne_Large Lodging_Total Electric_21712	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	1.000	1.000
Duquesne_Large Lodging_Total Electric_21713	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Total Electric_21714	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
Duquesne_Large Lodging_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.730	0.730
Duquesne_Large Lodging_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.730	0.730
Duquesne_Large Lodging_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.730	0.730
Duquesne_Large Lodging_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.730	0.730
Duquesne_Large Lodging_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.730	0.730
Duquesne_Large Lodging_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Duquesne_Large Lodging_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Duquesne_Large Lodging_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Duquesne_Large Lodging_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Duquesne_Large Lodging_Water Heating_21103	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Large Lodging_Water Heating_21107	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Large Lodging_Water Heating_21109	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Large Lodging_Water Heating_21114	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Large Lodging_Water Heating_21115	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Large Lodging_Water Heating_21116	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
Duquesne_Large Lodging_Water Heating_21118	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.900	0.900
Duquesne_Large Miscellaneous/Other_Cooling_20301	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20302	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Miscellaneous/Other_Cooling_20303	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20304	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20308	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20309	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20311	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20312	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20313	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	1.000	1.000
Duquesne_Large Miscellaneous/Other_Cooling_20317	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20318	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20319	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20320	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20321	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20322	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20330	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20331	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20333	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20334	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20335	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20336	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20338	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Cooling_20339	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
Duquesne_Large Miscellaneous/Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Miscellaneous/Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Miscellaneous/Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Miscellaneous/Other_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Duquesne_Large Miscellaneous/Other_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Duquesne_Large Miscellaneous/Other_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Duquesne_Large Miscellaneous/Other_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Duquesne_Large Miscellaneous/Other_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Duquesne_Large Miscellaneous/Other_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Duquesne_Large Miscellaneous/Other_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Duquesne_Large Miscellaneous/Other_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
Duquesne_Large Miscellaneous/Other_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Miscellaneous/Other_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Miscellaneous/Other_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Miscellaneous/Other_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Miscellaneous/Other_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Miscellaneous/Other_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Miscellaneous/Other_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Miscellaneous/Other_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Miscellaneous/Other_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Miscellaneous/Other_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Miscellaneous/Other_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Miscellaneous/Other_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Miscellaneous/Other_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Miscellaneous/Other_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Miscellaneous/Other_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Miscellaneous/Other_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Miscellaneous/Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Miscellaneous/Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Miscellaneous/Other_Total Electric_21701	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21702	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21703	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21704	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21705	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21706	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21707	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21708	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21709	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21710	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21711	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
Duquesne_Large Miscellaneous/Other_Total Electric_21712	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
Duquesne_Large Miscellaneous/Other_Total Electric_21713	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Total Electric_21714	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Miscellaneous/Other_Ventilation_21001	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.419	0.419
Duquesne_Large Miscellaneous/Other_Ventilation_21002	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.419	0.419

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Miscellaneous/Other_Ventilation_21003	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.419	0.419
Duquesne_Large Miscellaneous/Other_Ventilation_21005	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.419	0.419
Duquesne_Large Miscellaneous/Other_Ventilation_21006	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.419	0.419
Duquesne_Large Miscellaneous/Other_Ventilation_21007	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
Duquesne_Large Miscellaneous/Other_Ventilation_21008	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
Duquesne_Large Miscellaneous/Other_Ventilation_21009	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
Duquesne_Large Miscellaneous/Other_Ventilation_21010	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
Duquesne_Large Miscellaneous/Other_Water Heating_21103	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Miscellaneous/Other_Water Heating_21107	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Miscellaneous/Other_Water Heating_21109	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Miscellaneous/Other_Water Heating_21114	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Miscellaneous/Other_Water Heating_21115	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Miscellaneous/Other_Water Heating_21118	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.900	0.900
Duquesne_Large Office_Cooking_20201	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Duquesne_Large Office_Cooking_20202	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Duquesne_Large Office_Cooking_20206	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Duquesne_Large Office_Cooling_20301	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20302	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20303	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20304	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20308	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20309	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20311	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20312	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20313	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	1.000	1.000
Duquesne_Large Office_Cooling_20314	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20315	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20316	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20317	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20318	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20319	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20320	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20321	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20322	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20323	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20330	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20331	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20333	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20334	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20335	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20336	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20338	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Cooling_20339	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.350	0.350
Duquesne_Large Office_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Office_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Office_ Exterior Lighting_ 20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Office_ Exterior Lighting_ 20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Office_ Interior Lighting_ 20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Duquesne_Large Office_ Interior Lighting_ 20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Duquesne_Large Office_ Interior Lighting_ 20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Duquesne_Large Office_ Interior Lighting_ 20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Duquesne_Large Office_ Interior Lighting_ 20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Interior Lighting_ 20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Duquesne_Large Office_ Other_ 20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Duquesne_Large Office_ Other_ 20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Duquesne_Large Office_ Other_ 20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
Duquesne_Large Office_ Other_ 20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Office_ Other_ 20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Office_ Other_ 20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Office_ Other_ 20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Office_ Other_ 20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Office_ Other_ 20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Office_ Other_ 20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Office_ Other_ 20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Duquesne_Large Office_ Plug Loads_ 20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Office_ Plug Loads_ 20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Office_ Plug Loads_ 20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Office_ Plug Loads_ 20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Office_ Plug Loads_ 20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Office_ Plug Loads_ 20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Office_ Plug Loads_ 20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Office_ Plug Loads_ 20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Duquesne_Large Office_ Refrigeration_ 20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Duquesne_Large Office_ Space Heating_ 20910	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_ Space Heating_ 20911	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_ Space Heating_ 20913	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_ Space Heating_ 20914	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_ Space Heating_ 20915	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_ Space Heating_ 20916	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_ Space Heating_ 20917	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Office_Space Heating_20919	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_Space Heating_20923	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_Space Heating_20929	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_Space Heating_20932	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_Space Heating_20934	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_Space Heating_20936	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
Duquesne_Large Office_Total Electric_21701	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21702	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21703	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21704	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21705	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21706	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21707	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21708	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21709	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21710	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21711	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
Duquesne_Large Office_Total Electric_21712	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
Duquesne_Large Office_Total Electric_21713	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Total Electric_21714	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
Duquesne_Large Office_Ventilation_21001	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.350	0.350
Duquesne_Large Office_Ventilation_21002	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.350	0.350
Duquesne_Large Office_Ventilation_21003	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.350	0.350
Duquesne_Large Office_Ventilation_21005	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.350	0.350
Duquesne_Large Office_Ventilation_21006	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.350	0.350
Duquesne_Large Office_Ventilation_21007	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
Duquesne_Large Office_Ventilation_21008	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
Duquesne_Large Office_Ventilation_21009	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
Duquesne_Large Office_Ventilation_21010	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
Duquesne_Large Office_Water Heating_21103	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Office_Water Heating_21107	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Office_Water Heating_21109	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Office_Water Heating_21114	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Office_Water Heating_21115	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
Duquesne_Large Office_Water Heating_21118	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.900	0.900
Duquesne_Large Retail_Cooking_20201	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Duquesne_Large Retail_Cooking_20202	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Duquesne_Large Retail_Cooking_20204	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Duquesne_Large Retail_Cooking_20206	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Duquesne_Large Retail_Cooking_20208	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Duquesne_Large Retail_Cooling_20301	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20302	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20303	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20304	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20308	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Retail_Cooling_20309	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20311	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20312	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20313	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Duquesne_Large Retail_Cooling_20317	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20318	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20319	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20320	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20321	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20322	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20330	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20331	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20333	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20334	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20335	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20336	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20338	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Cooling_20339	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.560	0.560
Duquesne_Large Retail_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Retail_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Retail_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Retail_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Retail_Interior Lighting_20508	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20509	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20511	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20512	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20514	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20515	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20517	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
Duquesne_Large Retail_Interior Lighting_20518	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
Duquesne_Large Retail_Interior Lighting_20520	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20521	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20522	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
Duquesne_Large Retail_Interior Lighting_20524	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20525	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20529	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
Duquesne_Large Retail_Interior Lighting_20531	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Interior Lighting_20532	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Duquesne_Large Retail_Other_20601	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
Duquesne_Large Retail_Other_20602	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
Duquesne_Large Retail_Other_20603	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.405	0.405
Duquesne_Large Retail_Other_20604	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Duquesne_Large Retail_Other_20606	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Duquesne_Large Retail_Other_20607	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Duquesne_Large Retail_Other_20610	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Retail_Other_20611	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Duquesne_Large Retail_Other_20613	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Duquesne_Large Retail_Other_20614	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Duquesne_Large Retail_Other_20615	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Duquesne_Large Retail_Plug Loads_20701	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Duquesne_Large Retail_Plug Loads_20702	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Duquesne_Large Retail_Plug Loads_20703	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Duquesne_Large Retail_Plug Loads_20704	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Duquesne_Large Retail_Plug Loads_20705	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Duquesne_Large Retail_Plug Loads_20706	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Duquesne_Large Retail_Plug Loads_20707	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Duquesne_Large Retail_Plug Loads_20708	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Duquesne_Large Retail_Refrigeration_20801	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Duquesne_Large Retail_Refrigeration_20805	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Duquesne_Large Retail_Refrigeration_20806	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Duquesne_Large Retail_Refrigeration_20807	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.094	0.094
Duquesne_Large Retail_Refrigeration_20808	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Duquesne_Large Retail_Refrigeration_20809	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Duquesne_Large Retail_Refrigeration_20811	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.403	0.403
Duquesne_Large Retail_Refrigeration_20818	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Duquesne_Large Retail_Refrigeration_20821	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Duquesne_Large Retail_Space Heating_20910	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20911	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20913	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20915	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20916	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20917	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20919	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20923	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20929	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20932	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20934	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Space Heating_20936	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
Duquesne_Large Retail_Total Electric_21701	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21702	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21703	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21704	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21705	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21706	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21707	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21708	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21709	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21710	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21711	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	1.000	1.000
Duquesne_Large Retail_Total Electric_21712	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Retail_Total Electric_21713	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Total Electric_21714	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
Duquesne_Large Retail_Ventilation_21001	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.540	0.540
Duquesne_Large Retail_Ventilation_21002	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.540	0.540
Duquesne_Large Retail_Ventilation_21003	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.540	0.540
Duquesne_Large Retail_Ventilation_21005	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.540	0.540
Duquesne_Large Retail_Ventilation_21006	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.540	0.540
Duquesne_Large Retail_Ventilation_21007	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Duquesne_Large Retail_Ventilation_21008	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Duquesne_Large Retail_Ventilation_21009	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Duquesne_Large Retail_Ventilation_21010	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Duquesne_Large Retail_Water Heating_21103	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
Duquesne_Large Retail_Water Heating_21107	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
Duquesne_Large Retail_Water Heating_21109	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
Duquesne_Large Retail_Water Heating_21114	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
Duquesne_Large Retail_Water Heating_21115	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
Duquesne_Large Retail_Water Heating_21118	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.900	0.900
Duquesne_Large Warehouse_Cooling_20301	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20302	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20303	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20304	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20308	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20309	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20311	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20312	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20313	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Duquesne_Large Warehouse_Cooling_20314	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20315	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20316	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20317	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20318	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20319	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20320	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20321	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20322	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20323	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20330	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20331	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20333	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20334	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20335	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20336	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20337	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20338	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230
Duquesne_Large Warehouse_Cooling_20339	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.230	0.230

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Warehouse_ Exterior Lighting_ 20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Warehouse_ Exterior Lighting_ 20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
Duquesne_Large Warehouse_ Exterior Lighting_ 20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Warehouse_ Exterior Lighting_ 20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
Duquesne_Large Warehouse_ Interior Lighting_ 20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Duquesne_Large Warehouse_ Interior Lighting_ 20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Duquesne_Large Warehouse_ Interior Lighting_ 20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Interior Lighting_ 20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Duquesne_Large Warehouse_ Other_ 20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Duquesne_Large Warehouse_ Other_ 20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Duquesne_Large Warehouse_ Other_ 20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
Duquesne_Large Warehouse_ Other_ 20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Warehouse_ Other_ 20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Warehouse_ Other_ 20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Warehouse_ Other_ 20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Warehouse_ Other_ 20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Warehouse_ Other_ 20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Warehouse_ Other_ 20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Warehouse_ Other_ 20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Duquesne_Large Warehouse_ Plug Loads_ 20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Large Warehouse_ Plug Loads_ 20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Large Warehouse_ Plug Loads_ 20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Large Warehouse_ Plug Loads_ 20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Large Warehouse_ Plug Loads_ 20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Large Warehouse_ Plug Loads_ 20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Large Warehouse_ Plug Loads_ 20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Large Warehouse_ Plug Loads_ 20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Duquesne_Large Warehouse_ Refrigeration_ 20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Large Warehouse_ Refrigeration_ 20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Large Warehouse_ Refrigeration_ 20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Large Warehouse_ Refrigeration_ 20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
Duquesne_Large Warehouse_ Refrigeration_ 20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Large Warehouse_ Refrigeration_ 20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
Duquesne_Large Warehouse_ Refrigeration_ 20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Duquesne_Large Warehouse_ Space Heating_ 20910	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Duquesne_Large Warehouse_Space Heating_20911	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20913	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20914	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20915	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20916	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20917	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20919	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20923	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20929	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20932	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20934	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Space Heating_20936	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
Duquesne_Large Warehouse_Total Electric_21701	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21702	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21703	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21704	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21705	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21706	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21707	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21708	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21709	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21710	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21711	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
Duquesne_Large Warehouse_Total Electric_21712	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
Duquesne_Large Warehouse_Total Electric_21713	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Total Electric_21714	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
Duquesne_Large Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Large Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Large Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Large Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Large Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.230	0.230
Duquesne_Large Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Duquesne_Large Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Duquesne_Large Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Duquesne_Large Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Duquesne_Large Warehouse_Water Heating_21103	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Large Warehouse_Water Heating_21107	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Large Warehouse_Water Heating_21109	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Large Warehouse_Water Heating_21114	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Large Warehouse_Water Heating_21115	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
Duquesne_Large Warehouse_Water Heating_21118	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Single Family_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Met-Ed_Single Family_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Met-Ed_Single Family_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
Met-Ed_Single Family_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Met-Ed_Single Family_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Met-Ed_Single Family_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Met-Ed_Single Family_Cooling_10301	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10303	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10305	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10306	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10309	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10311	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10313	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10314	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Met-Ed_Single Family_Cooling_10315	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Met-Ed_Single Family_Cooling_10316	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10318	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Cooling_10319	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
Met-Ed_Single Family_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Met-Ed_Single Family_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Met-Ed_Single Family_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730
Met-Ed_Single Family_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Met-Ed_Single Family_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
Met-Ed_Single Family_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.418	0.418
Met-Ed_Single Family_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
Met-Ed_Single Family_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
Met-Ed_Single Family_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Met-Ed_Single Family_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Met-Ed_Single Family_Space Heating_10910	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Space Heating_10911	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Space Heating_10914	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Space Heating_10915	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Space Heating_10918	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Space Heating_10919	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Space Heating_10920	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Space Heating_10921	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Space Heating_10922	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family_Total Electric_11702	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family_Total Electric_11703	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family_Total Electric_11704	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family_Total Electric_11705	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family_Total Electric_11706	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Single Family_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Met-Ed_Single Family_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
Met-Ed_Single Family_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Met-Ed_Single Family_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Met-Ed_Single Family_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
Met-Ed_Single Family_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Met-Ed_Single Family_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Met-Ed_Multifamily_Appliances_10101	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
Met-Ed_Multifamily_Appliances_10102	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
Met-Ed_Multifamily_Appliances_10103	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.405	0.405
Met-Ed_Multifamily_Appliances_10105	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily_Appliances_10107	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily_Appliances_10108	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily_Appliances_10109	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily_Appliances_10111	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily_Cooling_10301	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Cooling_10303	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Cooling_10305	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Cooling_10306	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Cooling_10309	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Cooling_10311	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Cooling_10313	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Cooling_10314	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Met-Ed_Multifamily_Cooling_10315	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Met-Ed_Multifamily_Cooling_10318	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Cooling_10319	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
Met-Ed_Multifamily_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Met-Ed_Multifamily_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Met-Ed_Multifamily_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
Met-Ed_Multifamily_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Met-Ed_Multifamily_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Met-Ed_Multifamily_Other_10601	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.106	0.106
Met-Ed_Multifamily_Other_10602	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.000	0.000
Met-Ed_Multifamily_Other_10603	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.625	0.625
Met-Ed_Multifamily_Other_10604	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.418	0.418
Met-Ed_Multifamily_Other_10605	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.310	0.310
Met-Ed_Multifamily_Plug Loads_10701	21.4%	20.5%	12.8%	11.9%	17.1%	16.4%	0.410	0.410
Met-Ed_Multifamily_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Met-Ed_Multifamily_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Met-Ed_Multifamily_Space Heating_10910	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Multifamily_Space Heating_10911	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily_Space Heating_10914	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily_Space Heating_10915	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily_Space Heating_10916	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily_Space Heating_10918	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily_Space Heating_10920	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily_Space Heating_10921	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily_Space Heating_10922	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Met-Ed_Multifamily_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
Met-Ed_Multifamily_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Met-Ed_Multifamily_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Met-Ed_Multifamily_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
Met-Ed_Multifamily_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Met-Ed_Multifamily_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Met-Ed_Multifamily_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Met-Ed_Multifamily_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Met-Ed_Single Family LI_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Met-Ed_Single Family LI_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Met-Ed_Single Family LI_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
Met-Ed_Single Family LI_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Met-Ed_Single Family LI_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Met-Ed_Single Family LI_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Met-Ed_Single Family LI_Cooling_10301	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10303	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10305	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10306	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10309	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10311	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10313	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10314	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Met-Ed_Single Family LI_Cooling_10315	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Met-Ed_Single Family LI_Cooling_10316	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10318	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Cooling_10319	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Single Family LI_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
Met-Ed_Single Family LI_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Met-Ed_Single Family LI_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Met-Ed_Single Family LI_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Single Family LI_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Met-Ed_Single Family LI_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
Met-Ed_Single Family LI_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.418	0.418
Met-Ed_Single Family LI_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
Met-Ed_Single Family LI_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
Met-Ed_Single Family LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Met-Ed_Single Family LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Met-Ed_Single Family LI_Space Heating_10910	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Space Heating_10911	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Space Heating_10914	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Space Heating_10915	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Space Heating_10918	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Space Heating_10919	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Space Heating_10920	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Space Heating_10921	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Space Heating_10922	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
Met-Ed_Single Family LI_Total Electric_11702	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family LI_Total Electric_11703	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family LI_Total Electric_11704	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family LI_Total Electric_11705	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family LI_Total Electric_11706	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
Met-Ed_Single Family LI_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family LI_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family LI_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family LI_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family LI_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family LI_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Met-Ed_Single Family LI_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Met-Ed_Single Family LI_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
Met-Ed_Single Family LI_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Met-Ed_Single Family LI_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Met-Ed_Single Family LI_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
Met-Ed_Single Family LI_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Met-Ed_Single Family LI_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Met-Ed_Multifamily LI_Appliances_10101	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
Met-Ed_Multifamily LI_Appliances_10102	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
Met-Ed_Multifamily LI_Appliances_10103	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.405	0.405
Met-Ed_Multifamily LI_Appliances_10105	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily LI_Appliances_10107	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily LI_Appliances_10108	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily LI_Appliances_10109	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily LI_Appliances_10111	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
Met-Ed_Multifamily LI_Cooling_10301	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily LI_Cooling_10303	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily LI_Cooling_10305	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Multifamily LI_Cooling_10306	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily LI_Cooling_10309	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily LI_Cooling_10311	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily LI_Cooling_10313	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily LI_Cooling_10314	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Met-Ed_Multifamily LI_Cooling_10315	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
Met-Ed_Multifamily LI_Cooling_10318	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily LI_Cooling_10319	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.418	0.418
Met-Ed_Multifamily LI_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
Met-Ed_Multifamily LI_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Met-Ed_Multifamily LI_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Met-Ed_Multifamily LI_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
Met-Ed_Multifamily LI_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Met-Ed_Multifamily LI_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Met-Ed_Multifamily LI_Other_10601	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.106	0.106
Met-Ed_Multifamily LI_Other_10602	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.000	0.000
Met-Ed_Multifamily LI_Other_10603	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.625	0.625
Met-Ed_Multifamily LI_Other_10604	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.418	0.418
Met-Ed_Multifamily LI_Other_10605	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.310	0.310
Met-Ed_Multifamily LI_Plug Loads_10701	21.4%	20.5%	12.8%	11.9%	17.1%	16.4%	0.410	0.410
Met-Ed_Multifamily LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Met-Ed_Multifamily LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Met-Ed_Multifamily LI_Space Heating_10910	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Space Heating_10911	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Space Heating_10914	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Space Heating_10915	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Space Heating_10916	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Space Heating_10918	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Space Heating_10920	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Space Heating_10921	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Space Heating_10922	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
Met-Ed_Multifamily LI_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily LI_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily LI_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily LI_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily LI_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily LI_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Met-Ed_Multifamily LI_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
Met-Ed_Multifamily LI_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
Met-Ed_Multifamily LI_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Met-Ed_Multifamily LI_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Met-Ed_Multifamily LI_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
Met-Ed_Multifamily LI_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Met-Ed_Multifamily LI_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Met-Ed_Multifamily LI_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Multifamily LI_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Met-Ed_Small Education - College/University_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - College/University_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - College/University_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - College/University_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - College/University_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - College/University_Cooling_20301	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20302	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20303	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20304	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20308	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20309	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20311	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20312	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20313	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	1.000	1.000
Met-Ed_Small Education - College/University_Cooling_20314	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20315	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20316	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20317	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20318	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20319	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20320	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20321	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20322	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20323	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20326	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20327	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20328	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20329	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20330	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20331	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20333	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20334	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20335	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20336	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20338	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Cooling_20339	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.490	0.490
Met-Ed_Small Education - College/University_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Education - College/University_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Education - College/University_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Education - College/University_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Education - College/University_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - College/University_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - College/University_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - College/University_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450





## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Education - College/University_Total Electric_21701	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21702	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21703	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21704	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21705	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21706	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21707	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21708	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21709	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21710	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21711	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	1.000	1.000
Met-Ed_Small Education - College/University_Total Electric_21712	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	1.000	1.000
Met-Ed_Small Education - College/University_Total Electric_21713	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Total Electric_21714	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - College/University_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.446	0.446
Met-Ed_Small Education - College/University_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.446	0.446
Met-Ed_Small Education - College/University_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.446	0.446
Met-Ed_Small Education - College/University_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.446	0.446
Met-Ed_Small Education - College/University_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.446	0.446
Met-Ed_Small Education - College/University_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Met-Ed_Small Education - College/University_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Met-Ed_Small Education - College/University_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Met-Ed_Small Education - College/University_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Met-Ed_Small Education - College/University_Water Heating_21103	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - College/University_Water Heating_21107	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - College/University_Water Heating_21109	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - College/University_Water Heating_21114	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - College/University_Water Heating_21115	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - College/University_Water Heating_21116	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - College/University_Water Heating_21118	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.900	0.900
Met-Ed_Small Education - Other_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - Other_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - Other_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - Other_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - Other_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Met-Ed_Small Education - Other_Cooling_20301	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20302	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20303	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20304	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20308	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20309	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20311	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20312	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20313	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	1.000	1.000
Met-Ed_Small Education - Other_Cooling_20314	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Education - Other_Cooling_20315	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20316	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20317	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20318	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20319	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20320	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20321	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20322	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20323	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20326	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20327	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20328	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20329	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20330	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20331	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20333	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20334	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20335	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20336	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20338	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Cooling_20339	85.3%	7.1%	0.0%	0.0%	7.4%	0.1%	0.172	0.172
Met-Ed_Small Education - Other_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Education - Other_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Education - Other_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Education - Other_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Education - Other_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
Met-Ed_Small Education - Other_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
Met-Ed_Small Education - Other_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
Met-Ed_Small Education - Other_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
Met-Ed_Small Education - Other_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Met-Ed_Small Education - Other_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Met-Ed_Small Education - Other_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Met-Ed_Small Education - Other_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Met-Ed_Small Education - Other_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Education - Other_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Met-Ed_Small Education - Other_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Met-Ed_Small Education - Other_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Met-Ed_Small Education - Other_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Met-Ed_Small Education - Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Education - Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Education - Other_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Education - Other_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Education - Other_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
Met-Ed_Small Education - Other_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Education - Other_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Education - Other_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Met-Ed_Small Education - Other_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Education - Other_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Education - Other_Space Heating_20910	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20911	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20913	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20914	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20915	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20916	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20917	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20919	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20923	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20925	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20927	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20929	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20932	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20934	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Space Heating_20936	0.0%	0.0%	39.4%	32.5%	17.2%	10.9%	0.000	0.000
Met-Ed_Small Education - Other_Total Electric_21701	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21702	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21703	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21704	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21705	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21706	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21707	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21708	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21709	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21710	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21711	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	1.000	1.000
Met-Ed_Small Education - Other_Total Electric_21712	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	1.000	1.000
Met-Ed_Small Education - Other_Total Electric_21713	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Total Electric_21714	29.7%	8.9%	15.3%	10.7%	22.2%	13.2%	0.275	0.275
Met-Ed_Small Education - Other_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.163	0.163
Met-Ed_Small Education - Other_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.163	0.163

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Education - Other_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.163	0.163
Met-Ed_Small Education - Other_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.163	0.163
Met-Ed_Small Education - Other_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.163	0.163
Met-Ed_Small Education - Other_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Met-Ed_Small Education - Other_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Met-Ed_Small Education - Other_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Met-Ed_Small Education - Other_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
Met-Ed_Small Education - Other_Water Heating_21103	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - Other_Water Heating_21107	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - Other_Water Heating_21109	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - Other_Water Heating_21114	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - Other_Water Heating_21115	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - Other_Water Heating_21116	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.465	0.465
Met-Ed_Small Education - Other_Water Heating_21118	30.9%	7.8%	21.2%	5.6%	27.5%	7.0%	0.900	0.900
Met-Ed_Small Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Met-Ed_Small Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Met-Ed_Small Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Met-Ed_Small Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Met-Ed_Small Grocery_Cooling_20301	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20302	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20303	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20304	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20308	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20309	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20311	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20312	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20313	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	1.000	1.000
Met-Ed_Small Grocery_Cooling_20317	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20318	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20319	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20320	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20321	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20322	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20326	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20327	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20328	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20329	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20330	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20331	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20333	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20334	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20335	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20336	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20338	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257
Met-Ed_Small Grocery_Cooling_20339	33.2%	33.3%	4.4%	2.1%	15.6%	11.3%	0.257	0.257

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Grocery_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Grocery_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Grocery_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Grocery_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Met-Ed_Small Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Met-Ed_Small Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Met-Ed_Small Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Met-Ed_Small Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Small Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Grocery_Refrigeration_20803	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Met-Ed_Small Grocery_Refrigeration_20805	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Met-Ed_Small Grocery_Refrigeration_20806	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Met-Ed_Small Grocery_Refrigeration_20807	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.094	0.094
Met-Ed_Small Grocery_Refrigeration_20808	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Met-Ed_Small Grocery_Refrigeration_20811	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.403	0.403
Met-Ed_Small Grocery_Refrigeration_20818	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Met-Ed_Small Grocery_Space Heating_20910	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20911	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20913	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20915	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20916	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20917	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20919	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20923	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20925	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20927	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Grocery_Space Heating_20929	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20932	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20934	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Space Heating_20936	0.0%	0.0%	4.5%	91.3%	0.0%	4.2%	0.000	0.000
Met-Ed_Small Grocery_Total Electric_21701	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21702	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21703	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21704	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21705	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21706	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21707	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21708	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21709	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21710	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21711	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	1.000	1.000
Met-Ed_Small Grocery_Total Electric_21712	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	1.000	1.000
Met-Ed_Small Grocery_Total Electric_21713	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Total Electric_21714	23.2%	23.0%	11.1%	10.3%	16.6%	15.6%	0.952	0.952
Met-Ed_Small Grocery_Ventilation_21001	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.245	0.245
Met-Ed_Small Grocery_Ventilation_21002	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.245	0.245
Met-Ed_Small Grocery_Ventilation_21003	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.245	0.245
Met-Ed_Small Grocery_Ventilation_21005	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.245	0.245
Met-Ed_Small Grocery_Ventilation_21006	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.245	0.245
Met-Ed_Small Grocery_Ventilation_21007	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.883	0.883
Met-Ed_Small Grocery_Ventilation_21008	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.883	0.883
Met-Ed_Small Grocery_Ventilation_21009	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.883	0.883
Met-Ed_Small Grocery_Ventilation_21010	19.7%	21.8%	11.9%	13.5%	15.7%	17.5%	0.883	0.883
Met-Ed_Small Grocery_Water Heating_21103	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Small Grocery_Water Heating_21107	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Small Grocery_Water Heating_21109	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Small Grocery_Water Heating_21114	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Small Grocery_Water Heating_21115	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Small Grocery_Water Heating_21118	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
Met-Ed_Small Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Small Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Small Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Small Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Small Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Small Health - Hospital_Cooling_20301	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20302	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20303	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20304	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20308	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20309	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20311	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Health - Hospital_Cooling_20312	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20313	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	1.000	1.000
Met-Ed_Small Health - Hospital_Cooling_20314	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20315	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20316	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20317	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20318	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20319	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20320	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20321	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20322	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20323	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20326	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20327	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20328	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20329	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20330	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20331	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20333	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20334	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20335	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20336	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20338	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Cooling_20339	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Small Health - Hospital_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Health - Hospital_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Health - Hospital_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Health - Hospital_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Met-Ed_Small Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Met-Ed_Small Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Met-Ed_Small Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Met-Ed_Small Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Small Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Met-Ed_Small Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
Met-Ed_Small Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Small Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Small Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Small Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Small Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Small Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Small Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Small Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Small Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Small Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Small Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Small Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Small Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Small Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Small Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Small Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Small Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Small Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Small Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Small Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Small Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Met-Ed_Small Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Small Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Small Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Met-Ed_Small Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Small Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Small Health - Hospital_Space Heating_20910	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20911	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20913	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20914	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20915	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20916	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20917	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20919	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20923	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20925	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20927	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20929	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20932	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20934	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Space Heating_20936	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Small Health - Hospital_Total Electric_21701	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21702	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Health - Hospital_Total Electric_21703	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21704	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21705	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21706	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21707	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21708	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21709	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21710	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21711	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	1.000	1.000
Met-Ed_Small Health - Hospital_Total Electric_21712	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	1.000	1.000
Met-Ed_Small Health - Hospital_Total Electric_21713	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Total Electric_21714	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Small Health - Hospital_Ventilation_21001	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Small Health - Hospital_Ventilation_21002	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Small Health - Hospital_Ventilation_21003	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Small Health - Hospital_Ventilation_21005	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Small Health - Hospital_Ventilation_21006	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Small Health - Hospital_Ventilation_21007	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.782	0.782
Met-Ed_Small Health - Hospital_Ventilation_21008	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.782	0.782
Met-Ed_Small Health - Hospital_Ventilation_21009	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.782	0.782
Met-Ed_Small Health - Hospital_Ventilation_21010	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.782	0.782
Met-Ed_Small Health - Hospital_Water Heating_21103	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Small Health - Hospital_Water Heating_21107	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Small Health - Hospital_Water Heating_21114	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Small Health - Hospital_Water Heating_21115	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Small Health - Hospital_Water Heating_21116	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Small Health - Hospital_Water Heating_21118	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.900	0.900
Met-Ed_Small Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Small Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Small Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Small Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Small Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Small Health - Other_Cooling_20301	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20302	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20303	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20304	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20308	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20309	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20311	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20312	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20313	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	1.000	1.000
Met-Ed_Small Health - Other_Cooling_20314	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20315	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20316	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20317	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Health - Other_Cooling_20318	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20319	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20320	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20321	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20322	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20323	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20326	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20327	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20328	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20329	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20330	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20331	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20333	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20334	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20335	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20336	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20338	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Cooling_20339	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Small Health - Other_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Health - Other_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Health - Other_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Health - Other_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Met-Ed_Small Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Met-Ed_Small Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Met-Ed_Small Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Met-Ed_Small Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Small Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Met-Ed_Small Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Met-Ed_Small Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Met-Ed_Small Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Health - Other_Space Heating_20910	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20911	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20913	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20914	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20915	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20916	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20917	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20919	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20923	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20925	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20927	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20929	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20932	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20934	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Space Heating_20936	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Health - Other_Total Electric_21701	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21702	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21703	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21704	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21705	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21706	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21707	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21708	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21709	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21710	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21711	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
Met-Ed_Small Health - Other_Total Electric_21712	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
Met-Ed_Small Health - Other_Total Electric_21713	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Total Electric_21714	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Health - Other_Ventilation_21001	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Small Health - Other_Ventilation_21002	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Small Health - Other_Ventilation_21003	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Health - Other_Ventilation_21005	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Small Health - Other_Ventilation_21006	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Small Health - Other_Ventilation_21007	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Small Health - Other_Ventilation_21008	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Small Health - Other_Ventilation_21009	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Small Health - Other_Ventilation_21010	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Small Health - Other_Water Heating_21103	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Health - Other_Water Heating_21107	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Health - Other_Water Heating_21114	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Health - Other_Water Heating_21115	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Health - Other_Water Heating_21116	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Health - Other_Water Heating_21118	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.900	0.900
Met-Ed_Small Industrial Manufacturing_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Industrial Manufacturing_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Industrial Manufacturing_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Industrial Manufacturing_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Small Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Small Institutional/Public Service_Cooling_20301	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20302	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20303	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20304	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20308	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20309	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20311	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20312	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20313	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	1.000	1.000
Met-Ed_Small Institutional/Public Service_Cooling_20315	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20316	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20317	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20318	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Institutional/Public Service_Cooling_20319	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20320	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20321	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20322	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20323	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20326	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20327	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20328	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20329	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20330	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20331	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20333	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20334	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20335	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20336	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20338	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Cooling_20339	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Small Institutional/Public Service_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Institutional/Public Service_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Institutional/Public Service_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Met-Ed_Small Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Met-Ed_Small Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Met-Ed_Small Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Met-Ed_Small Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Small Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Met-Ed_Small Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Met-Ed_Small Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Met-Ed_Small Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Small Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Small Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Met-Ed_Small Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Met-Ed_Small Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Institutional/Public Service_Space Heating_20910	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20911	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20913	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20915	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20916	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20917	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20919	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20923	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20925	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20927	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20929	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20932	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20934	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Space Heating_20936	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Small Institutional/Public Service_Total Electric_21701	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21702	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21703	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21704	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21705	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21706	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21707	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21708	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21709	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21710	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Institutional/Public Service_Total Electric_21711	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
Met-Ed_Small Institutional/Public Service_Total Electric_21712	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
Met-Ed_Small Institutional/Public Service_Total Electric_21713	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Total Electric_21714	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Small Institutional/Public Service_Ventilation_21001	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Small Institutional/Public Service_Ventilation_21002	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Small Institutional/Public Service_Ventilation_21003	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Small Institutional/Public Service_Ventilation_21005	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Small Institutional/Public Service_Ventilation_21006	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Small Institutional/Public Service_Ventilation_21007	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Small Institutional/Public Service_Ventilation_21008	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Small Institutional/Public Service_Ventilation_21009	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Small Institutional/Public Service_Ventilation_21010	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Small Institutional/Public Service_Water Heating_21103	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Institutional/Public Service_Water Heating_21107	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Institutional/Public Service_Water Heating_21109	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Institutional/Public Service_Water Heating_21114	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Institutional/Public Service_Water Heating_21115	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Institutional/Public Service_Water Heating_21118	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.900	0.900
Met-Ed_Small Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Small Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Small Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Small Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Small Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Small Lodging_Cooling_20301	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20302	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20303	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20304	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20308	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20309	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20311	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20312	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20313	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Met-Ed_Small Lodging_Cooling_20315	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20316	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20317	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20318	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20319	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20320	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20321	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20322	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20323	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20324	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20325	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20326	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Lodging_Cooling_20327	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20328	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20329	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20330	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20331	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20333	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20334	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20335	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20336	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20338	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Cooling_20339	57.4%	42.6%	0.0%	0.0%	0.0%	0.0%	0.788	0.788
Met-Ed_Small Lodging_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Lodging_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Lodging_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Lodging_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Met-Ed_Small Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Met-Ed_Small Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Met-Ed_Small Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Met-Ed_Small Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Small Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Met-Ed_Small Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Met-Ed_Small Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
Met-Ed_Small Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Small Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Small Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Small Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Small Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Small Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Small Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Small Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Small Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Small Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Small Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Small Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Small Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Small Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Small Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Small Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Small Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Small Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Small Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Small Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Met-Ed_Small Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Small Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Small Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Met-Ed_Small Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Small Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Small Lodging_Space Heating_20910	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20911	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20913	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20914	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20915	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20916	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20917	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20919	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20921	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20923	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20925	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20927	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20929	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20932	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20934	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Space Heating_20936	0.0%	0.2%	30.1%	45.2%	7.6%	16.8%	0.000	0.000
Met-Ed_Small Lodging_Total Electric_21701	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21702	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21703	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21704	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21705	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21706	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21707	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21708	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21709	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21710	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21711	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	1.000	1.000
Met-Ed_Small Lodging_Total Electric_21712	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	1.000	1.000
Met-Ed_Small Lodging_Total Electric_21713	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706
Met-Ed_Small Lodging_Total Electric_21714	29.1%	26.0%	9.6%	9.6%	12.7%	13.0%	0.706	0.706

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Lodging_Ventilation_21001	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.697	0.697
Met-Ed_Small Lodging_Ventilation_21002	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.697	0.697
Met-Ed_Small Lodging_Ventilation_21003	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.697	0.697
Met-Ed_Small Lodging_Ventilation_21005	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.697	0.697
Met-Ed_Small Lodging_Ventilation_21006	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.697	0.697
Met-Ed_Small Lodging_Ventilation_21007	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.991	0.991
Met-Ed_Small Lodging_Ventilation_21008	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.991	0.991
Met-Ed_Small Lodging_Ventilation_21009	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.991	0.991
Met-Ed_Small Lodging_Ventilation_21010	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.991	0.991
Met-Ed_Small Lodging_Water Heating_21103	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Small Lodging_Water Heating_21107	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Small Lodging_Water Heating_21109	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Small Lodging_Water Heating_21114	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Small Lodging_Water Heating_21115	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Small Lodging_Water Heating_21116	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Small Lodging_Water Heating_21118	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.900	0.900
Met-Ed_Small Miscellaneous/Other_Cooling_20301	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20302	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20303	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20304	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20308	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20309	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20311	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20312	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20313	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	1.000	1.000
Met-Ed_Small Miscellaneous/Other_Cooling_20317	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20318	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20319	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20320	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20321	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20322	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20326	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20327	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20328	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20329	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20330	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20331	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20333	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20334	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20335	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20336	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20338	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Cooling_20339	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.480	0.480
Met-Ed_Small Miscellaneous/Other_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Miscellaneous/Other_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Miscellaneous/Other_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Miscellaneous/Other_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Met-Ed_Small Miscellaneous/Other_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Met-Ed_Small Miscellaneous/Other_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Met-Ed_Small Miscellaneous/Other_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
Met-Ed_Small Miscellaneous/Other_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Miscellaneous/Other_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Miscellaneous/Other_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Miscellaneous/Other_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Miscellaneous/Other_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Miscellaneous/Other_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Miscellaneous/Other_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Miscellaneous/Other_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Miscellaneous/Other_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Miscellaneous/Other_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Miscellaneous/Other_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Miscellaneous/Other_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Miscellaneous/Other_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Miscellaneous/Other_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Miscellaneous/Other_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Miscellaneous/Other_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Miscellaneous/Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Miscellaneous/Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20925	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20927	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Miscellaneous/Other_Total Electric_21701	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21702	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21703	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21704	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21705	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21706	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21707	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21708	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21709	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21710	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21711	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	1.000	1.000
Met-Ed_Small Miscellaneous/Other_Total Electric_21712	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	1.000	1.000
Met-Ed_Small Miscellaneous/Other_Total Electric_21713	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Total Electric_21714	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Miscellaneous/Other_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.421	0.421
Met-Ed_Small Miscellaneous/Other_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.421	0.421
Met-Ed_Small Miscellaneous/Other_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.421	0.421
Met-Ed_Small Miscellaneous/Other_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.421	0.421
Met-Ed_Small Miscellaneous/Other_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.421	0.421
Met-Ed_Small Miscellaneous/Other_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.962	0.962
Met-Ed_Small Miscellaneous/Other_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.962	0.962
Met-Ed_Small Miscellaneous/Other_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.962	0.962
Met-Ed_Small Miscellaneous/Other_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.962	0.962
Met-Ed_Small Miscellaneous/Other_Water Heating_21103	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Miscellaneous/Other_Water Heating_21107	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Miscellaneous/Other_Water Heating_21109	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Miscellaneous/Other_Water Heating_21114	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Miscellaneous/Other_Water Heating_21115	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Miscellaneous/Other_Water Heating_21118	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.900	0.900
Met-Ed_Small Office_Cooking_20201	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Met-Ed_Small Office_Cooking_20202	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Met-Ed_Small Office_Cooking_20206	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Met-Ed_Small Office_Cooling_20301	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20302	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20303	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20304	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20308	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Office_Cooling_20309	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20311	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20312	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20313	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	1.000	1.000
Met-Ed_Small Office_Cooling_20314	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20315	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20316	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20317	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20318	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20319	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20320	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20321	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20322	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20323	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20326	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20327	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20328	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20329	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20330	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20331	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20333	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20334	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20335	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20336	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20338	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Cooling_20339	69.4%	19.2%	0.1%	0.0%	10.9%	0.3%	0.341	0.341
Met-Ed_Small Office_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Office_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Office_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Office_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Office_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Met-Ed_Small Office_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Met-Ed_Small Office_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Met-Ed_Small Office_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Met-Ed_Small Office_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Office_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Met-Ed_Small Office_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Met-Ed_Small Office_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Met-Ed_Small Office_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
Met-Ed_Small Office_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Office_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Office_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Office_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Office_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Office_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Office_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Office_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Met-Ed_Small Office_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Office_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Office_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Office_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Office_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Office_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Office_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Office_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Met-Ed_Small Office_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Small Office_Space Heating_20910	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20911	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20913	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20914	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20915	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20916	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20917	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20919	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20923	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20925	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20927	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20929	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20932	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20934	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Space Heating_20936	0.0%	0.0%	26.1%	45.6%	6.8%	21.5%	0.000	0.000
Met-Ed_Small Office_Total Electric_21701	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21702	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21703	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21704	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21705	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21706	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21707	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21708	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21709	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Office_Total Electric_21710	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21711	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	1.000	1.000
Met-Ed_Small Office_Total Electric_21712	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	1.000	1.000
Met-Ed_Small Office_Total Electric_21713	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Total Electric_21714	35.4%	15.7%	12.7%	7.0%	19.4%	9.7%	0.759	0.759
Met-Ed_Small Office_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.364	0.364
Met-Ed_Small Office_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.364	0.364
Met-Ed_Small Office_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.364	0.364
Met-Ed_Small Office_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.364	0.364
Met-Ed_Small Office_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.364	0.364
Met-Ed_Small Office_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.962	0.962
Met-Ed_Small Office_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.962	0.962
Met-Ed_Small Office_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.962	0.962
Met-Ed_Small Office_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.8%	17.7%	0.962	0.962
Met-Ed_Small Office_Water Heating_21103	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Office_Water Heating_21107	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Office_Water Heating_21109	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Office_Water Heating_21114	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Office_Water Heating_21115	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.728	0.728
Met-Ed_Small Office_Water Heating_21118	19.4%	18.3%	14.7%	13.5%	17.5%	16.5%	0.900	0.900
Met-Ed_Small Restaurant_Cooking_20201	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Met-Ed_Small Restaurant_Cooking_20202	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Met-Ed_Small Restaurant_Cooking_20204	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Met-Ed_Small Restaurant_Cooking_20206	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Met-Ed_Small Restaurant_Cooking_20208	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Met-Ed_Small Restaurant_Cooling_20301	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20302	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20303	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20304	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20308	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20309	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20311	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20312	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20313	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	1.000	1.000
Met-Ed_Small Restaurant_Cooling_20317	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20318	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20319	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20320	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20321	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20322	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20326	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20327	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20328	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20329	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20330	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Restaurant_Cooling_20331	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20333	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20334	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20335	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20336	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20338	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Cooling_20339	43.2%	38.0%	0.8%	0.2%	11.8%	6.1%	0.444	0.444
Met-Ed_Small Restaurant_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Restaurant_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Restaurant_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Restaurant_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Restaurant_Interior Lighting_20508	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20509	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20511	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20512	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20514	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20515	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20517	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
Met-Ed_Small Restaurant_Interior Lighting_20518	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
Met-Ed_Small Restaurant_Interior Lighting_20520	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20521	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20522	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
Met-Ed_Small Restaurant_Interior Lighting_20524	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20525	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20529	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
Met-Ed_Small Restaurant_Interior Lighting_20531	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Interior Lighting_20532	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Met-Ed_Small Restaurant_Other_20601	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
Met-Ed_Small Restaurant_Other_20602	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
Met-Ed_Small Restaurant_Other_20603	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.405	0.405
Met-Ed_Small Restaurant_Other_20604	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Met-Ed_Small Restaurant_Other_20606	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Met-Ed_Small Restaurant_Other_20607	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Met-Ed_Small Restaurant_Other_20610	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Met-Ed_Small Restaurant_Other_20611	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Met-Ed_Small Restaurant_Other_20613	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Met-Ed_Small Restaurant_Other_20614	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Met-Ed_Small Restaurant_Other_20615	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Met-Ed_Small Restaurant_Plug Loads_20701	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Restaurant_Plug Loads_20702	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Restaurant_Plug Loads_20703	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Restaurant_Plug Loads_20704	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Restaurant_Plug Loads_20705	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Restaurant_Plug Loads_20706	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Restaurant_Plug Loads_20707	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Restaurant_Plug Loads_20708	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Small Restaurant_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Met-Ed_Small Restaurant_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Met-Ed_Small Restaurant_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Met-Ed_Small Restaurant_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Met-Ed_Small Restaurant_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Met-Ed_Small Restaurant_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Met-Ed_Small Restaurant_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Met-Ed_Small Restaurant_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Met-Ed_Small Restaurant_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Met-Ed_Small Restaurant_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Met-Ed_Small Restaurant_Space Heating_20910	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20911	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20913	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20914	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20915	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20916	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20917	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20923	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20925	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20927	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20929	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20932	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20934	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Space Heating_20936	0.0%	0.0%	24.5%	58.7%	2.2%	14.5%	0.000	0.000
Met-Ed_Small Restaurant_Total Electric_21701	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21702	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21703	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21704	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21705	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21706	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21707	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21708	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21709	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21710	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21711	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	1.000	1.000
Met-Ed_Small Restaurant_Total Electric_21712	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	1.000	1.000
Met-Ed_Small Restaurant_Total Electric_21713	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Total Electric_21714	25.7%	23.6%	10.6%	9.6%	16.2%	14.3%	0.939	0.939
Met-Ed_Small Restaurant_Ventilation_21001	19.2%	21.2%	12.6%	13.7%	15.6%	17.8%	0.444	0.444
Met-Ed_Small Restaurant_Ventilation_21002	19.2%	21.2%	12.6%	13.7%	15.6%	17.8%	0.444	0.444
Met-Ed_Small Restaurant_Ventilation_21003	19.2%	21.2%	12.6%	13.7%	15.6%	17.8%	0.444	0.444
Met-Ed_Small Restaurant_Ventilation_21007	19.2%	21.2%	12.6%	13.7%	15.6%	17.8%	0.892	0.892
Met-Ed_Small Restaurant_Ventilation_21008	19.2%	21.2%	12.6%	13.7%	15.6%	17.8%	0.892	0.892
Met-Ed_Small Restaurant_Ventilation_21009	19.2%	21.2%	12.6%	13.7%	15.6%	17.8%	0.892	0.892

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Restaurant_Ventilation_21010	19.2%	21.2%	12.6%	13.7%	15.6%	17.8%	0.892	0.892
Met-Ed_Small Restaurant_Water Heating_21103	22.9%	15.1%	17.2%	11.0%	20.4%	13.5%	0.688	0.688
Met-Ed_Small Restaurant_Water Heating_21107	22.9%	15.1%	17.2%	11.0%	20.4%	13.5%	0.688	0.688
Met-Ed_Small Restaurant_Water Heating_21109	22.9%	15.1%	17.2%	11.0%	20.4%	13.5%	0.688	0.688
Met-Ed_Small Restaurant_Water Heating_21114	22.9%	15.1%	17.2%	11.0%	20.4%	13.5%	0.688	0.688
Met-Ed_Small Restaurant_Water Heating_21115	22.9%	15.1%	17.2%	11.0%	20.4%	13.5%	0.688	0.688
Met-Ed_Small Restaurant_Water Heating_21118	22.9%	15.1%	17.2%	11.0%	20.4%	13.5%	0.900	0.900
Met-Ed_Small Retail_Cooking_20201	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Met-Ed_Small Retail_Cooking_20202	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Met-Ed_Small Retail_Cooking_20204	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Met-Ed_Small Retail_Cooking_20206	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Met-Ed_Small Retail_Cooking_20208	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Met-Ed_Small Retail_Cooling_20301	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20302	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20303	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20304	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20308	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20309	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20311	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20312	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20313	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	1.000	1.000
Met-Ed_Small Retail_Cooling_20317	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20318	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20319	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20320	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20321	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20322	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20326	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20327	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20328	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20329	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20330	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20331	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20333	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20334	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20335	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20336	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20338	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Cooling_20339	67.3%	17.5%	0.5%	0.1%	12.8%	1.9%	0.539	0.539
Met-Ed_Small Retail_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Retail_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Retail_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Retail_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Retail_Interior Lighting_20508	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20509	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Retail_Interior Lighting_20511	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20512	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20514	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20515	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20517	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
Met-Ed_Small Retail_Interior Lighting_20518	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
Met-Ed_Small Retail_Interior Lighting_20520	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20521	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20522	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
Met-Ed_Small Retail_Interior Lighting_20524	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20525	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20529	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
Met-Ed_Small Retail_Interior Lighting_20531	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Interior Lighting_20532	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Met-Ed_Small Retail_Other_20601	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
Met-Ed_Small Retail_Other_20602	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
Met-Ed_Small Retail_Other_20603	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.405	0.405
Met-Ed_Small Retail_Other_20604	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Met-Ed_Small Retail_Other_20606	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Met-Ed_Small Retail_Other_20607	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Met-Ed_Small Retail_Other_20610	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Met-Ed_Small Retail_Other_20611	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Met-Ed_Small Retail_Other_20613	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Met-Ed_Small Retail_Other_20614	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Met-Ed_Small Retail_Other_20615	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Met-Ed_Small Retail_Plug Loads_20701	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Met-Ed_Small Retail_Plug Loads_20702	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Met-Ed_Small Retail_Plug Loads_20703	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Met-Ed_Small Retail_Plug Loads_20704	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Met-Ed_Small Retail_Plug Loads_20705	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Met-Ed_Small Retail_Plug Loads_20706	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Met-Ed_Small Retail_Plug Loads_20707	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Met-Ed_Small Retail_Plug Loads_20708	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Met-Ed_Small Retail_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Retail_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Retail_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Retail_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Met-Ed_Small Retail_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Retail_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Retail_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Met-Ed_Small Retail_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Retail_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Small Retail_Space Heating_20910	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20911	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20913	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Retail_Space Heating_20915	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20916	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20917	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20919	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20923	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20925	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20927	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20929	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20932	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20934	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Space Heating_20936	0.0%	0.0%	22.9%	49.8%	5.5%	21.8%	0.000	0.000
Met-Ed_Small Retail_Total Electric_21701	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21702	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21703	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21704	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21705	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21706	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21707	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21708	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21709	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21710	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21711	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	1.000	1.000
Met-Ed_Small Retail_Total Electric_21712	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	1.000	1.000
Met-Ed_Small Retail_Total Electric_21713	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Total Electric_21714	34.3%	15.7%	12.8%	7.4%	19.3%	10.5%	0.913	0.913
Met-Ed_Small Retail_Ventilation_21001	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.531	0.531
Met-Ed_Small Retail_Ventilation_21002	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.531	0.531
Met-Ed_Small Retail_Ventilation_21003	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.531	0.531
Met-Ed_Small Retail_Ventilation_21005	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.531	0.531
Met-Ed_Small Retail_Ventilation_21006	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.531	0.531
Met-Ed_Small Retail_Ventilation_21007	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.952	0.952
Met-Ed_Small Retail_Ventilation_21008	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.952	0.952
Met-Ed_Small Retail_Ventilation_21009	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.952	0.952
Met-Ed_Small Retail_Ventilation_21010	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.952	0.952
Met-Ed_Small Retail_Water Heating_21103	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Retail_Water Heating_21107	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Retail_Water Heating_21109	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Retail_Water Heating_21114	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Retail_Water Heating_21115	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Small Retail_Water Heating_21118	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.900	0.900
Met-Ed_Small Warehouse_Cooling_20301	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20302	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20303	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20304	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20308	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Warehouse_Cooling_20309	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20311	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20312	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20313	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Met-Ed_Small Warehouse_Cooling_20314	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20315	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20316	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20317	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20318	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20319	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20320	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20321	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20322	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20323	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20326	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20327	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20328	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20329	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20330	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20331	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20333	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20334	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20335	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20336	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20337	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20338	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Cooling_20339	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Small Warehouse_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Warehouse_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Small Warehouse_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Warehouse_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Small Warehouse_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Met-Ed_Small Warehouse_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Met-Ed_Small Warehouse_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Small Warehouse_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Warehouse_Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Met-Ed_Small Warehouse_Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Met-Ed_Small Warehouse_Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
Met-Ed_Small Warehouse_Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Warehouse_Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Warehouse_Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Warehouse_Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Warehouse_Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Warehouse_Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Warehouse_Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Warehouse_Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Small Warehouse_Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Small Warehouse_Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Small Warehouse_Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Small Warehouse_Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Small Warehouse_Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Small Warehouse_Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Small Warehouse_Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Small Warehouse_Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Small Warehouse_Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Small Warehouse_Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Small Warehouse_Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Small Warehouse_Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
Met-Ed_Small Warehouse_Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Small Warehouse_Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
Met-Ed_Small Warehouse_Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Small Warehouse_Space Heating_20910	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20911	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20913	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20914	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20915	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20916	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20917	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20919	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20923	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20925	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20927	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20929	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20932	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20934	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Space Heating_20936	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Small Warehouse_Total Electric_21701	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21702	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21703	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21704	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Small Warehouse_Total Electric_21705	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21706	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21707	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21708	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21709	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21710	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21711	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	1.000	1.000
Met-Ed_Small Warehouse_Total Electric_21712	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	1.000	1.000
Met-Ed_Small Warehouse_Total Electric_21713	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Total Electric_21714	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Small Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Small Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Small Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Small Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Small Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Small Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Met-Ed_Small Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Met-Ed_Small Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Met-Ed_Small Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Met-Ed_Small Warehouse_Water Heating_21103	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Small Warehouse_Water Heating_21107	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Small Warehouse_Water Heating_21109	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Small Warehouse_Water Heating_21114	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Small Warehouse_Water Heating_21115	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Small Warehouse_Water Heating_21118	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.900	0.900
Met-Ed_Large Education - College/University_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - College/University_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - College/University_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - College/University_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - College/University_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - College/University_Cooling_20301	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20302	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20303	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20304	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20308	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20309	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20311	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20312	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20313	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	1.000	1.000
Met-Ed_Large Education - College/University_Cooling_20314	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20315	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20316	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20317	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20318	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20319	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Education - College/University_Cooling_20320	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20321	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20322	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20323	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20330	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20331	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20333	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20334	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20335	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20336	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20338	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Cooling_20339	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.490	0.490
Met-Ed_Large Education - College/University_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Education - College/University_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Education - College/University_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Education - College/University_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Education - College/University_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Met-Ed_Large Education - College/University_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Met-Ed_Large Education - College/University_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Met-Ed_Large Education - College/University_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Met-Ed_Large Education - College/University_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - College/University_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - College/University_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - College/University_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - College/University_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - College/University_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - College/University_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - College/University_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - College/University_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - College/University_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - College/University_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - College/University_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - College/University_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - College/University_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Education - College/University_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - College/University_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - College/University_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Met-Ed_Large Education - College/University_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - College/University_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - College/University_Space Heating_20910	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20911	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20913	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20914	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20915	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20916	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20917	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20919	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20923	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20929	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20932	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20934	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Space Heating_20936	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - College/University_Total Electric_21701	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21702	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21703	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21704	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21705	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21706	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21707	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21708	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21709	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21710	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21711	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	1.000	1.000
Met-Ed_Large Education - College/University_Total Electric_21712	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	1.000	1.000
Met-Ed_Large Education - College/University_Total Electric_21713	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Total Electric_21714	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - College/University_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.446	0.446
Met-Ed_Large Education - College/University_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.446	0.446
Met-Ed_Large Education - College/University_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.446	0.446
Met-Ed_Large Education - College/University_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.446	0.446
Met-Ed_Large Education - College/University_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.446	0.446
Met-Ed_Large Education - College/University_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Met-Ed_Large Education - College/University_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Met-Ed_Large Education - College/University_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Met-Ed_Large Education - College/University_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Met-Ed_Large Education - College/University_Water Heating_21103	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - College/University_Water Heating_21107	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - College/University_Water Heating_21109	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - College/University_Water Heating_21114	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Education - College/University_Water Heating_21115	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - College/University_Water Heating_21116	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - College/University_Water Heating_21118	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
Met-Ed_Large Education - Other_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - Other_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - Other_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - Other_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - Other_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Met-Ed_Large Education - Other_Cooling_20301	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20302	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20303	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20304	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20308	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20309	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20311	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20312	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20313	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	1.000	1.000
Met-Ed_Large Education - Other_Cooling_20314	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20315	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20316	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20317	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20318	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20319	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20320	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20321	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20322	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20323	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20330	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20331	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20333	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20334	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20335	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20336	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20338	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Cooling_20339	83.7%	8.1%	0.0%	0.0%	8.1%	0.1%	0.172	0.172
Met-Ed_Large Education - Other_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Education - Other_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Education - Other_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Education - Other_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Education - Other_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Education - Other_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Met-Ed_Large Education - Other_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Met-Ed_Large Education - Other_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Met-Ed_Large Education - Other_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Met-Ed_Large Education - Other_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Met-Ed_Large Education - Other_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - Other_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - Other_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - Other_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - Other_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - Other_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - Other_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - Other_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Met-Ed_Large Education - Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - Other_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - Other_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - Other_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
Met-Ed_Large Education - Other_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - Other_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - Other_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Met-Ed_Large Education - Other_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - Other_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Education - Other_Space Heating_20910	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20911	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20913	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20914	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20915	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20916	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20917	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20919	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20923	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20929	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20932	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20934	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Space Heating_20936	0.1%	0.1%	40.1%	36.9%	12.2%	10.6%	0.000	0.000
Met-Ed_Large Education - Other_Total Electric_21701	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21702	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21703	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21704	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Education - Other_Total Electric_21705	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21706	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21707	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21708	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21709	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21710	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21711	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	1.000	1.000
Met-Ed_Large Education - Other_Total Electric_21712	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	1.000	1.000
Met-Ed_Large Education - Other_Total Electric_21713	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Total Electric_21714	28.6%	14.1%	13.4%	10.3%	19.6%	14.1%	0.569	0.569
Met-Ed_Large Education - Other_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.163	0.163
Met-Ed_Large Education - Other_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.163	0.163
Met-Ed_Large Education - Other_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.163	0.163
Met-Ed_Large Education - Other_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.163	0.163
Met-Ed_Large Education - Other_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.163	0.163
Met-Ed_Large Education - Other_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Met-Ed_Large Education - Other_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Met-Ed_Large Education - Other_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Met-Ed_Large Education - Other_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
Met-Ed_Large Education - Other_Water Heating_21103	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - Other_Water Heating_21107	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - Other_Water Heating_21109	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - Other_Water Heating_21114	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - Other_Water Heating_21115	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - Other_Water Heating_21116	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.581	0.581
Met-Ed_Large Education - Other_Water Heating_21118	30.3%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
Met-Ed_Large Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Met-Ed_Large Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Met-Ed_Large Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Met-Ed_Large Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Met-Ed_Large Grocery_Cooling_20301	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20302	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20303	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20304	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20308	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20309	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20311	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20312	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20313	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	1.000	1.000
Met-Ed_Large Grocery_Cooling_20317	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20318	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20319	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20320	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20321	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20322	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Grocery_Cooling_20330	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20331	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20333	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20334	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20335	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20336	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20338	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Cooling_20339	50.7%	39.9%	0.0%	0.0%	6.8%	2.6%	0.257	0.257
Met-Ed_Large Grocery_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Grocery_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Grocery_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Grocery_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Met-Ed_Large Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Met-Ed_Large Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Met-Ed_Large Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Met-Ed_Large Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Met-Ed_Large Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Large Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Large Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Large Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Large Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Large Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Large Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Large Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Met-Ed_Large Grocery_Refrigeration_20803	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Met-Ed_Large Grocery_Refrigeration_20805	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Met-Ed_Large Grocery_Refrigeration_20806	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Met-Ed_Large Grocery_Refrigeration_20807	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.094	0.094
Met-Ed_Large Grocery_Refrigeration_20808	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Met-Ed_Large Grocery_Refrigeration_20811	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.403	0.403
Met-Ed_Large Grocery_Refrigeration_20818	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Met-Ed_Large Grocery_Space Heating_20910	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20911	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Grocery_Space Heating_20913	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20915	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20916	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20917	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20919	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20923	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20929	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20932	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20934	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Space Heating_20936	0.0%	0.2%	26.3%	47.9%	5.4%	20.2%	0.000	0.000
Met-Ed_Large Grocery_Total Electric_21701	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21702	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21703	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21704	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21705	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21706	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21707	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21708	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21709	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21710	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21711	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	1.000	1.000
Met-Ed_Large Grocery_Total Electric_21712	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	1.000	1.000
Met-Ed_Large Grocery_Total Electric_21713	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Total Electric_21714	24.7%	23.3%	11.0%	10.6%	15.5%	15.0%	0.902	0.902
Met-Ed_Large Grocery_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.245	0.245
Met-Ed_Large Grocery_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.245	0.245
Met-Ed_Large Grocery_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.245	0.245
Met-Ed_Large Grocery_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.245	0.245
Met-Ed_Large Grocery_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.245	0.245
Met-Ed_Large Grocery_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Met-Ed_Large Grocery_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Met-Ed_Large Grocery_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Met-Ed_Large Grocery_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Met-Ed_Large Grocery_Water Heating_21103	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Large Grocery_Water Heating_21107	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Large Grocery_Water Heating_21109	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Large Grocery_Water Heating_21114	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Large Grocery_Water Heating_21115	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.704	0.704
Met-Ed_Large Grocery_Water Heating_21118	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
Met-Ed_Large Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Large Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Large Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Large Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Large Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Met-Ed_Large Health - Hospital_Cooling_20301	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Health - Hospital_Cooling_20302	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20303	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20304	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20308	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20309	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20311	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20312	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20313	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	1.000	1.000
Met-Ed_Large Health - Hospital_Cooling_20314	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20315	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20316	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20317	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20318	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20319	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20320	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20321	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20322	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20323	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20330	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20331	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20333	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20334	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20335	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20336	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20338	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Cooling_20339	45.2%	39.1%	2.6%	2.5%	6.3%	4.3%	0.414	0.414
Met-Ed_Large Health - Hospital_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Health - Hospital_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Health - Hospital_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Health - Hospital_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Met-Ed_Large Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Met-Ed_Large Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Met-Ed_Large Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Met-Ed_Large Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Met-Ed_Large Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Met-Ed_Large Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Met-Ed_Large Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
Met-Ed_Large Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Large Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Large Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Large Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Large Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Large Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Large Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Large Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Met-Ed_Large Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Large Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Large Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Large Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Large Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Large Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Large Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Large Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Met-Ed_Large Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Large Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Large Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Large Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Large Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Met-Ed_Large Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Large Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Large Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Met-Ed_Large Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Large Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Met-Ed_Large Health - Hospital_Space Heating_20910	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20911	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20913	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20914	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20915	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20916	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20917	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20919	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20923	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20929	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20932	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20934	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Space Heating_20936	0.4%	1.1%	27.8%	43.9%	7.8%	18.9%	0.055	0.055
Met-Ed_Large Health - Hospital_Total Electric_21701	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21702	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Health - Hospital_Total Electric_21703	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21704	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21705	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21706	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21707	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21708	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21709	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21710	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21711	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	1.000	1.000
Met-Ed_Large Health - Hospital_Total Electric_21712	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	1.000	1.000
Met-Ed_Large Health - Hospital_Total Electric_21713	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Total Electric_21714	27.5%	25.1%	10.3%	9.5%	14.3%	13.2%	0.804	0.804
Met-Ed_Large Health - Hospital_Ventilation_21001	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Large Health - Hospital_Ventilation_21002	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Large Health - Hospital_Ventilation_21003	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Large Health - Hospital_Ventilation_21005	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Large Health - Hospital_Ventilation_21006	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.466	0.466
Met-Ed_Large Health - Hospital_Ventilation_21007	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.782	0.782
Met-Ed_Large Health - Hospital_Ventilation_21008	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.782	0.782
Met-Ed_Large Health - Hospital_Ventilation_21009	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.782	0.782
Met-Ed_Large Health - Hospital_Ventilation_21010	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.782	0.782
Met-Ed_Large Health - Hospital_Water Heating_21103	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Large Health - Hospital_Water Heating_21107	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Large Health - Hospital_Water Heating_21114	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Large Health - Hospital_Water Heating_21115	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Large Health - Hospital_Water Heating_21116	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.621	0.621
Met-Ed_Large Health - Hospital_Water Heating_21118	21.0%	16.7%	16.0%	12.3%	18.9%	15.1%	0.900	0.900
Met-Ed_Large Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Large Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Large Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Large Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Large Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Large Health - Other_Cooling_20301	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20302	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20303	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20304	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20308	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20309	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20311	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20312	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20313	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	1.000	1.000
Met-Ed_Large Health - Other_Cooling_20314	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20315	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20316	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20317	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Health - Other_Cooling_20318	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20319	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20320	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20321	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20322	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20323	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20330	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20331	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20333	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20334	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20335	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20336	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20338	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Cooling_20339	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.308	0.308
Met-Ed_Large Health - Other_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Health - Other_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Health - Other_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Health - Other_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Met-Ed_Large Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Met-Ed_Large Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Met-Ed_Large Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Met-Ed_Large Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Met-Ed_Large Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Met-Ed_Large Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Met-Ed_Large Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Met-Ed_Large Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Health - Other_Space Heating_20910	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20911	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20913	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20914	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20915	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20916	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20917	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20919	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20923	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20929	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20932	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20934	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Space Heating_20936	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Health - Other_Total Electric_21701	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21702	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21703	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21704	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21705	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21706	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21707	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21708	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21709	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21710	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21711	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
Met-Ed_Large Health - Other_Total Electric_21712	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
Met-Ed_Large Health - Other_Total Electric_21713	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Total Electric_21714	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Health - Other_Ventilation_21001	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Large Health - Other_Ventilation_21002	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Large Health - Other_Ventilation_21003	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Large Health - Other_Ventilation_21005	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Large Health - Other_Ventilation_21006	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.288	0.288
Met-Ed_Large Health - Other_Ventilation_21007	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Large Health - Other_Ventilation_21008	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Large Health - Other_Ventilation_21009	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Large Health - Other_Ventilation_21010	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Health - Other_Water Heating_21103	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Health - Other_Water Heating_21107	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Health - Other_Water Heating_21114	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Health - Other_Water Heating_21115	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Health - Other_Water Heating_21116	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Health - Other_Water Heating_21118	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.900	0.900
Met-Ed_Large Industrial Manufacturing_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Industrial Manufacturing_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Industrial Manufacturing_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Industrial Manufacturing_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Met-Ed_Large Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Institutional/Public Service_Cooling_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Met-Ed_Large Institutional/Public Service_Cooling_20301	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20302	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20303	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20304	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20308	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20309	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20311	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20312	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20313	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	1.000	1.000
Met-Ed_Large Institutional/Public Service_Cooling_20315	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20316	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20317	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20318	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20319	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20320	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20321	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20322	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20323	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20330	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Institutional/Public Service_Cooling_20331	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20333	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20334	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20335	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20336	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20338	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Cooling_20339	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.626	0.626
Met-Ed_Large Institutional/Public Service_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Institutional/Public Service_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Institutional/Public Service_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Met-Ed_Large Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Met-Ed_Large Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Met-Ed_Large Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Met-Ed_Large Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Met-Ed_Large Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Met-Ed_Large Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Met-Ed_Large Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Met-Ed_Large Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Met-Ed_Large Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Met-Ed_Large Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Met-Ed_Large Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Met-Ed_Large Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Met-Ed_Large Institutional/Public Service_Space Heating_20910	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20911	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20913	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20915	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20916	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20917	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20919	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20923	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20929	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20932	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20934	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Space Heating_20936	0.0%	0.0%	33.4%	37.3%	13.8%	15.4%	0.000	0.000
Met-Ed_Large Institutional/Public Service_Total Electric_21701	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21702	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21703	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21704	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21705	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21706	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21707	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21708	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21709	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21710	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21711	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
Met-Ed_Large Institutional/Public Service_Total Electric_21712	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
Met-Ed_Large Institutional/Public Service_Total Electric_21713	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Total Electric_21714	30.7%	13.3%	14.5%	9.8%	19.0%	12.6%	0.750	0.750
Met-Ed_Large Institutional/Public Service_Ventilation_21001	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Large Institutional/Public Service_Ventilation_21002	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Large Institutional/Public Service_Ventilation_21003	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Large Institutional/Public Service_Ventilation_21005	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Large Institutional/Public Service_Ventilation_21006	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.625	0.625
Met-Ed_Large Institutional/Public Service_Ventilation_21007	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Large Institutional/Public Service_Ventilation_21008	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Large Institutional/Public Service_Ventilation_21009	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Institutional/Public Service_Ventilation_21010	18.3%	2.6%	18.0%	19.4%	21.3%	20.4%	0.886	0.886
Met-Ed_Large Institutional/Public Service_Water Heating_21103	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Institutional/Public Service_Water Heating_21107	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Institutional/Public Service_Water Heating_21109	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Institutional/Public Service_Water Heating_21114	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Institutional/Public Service_Water Heating_21115	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.733	0.733
Met-Ed_Large Institutional/Public Service_Water Heating_21118	23.7%	14.2%	17.8%	10.3%	21.1%	12.8%	0.900	0.900
Met-Ed_Large Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Large Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Large Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Large Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Large Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Met-Ed_Large Lodging_Cooling_20301	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20302	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20303	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20304	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20308	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20309	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20311	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20312	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20313	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	1.000	1.000
Met-Ed_Large Lodging_Cooling_20315	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20316	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20317	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20318	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20319	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20320	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20321	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20322	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20323	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20324	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20325	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20330	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20331	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20333	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20334	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20335	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20336	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20338	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Cooling_20339	59.7%	38.3%	0.0%	0.0%	1.5%	0.5%	0.788	0.788
Met-Ed_Large Lodging_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Lodging_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Lodging_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Lodging_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Met-Ed_Large Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Met-Ed_Large Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Met-Ed_Large Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Met-Ed_Large Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Met-Ed_Large Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Met-Ed_Large Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Met-Ed_Large Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
Met-Ed_Large Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Large Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Large Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Large Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Large Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Large Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Large Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Large Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Met-Ed_Large Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Large Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Large Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Large Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Large Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Large Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Large Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Large Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Met-Ed_Large Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Large Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Large Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Large Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Large Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Met-Ed_Large Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Large Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Large Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Met-Ed_Large Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Large Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Met-Ed_Large Lodging_Space Heating_20910	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Lodging_Space Heating_20911	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20913	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20914	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20915	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20916	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20917	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20919	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20921	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20923	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20929	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20932	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20934	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Space Heating_20936	0.0%	0.2%	27.4%	51.6%	5.4%	15.5%	0.000	0.000
Met-Ed_Large Lodging_Total Electric_21701	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21702	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21703	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21704	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21705	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21706	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21707	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21708	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21709	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21710	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21711	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	1.000	1.000
Met-Ed_Large Lodging_Total Electric_21712	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	1.000	1.000
Met-Ed_Large Lodging_Total Electric_21713	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Total Electric_21714	30.2%	25.0%	9.6%	9.3%	13.1%	12.8%	0.718	0.718
Met-Ed_Large Lodging_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.697	0.697
Met-Ed_Large Lodging_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.697	0.697
Met-Ed_Large Lodging_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.697	0.697
Met-Ed_Large Lodging_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.697	0.697
Met-Ed_Large Lodging_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.697	0.697
Met-Ed_Large Lodging_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Met-Ed_Large Lodging_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Met-Ed_Large Lodging_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Met-Ed_Large Lodging_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Met-Ed_Large Lodging_Water Heating_21103	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Large Lodging_Water Heating_21107	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Large Lodging_Water Heating_21109	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Large Lodging_Water Heating_21114	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Large Lodging_Water Heating_21115	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Large Lodging_Water Heating_21116	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.733	0.733
Met-Ed_Large Lodging_Water Heating_21118	21.2%	16.6%	16.1%	12.2%	19.1%	14.9%	0.900	0.900
Met-Ed_Large Miscellaneous/Other_Cooling_20301	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20302	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Miscellaneous/Other_Cooling_20303	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20304	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20308	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20309	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20311	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20312	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20313	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	1.000	1.000
Met-Ed_Large Miscellaneous/Other_Cooling_20317	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20318	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20319	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20320	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20321	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20322	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20330	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20331	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20333	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20334	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20335	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20336	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20338	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Cooling_20339	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.480	0.480
Met-Ed_Large Miscellaneous/Other_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Miscellaneous/Other_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Miscellaneous/Other_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Met-Ed_Large Miscellaneous/Other_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Met-Ed_Large Miscellaneous/Other_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Met-Ed_Large Miscellaneous/Other_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
Met-Ed_Large Miscellaneous/Other_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Miscellaneous/Other_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Miscellaneous/Other_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Miscellaneous/Other_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Miscellaneous/Other_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Miscellaneous/Other_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Miscellaneous/Other_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Miscellaneous/Other_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Miscellaneous/Other_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Miscellaneous/Other_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Miscellaneous/Other_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Miscellaneous/Other_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Miscellaneous/Other_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Miscellaneous/Other_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Miscellaneous/Other_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Miscellaneous/Other_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Miscellaneous/Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Miscellaneous/Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Miscellaneous/Other_Total Electric_21701	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21702	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21703	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21704	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21705	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21706	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21707	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21708	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21709	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21710	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21711	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	1.000	1.000
Met-Ed_Large Miscellaneous/Other_Total Electric_21712	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	1.000	1.000
Met-Ed_Large Miscellaneous/Other_Total Electric_21713	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Total Electric_21714	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Miscellaneous/Other_Ventilation_21001	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.421	0.421
Met-Ed_Large Miscellaneous/Other_Ventilation_21002	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.421	0.421

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Miscellaneous/Other_Ventilation_21003	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.421	0.421
Met-Ed_Large Miscellaneous/Other_Ventilation_21005	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.421	0.421
Met-Ed_Large Miscellaneous/Other_Ventilation_21006	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.421	0.421
Met-Ed_Large Miscellaneous/Other_Ventilation_21007	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.764	0.764
Met-Ed_Large Miscellaneous/Other_Ventilation_21008	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.764	0.764
Met-Ed_Large Miscellaneous/Other_Ventilation_21009	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.764	0.764
Met-Ed_Large Miscellaneous/Other_Ventilation_21010	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.764	0.764
Met-Ed_Large Miscellaneous/Other_Water Heating_21103	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Miscellaneous/Other_Water Heating_21107	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Miscellaneous/Other_Water Heating_21109	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Miscellaneous/Other_Water Heating_21114	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Miscellaneous/Other_Water Heating_21115	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Miscellaneous/Other_Water Heating_21118	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.900	0.900
Met-Ed_Large Office_Cooking_20201	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Met-Ed_Large Office_Cooking_20202	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Met-Ed_Large Office_Cooking_20206	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Met-Ed_Large Office_Cooling_20301	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20302	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20303	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20304	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20308	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20309	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20311	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20312	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20313	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	1.000	1.000
Met-Ed_Large Office_Cooling_20314	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20315	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20316	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20317	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20318	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20319	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20320	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20321	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20322	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20323	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20330	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20331	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20333	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20334	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20335	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20336	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20338	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Cooling_20339	64.3%	12.6%	4.7%	2.3%	13.1%	2.9%	0.341	0.341
Met-Ed_Large Office_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Office_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Office_ Exterior Lighting_ 20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Office_ Exterior Lighting_ 20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Office_ Interior Lighting_ 20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Met-Ed_Large Office_ Interior Lighting_ 20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Met-Ed_Large Office_ Interior Lighting_ 20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Met-Ed_Large Office_ Interior Lighting_ 20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Met-Ed_Large Office_ Interior Lighting_ 20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Interior Lighting_ 20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Met-Ed_Large Office_ Other_ 20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Met-Ed_Large Office_ Other_ 20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Met-Ed_Large Office_ Other_ 20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
Met-Ed_Large Office_ Other_ 20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Office_ Other_ 20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Office_ Other_ 20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Office_ Other_ 20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Office_ Other_ 20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Office_ Other_ 20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Office_ Other_ 20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Office_ Other_ 20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Met-Ed_Large Office_ Plug Loads_ 20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Office_ Plug Loads_ 20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Office_ Plug Loads_ 20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Office_ Plug Loads_ 20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Office_ Plug Loads_ 20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Office_ Plug Loads_ 20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Office_ Plug Loads_ 20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Office_ Plug Loads_ 20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Met-Ed_Large Office_ Refrigeration_ 20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Met-Ed_Large Office_ Space Heating_ 20910	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_ Space Heating_ 20911	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_ Space Heating_ 20913	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_ Space Heating_ 20914	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_ Space Heating_ 20915	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_ Space Heating_ 20916	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_ Space Heating_ 20917	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Office_Space Heating_20919	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_Space Heating_20923	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_Space Heating_20929	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_Space Heating_20932	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_Space Heating_20934	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_Space Heating_20936	0.0%	0.0%	45.5%	31.2%	12.4%	11.0%	0.000	0.000
Met-Ed_Large Office_Total Electric_21701	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21702	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21703	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21704	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21705	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21706	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21707	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21708	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21709	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21710	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21711	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	1.000	1.000
Met-Ed_Large Office_Total Electric_21712	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	1.000	1.000
Met-Ed_Large Office_Total Electric_21713	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Total Electric_21714	32.2%	14.5%	13.1%	9.4%	18.8%	12.1%	0.796	0.796
Met-Ed_Large Office_Ventilation_21001	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.364	0.364
Met-Ed_Large Office_Ventilation_21002	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.364	0.364
Met-Ed_Large Office_Ventilation_21003	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.364	0.364
Met-Ed_Large Office_Ventilation_21005	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.364	0.364
Met-Ed_Large Office_Ventilation_21006	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.364	0.364
Met-Ed_Large Office_Ventilation_21007	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.764	0.764
Met-Ed_Large Office_Ventilation_21008	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.764	0.764
Met-Ed_Large Office_Ventilation_21009	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.764	0.764
Met-Ed_Large Office_Ventilation_21010	20.6%	4.8%	15.8%	17.8%	20.4%	20.6%	0.764	0.764
Met-Ed_Large Office_Water Heating_21103	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Office_Water Heating_21107	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Office_Water Heating_21109	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Office_Water Heating_21114	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Office_Water Heating_21115	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.727	0.727
Met-Ed_Large Office_Water Heating_21118	19.2%	18.6%	14.5%	13.7%	17.2%	16.8%	0.900	0.900
Met-Ed_Large Retail_Cooking_20201	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Met-Ed_Large Retail_Cooking_20202	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Met-Ed_Large Retail_Cooking_20204	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Met-Ed_Large Retail_Cooking_20206	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Met-Ed_Large Retail_Cooking_20208	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Met-Ed_Large Retail_Cooling_20301	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20302	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20303	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20304	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20308	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Retail_Cooling_20309	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20311	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20312	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20313	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	1.000	1.000
Met-Ed_Large Retail_Cooling_20317	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20318	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20319	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20320	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20321	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20322	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20330	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20331	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20333	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20334	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20335	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20336	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20338	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Cooling_20339	68.3%	31.4%	0.0%	0.0%	0.2%	0.0%	0.539	0.539
Met-Ed_Large Retail_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Retail_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Retail_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Retail_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Retail_Interior Lighting_20508	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20509	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20511	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20512	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20514	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20515	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20517	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
Met-Ed_Large Retail_Interior Lighting_20518	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
Met-Ed_Large Retail_Interior Lighting_20520	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20521	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20522	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
Met-Ed_Large Retail_Interior Lighting_20524	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20525	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20529	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
Met-Ed_Large Retail_Interior Lighting_20531	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Interior Lighting_20532	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Met-Ed_Large Retail_Other_20601	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
Met-Ed_Large Retail_Other_20602	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
Met-Ed_Large Retail_Other_20603	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.405	0.405
Met-Ed_Large Retail_Other_20604	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Met-Ed_Large Retail_Other_20606	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Met-Ed_Large Retail_Other_20607	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Met-Ed_Large Retail_Other_20610	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Retail_Other_20611	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Met-Ed_Large Retail_Other_20613	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Met-Ed_Large Retail_Other_20614	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Met-Ed_Large Retail_Other_20615	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Met-Ed_Large Retail_Plug Loads_20701	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Met-Ed_Large Retail_Plug Loads_20702	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Met-Ed_Large Retail_Plug Loads_20703	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Met-Ed_Large Retail_Plug Loads_20704	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Met-Ed_Large Retail_Plug Loads_20705	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Met-Ed_Large Retail_Plug Loads_20706	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Met-Ed_Large Retail_Plug Loads_20707	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Met-Ed_Large Retail_Plug Loads_20708	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Met-Ed_Large Retail_Refrigeration_20801	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Met-Ed_Large Retail_Refrigeration_20805	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Met-Ed_Large Retail_Refrigeration_20806	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Met-Ed_Large Retail_Refrigeration_20807	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.094	0.094
Met-Ed_Large Retail_Refrigeration_20808	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Met-Ed_Large Retail_Refrigeration_20809	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Met-Ed_Large Retail_Refrigeration_20811	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.403	0.403
Met-Ed_Large Retail_Refrigeration_20818	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Met-Ed_Large Retail_Refrigeration_20821	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Met-Ed_Large Retail_Space Heating_20910	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20911	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20913	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20915	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20916	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20917	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20919	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20923	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20929	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20932	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20934	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Space Heating_20936	0.0%	0.0%	45.0%	28.2%	16.4%	10.4%	0.000	0.000
Met-Ed_Large Retail_Total Electric_21701	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21702	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21703	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21704	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21705	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21706	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21707	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21708	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21709	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21710	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21711	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	1.000	1.000
Met-Ed_Large Retail_Total Electric_21712	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	1.000	1.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Retail_Total Electric_21713	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Total Electric_21714	36.2%	19.9%	10.5%	8.5%	13.9%	11.0%	0.754	0.754
Met-Ed_Large Retail_Ventilation_21001	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.531	0.531
Met-Ed_Large Retail_Ventilation_21002	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.531	0.531
Met-Ed_Large Retail_Ventilation_21003	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.531	0.531
Met-Ed_Large Retail_Ventilation_21005	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.531	0.531
Met-Ed_Large Retail_Ventilation_21006	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.531	0.531
Met-Ed_Large Retail_Ventilation_21007	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Met-Ed_Large Retail_Ventilation_21008	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Met-Ed_Large Retail_Ventilation_21009	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Met-Ed_Large Retail_Ventilation_21010	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Met-Ed_Large Retail_Water Heating_21103	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.723	0.723
Met-Ed_Large Retail_Water Heating_21107	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.723	0.723
Met-Ed_Large Retail_Water Heating_21109	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.723	0.723
Met-Ed_Large Retail_Water Heating_21114	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.723	0.723
Met-Ed_Large Retail_Water Heating_21115	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.723	0.723
Met-Ed_Large Retail_Water Heating_21118	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.900	0.900
Met-Ed_Large Warehouse_Cooling_20301	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20302	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20303	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20304	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20308	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20309	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20311	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20312	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20313	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Met-Ed_Large Warehouse_Cooling_20314	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20315	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20316	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20317	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20318	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20319	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20320	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20321	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20322	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20323	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20330	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20331	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20333	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20334	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20335	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20336	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20337	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20338	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247
Met-Ed_Large Warehouse_Cooling_20339	58.8%	41.2%	0.0%	0.0%	0.0%	0.0%	0.247	0.247

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Warehouse_Exterior Lighting_20401	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Warehouse_Exterior Lighting_20402	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.000	0.000
Met-Ed_Large Warehouse_Exterior Lighting_20403	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Warehouse_Exterior Lighting_20404	9.4%	27.1%	9.5%	18.9%	10.8%	24.2%	0.110	0.110
Met-Ed_Large Warehouse_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Met-Ed_Large Warehouse_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Met-Ed_Large Warehouse_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Met-Ed_Large Warehouse_Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Met-Ed_Large Warehouse_Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Met-Ed_Large Warehouse_Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
Met-Ed_Large Warehouse_Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Warehouse_Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Warehouse_Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Warehouse_Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Warehouse_Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Warehouse_Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Warehouse_Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Warehouse_Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Met-Ed_Large Warehouse_Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Large Warehouse_Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Large Warehouse_Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Large Warehouse_Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Large Warehouse_Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Large Warehouse_Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Large Warehouse_Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Large Warehouse_Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Met-Ed_Large Warehouse_Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Large Warehouse_Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Large Warehouse_Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Large Warehouse_Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
Met-Ed_Large Warehouse_Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Large Warehouse_Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
Met-Ed_Large Warehouse_Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Met-Ed_Large Warehouse_Space Heating_20910	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Met-Ed_Large Warehouse_Space Heating_20911	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20913	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20914	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20915	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20916	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20917	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20919	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20923	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20929	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20932	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20934	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Space Heating_20936	0.0%	0.0%	29.2%	38.2%	11.6%	21.0%	0.000	0.000
Met-Ed_Large Warehouse_Total Electric_21701	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21702	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21703	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21704	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21705	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21706	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21707	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21708	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21709	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21710	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21711	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	1.000	1.000
Met-Ed_Large Warehouse_Total Electric_21712	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	1.000	1.000
Met-Ed_Large Warehouse_Total Electric_21713	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Total Electric_21714	27.2%	17.6%	14.5%	9.1%	19.2%	12.4%	0.820	0.820
Met-Ed_Large Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Large Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Large Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Large Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Large Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.247	0.247
Met-Ed_Large Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Met-Ed_Large Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Met-Ed_Large Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Met-Ed_Large Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Met-Ed_Large Warehouse_Water Heating_21103	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Large Warehouse_Water Heating_21107	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Large Warehouse_Water Heating_21109	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Large Warehouse_Water Heating_21114	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Large Warehouse_Water Heating_21115	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.706	0.706
Met-Ed_Large Warehouse_Water Heating_21118	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Single Family_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Penelec_Single Family_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Penelec_Single Family_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
Penelec_Single Family_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penelec_Single Family_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penelec_Single Family_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penelec_Single Family_Cooling_10301	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10303	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10305	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10306	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10309	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10311	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10313	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10314	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.000	0.000
Penelec_Single Family_Cooling_10315	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.000	0.000
Penelec_Single Family_Cooling_10316	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10318	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Cooling_10319	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
Penelec_Single Family_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penelec_Single Family_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penelec_Single Family_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730
Penelec_Single Family_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penelec_Single Family_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
Penelec_Single Family_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.315	0.315
Penelec_Single Family_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
Penelec_Single Family_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
Penelec_Single Family_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penelec_Single Family_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penelec_Single Family_Space Heating_10910	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Space Heating_10911	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Space Heating_10914	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Space Heating_10915	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Space Heating_10918	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Space Heating_10919	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Space Heating_10920	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Space Heating_10921	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Space Heating_10922	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family_Total Electric_11702	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family_Total Electric_11703	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family_Total Electric_11704	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family_Total Electric_11705	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family_Total Electric_11706	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Single Family_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penelec_Single Family_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
Penelec_Single Family_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penelec_Single Family_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penelec_Single Family_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
Penelec_Single Family_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Penelec_Single Family_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Penelec_Multifamily_Appliances_10101	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.026	0.026
Penelec_Multifamily_Appliances_10102	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.026	0.026
Penelec_Multifamily_Appliances_10103	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.405	0.405
Penelec_Multifamily_Appliances_10105	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily_Appliances_10107	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily_Appliances_10108	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily_Appliances_10109	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily_Appliances_10111	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily_Cooling_10301	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Cooling_10303	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Cooling_10305	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Cooling_10306	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Cooling_10309	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Cooling_10311	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Cooling_10313	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Cooling_10314	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.000	0.000
Penelec_Multifamily_Cooling_10315	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.000	0.000
Penelec_Multifamily_Cooling_10318	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Cooling_10319	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
Penelec_Multifamily_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penelec_Multifamily_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penelec_Multifamily_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
Penelec_Multifamily_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penelec_Multifamily_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penelec_Multifamily_Other_10601	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.106	0.106
Penelec_Multifamily_Other_10602	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.000	0.000
Penelec_Multifamily_Other_10603	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.625	0.625
Penelec_Multifamily_Other_10604	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.315	0.315
Penelec_Multifamily_Other_10605	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.310	0.310
Penelec_Multifamily_Plug Loads_10701	21.3%	20.6%	12.8%	11.9%	17.0%	16.4%	0.410	0.410
Penelec_Multifamily_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penelec_Multifamily_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penelec_Multifamily_Space Heating_10910	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Multifamily_Space Heating_10911	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily_Space Heating_10914	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily_Space Heating_10915	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily_Space Heating_10916	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily_Space Heating_10918	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily_Space Heating_10920	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily_Space Heating_10921	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily_Space Heating_10922	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penelec_Multifamily_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
Penelec_Multifamily_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penelec_Multifamily_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penelec_Multifamily_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
Penelec_Multifamily_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penelec_Multifamily_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penelec_Multifamily_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penelec_Multifamily_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penelec_Single Family LI_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Penelec_Single Family LI_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Penelec_Single Family LI_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
Penelec_Single Family LI_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penelec_Single Family LI_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penelec_Single Family LI_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penelec_Single Family LI_Cooling_10301	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10303	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10305	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10306	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10309	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10311	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10313	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10314	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.000	0.000
Penelec_Single Family LI_Cooling_10315	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.000	0.000
Penelec_Single Family LI_Cooling_10316	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10318	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Cooling_10319	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.315	0.315
Penelec_Single Family LI_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
Penelec_Single Family LI_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penelec_Single Family LI_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penelec_Single Family LI_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Single Family LI_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penelec_Single Family LI_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
Penelec_Single Family LI_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.315	0.315
Penelec_Single Family LI_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
Penelec_Single Family LI_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
Penelec_Single Family LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penelec_Single Family LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penelec_Single Family LI_Space Heating_10910	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Space Heating_10911	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Space Heating_10914	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Space Heating_10915	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Space Heating_10918	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Space Heating_10919	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Space Heating_10920	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Space Heating_10921	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Space Heating_10922	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penelec_Single Family LI_Total Electric_11702	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family LI_Total Electric_11703	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family LI_Total Electric_11704	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family LI_Total Electric_11705	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family LI_Total Electric_11706	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penelec_Single Family LI_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family LI_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family LI_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family LI_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family LI_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family LI_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penelec_Single Family LI_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penelec_Single Family LI_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
Penelec_Single Family LI_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penelec_Single Family LI_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penelec_Single Family LI_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
Penelec_Single Family LI_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Penelec_Single Family LI_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Penelec_Multifamily LI_Appliances_10101	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.026	0.026
Penelec_Multifamily LI_Appliances_10102	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.026	0.026
Penelec_Multifamily LI_Appliances_10103	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.405	0.405
Penelec_Multifamily LI_Appliances_10105	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily LI_Appliances_10107	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily LI_Appliances_10108	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily LI_Appliances_10109	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily LI_Appliances_10111	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penelec_Multifamily LI_Cooling_10301	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily LI_Cooling_10303	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily LI_Cooling_10305	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Multifamily LI_Cooling_10306	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily LI_Cooling_10309	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily LI_Cooling_10311	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily LI_Cooling_10313	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily LI_Cooling_10314	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.000	0.000
Penelec_Multifamily LI_Cooling_10315	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.000	0.000
Penelec_Multifamily LI_Cooling_10318	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily LI_Cooling_10319	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.315	0.315
Penelec_Multifamily LI_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
Penelec_Multifamily LI_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penelec_Multifamily LI_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penelec_Multifamily LI_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
Penelec_Multifamily LI_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penelec_Multifamily LI_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penelec_Multifamily LI_Other_10601	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.106	0.106
Penelec_Multifamily LI_Other_10602	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.000	0.000
Penelec_Multifamily LI_Other_10603	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.625	0.625
Penelec_Multifamily LI_Other_10604	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.315	0.315
Penelec_Multifamily LI_Other_10605	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.310	0.310
Penelec_Multifamily LI_Plug Loads_10701	21.3%	20.6%	12.8%	11.9%	17.0%	16.4%	0.410	0.410
Penelec_Multifamily LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penelec_Multifamily LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penelec_Multifamily LI_Space Heating_10910	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Space Heating_10911	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Space Heating_10914	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Space Heating_10915	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Space Heating_10916	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Space Heating_10918	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Space Heating_10920	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Space Heating_10921	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Space Heating_10922	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penelec_Multifamily LI_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily LI_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily LI_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily LI_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily LI_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily LI_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penelec_Multifamily LI_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penelec_Multifamily LI_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
Penelec_Multifamily LI_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penelec_Multifamily LI_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penelec_Multifamily LI_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
Penelec_Multifamily LI_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penelec_Multifamily LI_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penelec_Multifamily LI_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Multifamily LI_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penelec_Small Education - College/University_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - College/University_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - College/University_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - College/University_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - College/University_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - College/University_Cooling_20301	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20302	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20303	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20304	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20308	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20309	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20311	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20312	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20313	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	1.000	1.000
Penelec_Small Education - College/University_Cooling_20314	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20315	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20316	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20317	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20318	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20319	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20320	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20321	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20322	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20323	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20326	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20327	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20328	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20329	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20330	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20331	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20333	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20334	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20335	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20336	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20338	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Cooling_20339	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.429	0.429
Penelec_Small Education - College/University_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Education - College/University_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Education - College/University_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Education - College/University_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Education - College/University_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - College/University_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - College/University_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - College/University_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Education - College/University_Total Electric_21701	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21702	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21703	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21704	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21705	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21706	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21707	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21708	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21709	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21710	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21711	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	1.000	1.000
Penelec_Small Education - College/University_Total Electric_21712	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	1.000	1.000
Penelec_Small Education - College/University_Total Electric_21713	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Total Electric_21714	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - College/University_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.362	0.362
Penelec_Small Education - College/University_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.362	0.362
Penelec_Small Education - College/University_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.362	0.362
Penelec_Small Education - College/University_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.362	0.362
Penelec_Small Education - College/University_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.362	0.362
Penelec_Small Education - College/University_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penelec_Small Education - College/University_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penelec_Small Education - College/University_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penelec_Small Education - College/University_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penelec_Small Education - College/University_Water Heating_21103	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - College/University_Water Heating_21107	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - College/University_Water Heating_21109	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - College/University_Water Heating_21114	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - College/University_Water Heating_21115	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - College/University_Water Heating_21116	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - College/University_Water Heating_21118	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.900	0.900
Penelec_Small Education - Other_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - Other_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - Other_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - Other_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - Other_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penelec_Small Education - Other_Cooling_20301	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20302	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20303	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20304	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20308	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20309	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20311	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20312	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20313	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	1.000	1.000
Penelec_Small Education - Other_Cooling_20314	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Education - Other_Cooling_20315	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20316	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20317	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20318	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20319	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20320	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20321	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20322	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20323	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20326	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20327	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20328	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20329	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20330	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20331	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20333	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20334	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20335	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20336	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20338	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Cooling_20339	89.0%	6.8%	0.0%	0.0%	4.1%	0.1%	0.129	0.129
Penelec_Small Education - Other_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Education - Other_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Education - Other_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Education - Other_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Education - Other_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
Penelec_Small Education - Other_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
Penelec_Small Education - Other_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
Penelec_Small Education - Other_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
Penelec_Small Education - Other_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penelec_Small Education - Other_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penelec_Small Education - Other_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penelec_Small Education - Other_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penelec_Small Education - Other_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Education - Other_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penelec_Small Education - Other_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penelec_Small Education - Other_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penelec_Small Education - Other_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penelec_Small Education - Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Education - Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Education - Other_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Education - Other_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Education - Other_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
Penelec_Small Education - Other_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Education - Other_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Education - Other_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Penelec_Small Education - Other_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Education - Other_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Education - Other_Space Heating_20910	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20911	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20913	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20914	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20915	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20916	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20917	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20919	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20923	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20925	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20927	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20929	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20932	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20934	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Space Heating_20936	0.0%	0.0%	35.4%	33.7%	17.1%	13.7%	0.000	0.000
Penelec_Small Education - Other_Total Electric_21701	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21702	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21703	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21704	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21705	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21706	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21707	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21708	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21709	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21710	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21711	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	1.000	1.000
Penelec_Small Education - Other_Total Electric_21712	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	1.000	1.000
Penelec_Small Education - Other_Total Electric_21713	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Total Electric_21714	29.5%	8.8%	15.6%	10.8%	21.8%	13.4%	0.263	0.263
Penelec_Small Education - Other_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.127	0.127
Penelec_Small Education - Other_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.127	0.127

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Education - Other_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.127	0.127
Penelec_Small Education - Other_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.127	0.127
Penelec_Small Education - Other_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.127	0.127
Penelec_Small Education - Other_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penelec_Small Education - Other_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penelec_Small Education - Other_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penelec_Small Education - Other_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penelec_Small Education - Other_Water Heating_21103	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - Other_Water Heating_21107	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - Other_Water Heating_21109	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - Other_Water Heating_21114	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - Other_Water Heating_21115	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - Other_Water Heating_21116	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.404	0.404
Penelec_Small Education - Other_Water Heating_21118	29.9%	7.5%	22.5%	5.9%	27.3%	6.9%	0.900	0.900
Penelec_Small Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penelec_Small Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penelec_Small Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penelec_Small Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penelec_Small Grocery_Cooling_20301	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20302	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20303	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20304	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20308	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20309	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20311	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20312	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20313	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	1.000	1.000
Penelec_Small Grocery_Cooling_20317	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20318	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20319	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20320	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20321	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20322	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20326	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20327	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20328	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20329	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20330	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20331	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20333	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20334	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20335	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20336	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20338	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262
Penelec_Small Grocery_Cooling_20339	37.8%	35.6%	2.5%	1.1%	13.8%	9.1%	0.262	0.262

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Grocery_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Grocery_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Grocery_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Grocery_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Penelec_Small Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Penelec_Small Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Penelec_Small Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Penelec_Small Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Small Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Grocery_Refrigeration_20803	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penelec_Small Grocery_Refrigeration_20805	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penelec_Small Grocery_Refrigeration_20806	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penelec_Small Grocery_Refrigeration_20807	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.094	0.094
Penelec_Small Grocery_Refrigeration_20808	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penelec_Small Grocery_Refrigeration_20811	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.403	0.403
Penelec_Small Grocery_Refrigeration_20818	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penelec_Small Grocery_Space Heating_20910	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20911	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20913	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20915	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20916	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20917	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20919	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20923	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20925	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20927	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Grocery_Space Heating_20929	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20932	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20934	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Space Heating_20936	0.0%	0.0%	15.4%	75.6%	0.4%	8.6%	0.000	0.000
Penelec_Small Grocery_Total Electric_21701	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21702	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21703	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21704	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21705	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21706	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21707	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21708	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21709	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21710	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21711	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	1.000	1.000
Penelec_Small Grocery_Total Electric_21712	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	1.000	1.000
Penelec_Small Grocery_Total Electric_21713	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Total Electric_21714	23.9%	23.3%	10.9%	10.3%	16.3%	15.3%	0.935	0.935
Penelec_Small Grocery_Ventilation_21001	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.242	0.242
Penelec_Small Grocery_Ventilation_21002	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.242	0.242
Penelec_Small Grocery_Ventilation_21003	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.242	0.242
Penelec_Small Grocery_Ventilation_21005	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.242	0.242
Penelec_Small Grocery_Ventilation_21006	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.242	0.242
Penelec_Small Grocery_Ventilation_21007	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.883	0.883
Penelec_Small Grocery_Ventilation_21008	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.883	0.883
Penelec_Small Grocery_Ventilation_21009	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.883	0.883
Penelec_Small Grocery_Ventilation_21010	19.5%	21.5%	12.2%	13.7%	15.6%	17.5%	0.883	0.883
Penelec_Small Grocery_Water Heating_21103	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Small Grocery_Water Heating_21107	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Small Grocery_Water Heating_21109	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Small Grocery_Water Heating_21114	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Small Grocery_Water Heating_21115	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Small Grocery_Water Heating_21118	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.900	0.900
Penelec_Small Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Small Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Small Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Small Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Small Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Small Health - Hospital_Cooling_20301	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20302	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20303	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20304	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20308	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20309	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20311	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Health - Hospital_Cooling_20312	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20313	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	1.000	1.000
Penelec_Small Health - Hospital_Cooling_20314	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20315	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20316	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20317	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20318	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20319	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20320	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20321	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20322	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20323	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20326	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20327	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20328	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20329	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20330	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20331	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20333	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20334	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20335	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20336	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20338	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Cooling_20339	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Small Health - Hospital_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Health - Hospital_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Health - Hospital_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Health - Hospital_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Penelec_Small Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Penelec_Small Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Penelec_Small Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Penelec_Small Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Small Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Penelec_Small Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
Penelec_Small Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Small Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Small Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Small Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Small Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Small Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Small Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Small Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Small Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Small Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Small Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Small Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Small Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Small Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Small Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Small Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Small Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Small Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Small Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Small Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Small Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Penelec_Small Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Small Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Small Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Penelec_Small Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Small Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Small Health - Hospital_Space Heating_20910	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20911	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20913	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20914	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20915	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20916	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20917	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20919	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20923	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20925	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20927	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20929	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20932	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20934	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Space Heating_20936	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Small Health - Hospital_Total Electric_21701	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21702	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Health - Hospital_Total Electric_21703	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21704	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21705	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21706	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21707	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21708	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21709	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21710	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21711	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	1.000	1.000
Penelec_Small Health - Hospital_Total Electric_21712	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	1.000	1.000
Penelec_Small Health - Hospital_Total Electric_21713	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Total Electric_21714	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Small Health - Hospital_Ventilation_21001	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Small Health - Hospital_Ventilation_21002	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Small Health - Hospital_Ventilation_21003	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Small Health - Hospital_Ventilation_21005	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Small Health - Hospital_Ventilation_21006	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Small Health - Hospital_Ventilation_21007	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.761	0.761
Penelec_Small Health - Hospital_Ventilation_21008	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.761	0.761
Penelec_Small Health - Hospital_Ventilation_21009	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.761	0.761
Penelec_Small Health - Hospital_Ventilation_21010	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.761	0.761
Penelec_Small Health - Hospital_Water Heating_21103	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Small Health - Hospital_Water Heating_21107	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Small Health - Hospital_Water Heating_21114	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Small Health - Hospital_Water Heating_21115	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Small Health - Hospital_Water Heating_21116	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Small Health - Hospital_Water Heating_21118	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.900	0.900
Penelec_Small Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Small Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Small Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Small Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Small Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Small Health - Other_Cooling_20301	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20302	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20303	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20304	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20308	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20309	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20311	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20312	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20313	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	1.000	1.000
Penelec_Small Health - Other_Cooling_20314	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20315	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20316	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20317	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Health - Other_Cooling_20318	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20319	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20320	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20321	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20322	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20323	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20326	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20327	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20328	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20329	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20330	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20331	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20333	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20334	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20335	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20336	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20338	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Cooling_20339	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Small Health - Other_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Health - Other_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Health - Other_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Health - Other_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penelec_Small Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penelec_Small Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penelec_Small Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penelec_Small Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Small Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penelec_Small Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penelec_Small Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Penelec_Small Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Health - Other_Space Heating_20910	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20911	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20913	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20914	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20915	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20916	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20917	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20919	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20923	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20925	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20927	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20929	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20932	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20934	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Space Heating_20936	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Health - Other_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Penelec_Small Health - Other_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Penelec_Small Health - Other_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Health - Other_Ventilation_21001	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Small Health - Other_Ventilation_21002	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Small Health - Other_Ventilation_21003	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Health - Other_Ventilation_21005	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Small Health - Other_Ventilation_21006	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Small Health - Other_Ventilation_21007	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Small Health - Other_Ventilation_21008	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Small Health - Other_Ventilation_21009	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Small Health - Other_Ventilation_21010	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Small Health - Other_Water Heating_21103	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Health - Other_Water Heating_21107	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Health - Other_Water Heating_21114	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Health - Other_Water Heating_21115	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Health - Other_Water Heating_21116	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Health - Other_Water Heating_21118	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.900	0.900
Penelec_Small Industrial Manufacturing_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Industrial Manufacturing_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Industrial Manufacturing_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Industrial Manufacturing_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penelec_Small Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penelec_Small Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Small Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Small Institutional/Public Service_Cooling_20301	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20302	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20303	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20304	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20308	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20309	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20311	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20312	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20313	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	1.000	1.000
Penelec_Small Institutional/Public Service_Cooling_20315	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20316	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20317	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20318	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Institutional/Public Service_Cooling_20319	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20320	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20321	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20322	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20323	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20326	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20327	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20328	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20329	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20330	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20331	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20333	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20334	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20335	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20336	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20338	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Cooling_20339	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Small Institutional/Public Service_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Institutional/Public Service_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Institutional/Public Service_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Institutional/Public Service_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penelec_Small Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penelec_Small Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penelec_Small Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penelec_Small Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Small Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penelec_Small Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penelec_Small Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Penelec_Small Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Small Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Small Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penelec_Small Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penelec_Small Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Institutional/Public Service_Space Heating_20910	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20911	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20913	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20915	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20916	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20917	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20919	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20923	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20925	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20927	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20929	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20932	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20934	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Space Heating_20936	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Small Institutional/Public Service_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Institutional/Public Service_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Penelec_Small Institutional/Public Service_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Penelec_Small Institutional/Public Service_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Small Institutional/Public Service_Ventilation_21001	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Small Institutional/Public Service_Ventilation_21002	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Small Institutional/Public Service_Ventilation_21003	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Small Institutional/Public Service_Ventilation_21005	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Small Institutional/Public Service_Ventilation_21006	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Small Institutional/Public Service_Ventilation_21007	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Small Institutional/Public Service_Ventilation_21008	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Small Institutional/Public Service_Ventilation_21009	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Small Institutional/Public Service_Ventilation_21010	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Small Institutional/Public Service_Water Heating_21103	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Institutional/Public Service_Water Heating_21107	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Institutional/Public Service_Water Heating_21109	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Institutional/Public Service_Water Heating_21114	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Institutional/Public Service_Water Heating_21115	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Institutional/Public Service_Water Heating_21118	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.900	0.900
Penelec_Small Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Small Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Small Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Small Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Small Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Small Lodging_Cooling_20301	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20302	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20303	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20304	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20308	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20309	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20311	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20312	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20313	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	1.000	1.000
Penelec_Small Lodging_Cooling_20315	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20316	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20317	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20318	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20319	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20320	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20321	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20322	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20323	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20324	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20325	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20326	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Lodging_Cooling_20327	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20328	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20329	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20330	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20331	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20333	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20334	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20335	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20336	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20338	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Cooling_20339	59.7%	39.8%	0.0%	0.0%	0.5%	0.0%	0.781	0.781
Penelec_Small Lodging_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Lodging_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Lodging_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Lodging_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Penelec_Small Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Penelec_Small Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Penelec_Small Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Penelec_Small Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Small Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Penelec_Small Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Penelec_Small Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
Penelec_Small Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Small Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Small Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Small Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Small Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Small Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Small Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Small Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Small Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Small Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Small Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Small Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Small Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Small Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Small Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Small Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Small Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Small Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Small Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Small Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penelec_Small Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Small Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Small Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penelec_Small Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Small Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Small Lodging_Space Heating_20910	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20911	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20913	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20914	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20915	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20916	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20917	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20919	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20921	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20923	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20925	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20927	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20929	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20932	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20934	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Space Heating_20936	0.0%	0.2%	29.7%	39.4%	10.2%	20.4%	0.000	0.000
Penelec_Small Lodging_Total Electric_21701	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21702	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21703	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21704	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21705	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21706	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21707	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21708	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21709	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21710	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21711	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	1.000	1.000
Penelec_Small Lodging_Total Electric_21712	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	1.000	1.000
Penelec_Small Lodging_Total Electric_21713	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652
Penelec_Small Lodging_Total Electric_21714	28.4%	24.8%	10.0%	10.0%	13.3%	13.5%	0.652	0.652

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Lodging_Ventilation_21001	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.678	0.678
Penelec_Small Lodging_Ventilation_21002	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.678	0.678
Penelec_Small Lodging_Ventilation_21003	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.678	0.678
Penelec_Small Lodging_Ventilation_21005	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.678	0.678
Penelec_Small Lodging_Ventilation_21006	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.678	0.678
Penelec_Small Lodging_Ventilation_21007	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Penelec_Small Lodging_Ventilation_21008	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Penelec_Small Lodging_Ventilation_21009	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Penelec_Small Lodging_Ventilation_21010	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Penelec_Small Lodging_Water Heating_21103	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Small Lodging_Water Heating_21107	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Small Lodging_Water Heating_21109	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Small Lodging_Water Heating_21114	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Small Lodging_Water Heating_21115	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Small Lodging_Water Heating_21116	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Small Lodging_Water Heating_21118	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.900	0.900
Penelec_Small Miscellaneous/Other_Cooling_20301	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20302	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20303	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20304	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20308	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20309	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20311	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20312	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20313	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	1.000	1.000
Penelec_Small Miscellaneous/Other_Cooling_20317	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20318	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20319	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20320	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20321	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20322	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20326	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20327	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20328	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20329	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20330	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20331	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20333	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20334	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20335	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20336	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20338	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Cooling_20339	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.480	0.480
Penelec_Small Miscellaneous/Other_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Miscellaneous/Other_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Miscellaneous/Other_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Miscellaneous/Other_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Miscellaneous/Other_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Penelec_Small Miscellaneous/Other_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Penelec_Small Miscellaneous/Other_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Penelec_Small Miscellaneous/Other_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Penelec_Small Miscellaneous/Other_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penelec_Small Miscellaneous/Other_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Penelec_Small Miscellaneous/Other_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Penelec_Small Miscellaneous/Other_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
Penelec_Small Miscellaneous/Other_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Miscellaneous/Other_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Miscellaneous/Other_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Miscellaneous/Other_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Miscellaneous/Other_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Miscellaneous/Other_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Miscellaneous/Other_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Miscellaneous/Other_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Miscellaneous/Other_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Miscellaneous/Other_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Miscellaneous/Other_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Miscellaneous/Other_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Miscellaneous/Other_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Miscellaneous/Other_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Miscellaneous/Other_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Miscellaneous/Other_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Miscellaneous/Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Miscellaneous/Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20925	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20927	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Miscellaneous/Other_Total Electric_21701	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21702	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21703	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21704	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21705	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21706	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21707	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21708	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21709	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21710	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21711	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	1.000	1.000
Penelec_Small Miscellaneous/Other_Total Electric_21712	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	1.000	1.000
Penelec_Small Miscellaneous/Other_Total Electric_21713	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Total Electric_21714	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Miscellaneous/Other_Ventilation_21001	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.360	0.360
Penelec_Small Miscellaneous/Other_Ventilation_21002	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.360	0.360
Penelec_Small Miscellaneous/Other_Ventilation_21003	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.360	0.360
Penelec_Small Miscellaneous/Other_Ventilation_21005	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.360	0.360
Penelec_Small Miscellaneous/Other_Ventilation_21006	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.360	0.360
Penelec_Small Miscellaneous/Other_Ventilation_21007	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penelec_Small Miscellaneous/Other_Ventilation_21008	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penelec_Small Miscellaneous/Other_Ventilation_21009	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penelec_Small Miscellaneous/Other_Ventilation_21010	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penelec_Small Miscellaneous/Other_Water Heating_21103	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Miscellaneous/Other_Water Heating_21107	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Miscellaneous/Other_Water Heating_21109	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Miscellaneous/Other_Water Heating_21114	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Miscellaneous/Other_Water Heating_21115	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Miscellaneous/Other_Water Heating_21118	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.900	0.900
Penelec_Small Office_Cooking_20201	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Penelec_Small Office_Cooking_20202	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Penelec_Small Office_Cooking_20206	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Penelec_Small Office_Cooling_20301	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20302	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20303	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20304	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20308	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Office_Cooling_20309	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20311	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20312	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20313	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	1.000	1.000
Penelec_Small Office_Cooling_20314	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20315	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20316	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20317	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20318	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20319	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20320	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20321	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20322	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20323	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20326	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20327	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20328	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20329	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20330	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20331	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20333	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20334	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20335	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20336	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20338	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Cooling_20339	72.8%	18.4%	0.0%	0.0%	8.6%	0.2%	0.325	0.325
Penelec_Small Office_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Office_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Office_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Office_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Office_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Penelec_Small Office_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Penelec_Small Office_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Penelec_Small Office_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Penelec_Small Office_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Office_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penelec_Small Office_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Penelec_Small Office_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Penelec_Small Office_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
Penelec_Small Office_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Office_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Office_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Office_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Office_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Office_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Office_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Office_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penelec_Small Office_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Office_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Office_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Office_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Office_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Office_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Office_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Office_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penelec_Small Office_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Small Office_Space Heating_20910	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20911	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20913	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20914	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20915	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20916	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20917	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20919	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20923	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20925	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20927	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20929	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20932	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20934	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Space Heating_20936	0.0%	0.0%	26.3%	40.9%	8.7%	24.0%	0.000	0.000
Penelec_Small Office_Total Electric_21701	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21702	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21703	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21704	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21705	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21706	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21707	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21708	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21709	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Office_Total Electric_21710	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21711	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	1.000	1.000
Penelec_Small Office_Total Electric_21712	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	1.000	1.000
Penelec_Small Office_Total Electric_21713	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Total Electric_21714	35.5%	15.5%	12.9%	7.2%	19.1%	9.8%	0.744	0.744
Penelec_Small Office_Ventilation_21001	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.306	0.306
Penelec_Small Office_Ventilation_21002	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.306	0.306
Penelec_Small Office_Ventilation_21003	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.306	0.306
Penelec_Small Office_Ventilation_21005	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.306	0.306
Penelec_Small Office_Ventilation_21006	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.306	0.306
Penelec_Small Office_Ventilation_21007	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penelec_Small Office_Ventilation_21008	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penelec_Small Office_Ventilation_21009	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penelec_Small Office_Ventilation_21010	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penelec_Small Office_Water Heating_21103	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Office_Water Heating_21107	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Office_Water Heating_21109	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Office_Water Heating_21114	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Office_Water Heating_21115	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.633	0.633
Penelec_Small Office_Water Heating_21118	18.8%	17.7%	15.5%	14.3%	17.3%	16.4%	0.900	0.900
Penelec_Small Restaurant_Cooking_20201	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penelec_Small Restaurant_Cooking_20202	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penelec_Small Restaurant_Cooking_20204	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penelec_Small Restaurant_Cooking_20206	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penelec_Small Restaurant_Cooking_20208	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penelec_Small Restaurant_Cooling_20301	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20302	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20303	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20304	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20308	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20309	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20311	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20312	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20313	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	1.000	1.000
Penelec_Small Restaurant_Cooling_20317	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20318	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20319	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20320	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20321	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20322	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20326	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20327	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20328	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20329	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20330	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Restaurant_Cooling_20331	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20333	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20334	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20335	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20336	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20338	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Cooling_20339	47.7%	38.3%	0.3%	0.0%	9.4%	4.1%	0.416	0.416
Penelec_Small Restaurant_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Restaurant_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Restaurant_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Restaurant_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Restaurant_Interior Lighting_20508	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20509	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20511	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20512	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20514	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20515	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20517	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
Penelec_Small Restaurant_Interior Lighting_20518	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
Penelec_Small Restaurant_Interior Lighting_20520	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20521	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20522	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
Penelec_Small Restaurant_Interior Lighting_20524	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20525	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20529	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
Penelec_Small Restaurant_Interior Lighting_20531	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Interior Lighting_20532	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penelec_Small Restaurant_Other_20601	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
Penelec_Small Restaurant_Other_20602	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
Penelec_Small Restaurant_Other_20603	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.405	0.405
Penelec_Small Restaurant_Other_20604	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penelec_Small Restaurant_Other_20606	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penelec_Small Restaurant_Other_20607	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penelec_Small Restaurant_Other_20610	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penelec_Small Restaurant_Other_20611	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penelec_Small Restaurant_Other_20613	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penelec_Small Restaurant_Other_20614	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penelec_Small Restaurant_Other_20615	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penelec_Small Restaurant_Plug Loads_20701	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Restaurant_Plug Loads_20702	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Restaurant_Plug Loads_20703	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Restaurant_Plug Loads_20704	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Restaurant_Plug Loads_20705	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Restaurant_Plug Loads_20706	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Restaurant_Plug Loads_20707	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Restaurant_Plug Loads_20708	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Small Restaurant_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penelec_Small Restaurant_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penelec_Small Restaurant_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penelec_Small Restaurant_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penelec_Small Restaurant_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Penelec_Small Restaurant_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penelec_Small Restaurant_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penelec_Small Restaurant_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Penelec_Small Restaurant_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penelec_Small Restaurant_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penelec_Small Restaurant_Space Heating_20910	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20911	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20913	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20914	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20915	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20916	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20917	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20923	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20925	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20927	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20929	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20932	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20934	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Space Heating_20936	0.0%	0.0%	28.4%	49.1%	4.7%	17.8%	0.000	0.000
Penelec_Small Restaurant_Total Electric_21701	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21702	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21703	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21704	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21705	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21706	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21707	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21708	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21709	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21710	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21711	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	1.000	1.000
Penelec_Small Restaurant_Total Electric_21712	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	1.000	1.000
Penelec_Small Restaurant_Total Electric_21713	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Total Electric_21714	26.2%	23.4%	10.7%	9.8%	15.8%	14.1%	0.925	0.925
Penelec_Small Restaurant_Ventilation_21001	19.0%	21.0%	12.6%	13.6%	15.7%	18.0%	0.406	0.406
Penelec_Small Restaurant_Ventilation_21002	19.0%	21.0%	12.6%	13.6%	15.7%	18.0%	0.406	0.406
Penelec_Small Restaurant_Ventilation_21003	19.0%	21.0%	12.6%	13.6%	15.7%	18.0%	0.406	0.406
Penelec_Small Restaurant_Ventilation_21007	19.0%	21.0%	12.6%	13.6%	15.7%	18.0%	0.892	0.892
Penelec_Small Restaurant_Ventilation_21008	19.0%	21.0%	12.6%	13.6%	15.7%	18.0%	0.892	0.892
Penelec_Small Restaurant_Ventilation_21009	19.0%	21.0%	12.6%	13.6%	15.7%	18.0%	0.892	0.892

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Restaurant_Ventilation_21010	19.0%	21.0%	12.6%	13.6%	15.7%	18.0%	0.892	0.892
Penelec_Small Restaurant_Water Heating_21103	22.1%	14.5%	18.2%	11.6%	20.2%	13.4%	0.598	0.598
Penelec_Small Restaurant_Water Heating_21107	22.1%	14.5%	18.2%	11.6%	20.2%	13.4%	0.598	0.598
Penelec_Small Restaurant_Water Heating_21109	22.1%	14.5%	18.2%	11.6%	20.2%	13.4%	0.598	0.598
Penelec_Small Restaurant_Water Heating_21114	22.1%	14.5%	18.2%	11.6%	20.2%	13.4%	0.598	0.598
Penelec_Small Restaurant_Water Heating_21115	22.1%	14.5%	18.2%	11.6%	20.2%	13.4%	0.598	0.598
Penelec_Small Restaurant_Water Heating_21118	22.1%	14.5%	18.2%	11.6%	20.2%	13.4%	0.900	0.900
Penelec_Small Retail_Cooking_20201	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penelec_Small Retail_Cooking_20202	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penelec_Small Retail_Cooking_20204	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penelec_Small Retail_Cooking_20206	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penelec_Small Retail_Cooking_20208	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penelec_Small Retail_Cooling_20301	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20302	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20303	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20304	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20308	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20309	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20311	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20312	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20313	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	1.000	1.000
Penelec_Small Retail_Cooling_20317	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20318	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20319	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20320	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20321	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20322	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20326	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20327	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20328	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20329	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20330	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20331	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20333	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20334	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20335	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20336	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20338	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Cooling_20339	70.5%	17.4%	0.1%	0.0%	10.5%	1.4%	0.495	0.495
Penelec_Small Retail_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Retail_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Retail_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Retail_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Retail_Interior Lighting_20508	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20509	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Retail_Interior Lighting_20511	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20512	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20514	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20515	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20517	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
Penelec_Small Retail_Interior Lighting_20518	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
Penelec_Small Retail_Interior Lighting_20520	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20521	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20522	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
Penelec_Small Retail_Interior Lighting_20524	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20525	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20529	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
Penelec_Small Retail_Interior Lighting_20531	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Interior Lighting_20532	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penelec_Small Retail_Other_20601	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
Penelec_Small Retail_Other_20602	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
Penelec_Small Retail_Other_20603	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.405	0.405
Penelec_Small Retail_Other_20604	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penelec_Small Retail_Other_20606	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penelec_Small Retail_Other_20607	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penelec_Small Retail_Other_20610	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penelec_Small Retail_Other_20611	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penelec_Small Retail_Other_20613	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penelec_Small Retail_Other_20614	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penelec_Small Retail_Other_20615	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penelec_Small Retail_Plug Loads_20701	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penelec_Small Retail_Plug Loads_20702	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penelec_Small Retail_Plug Loads_20703	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penelec_Small Retail_Plug Loads_20704	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penelec_Small Retail_Plug Loads_20705	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penelec_Small Retail_Plug Loads_20706	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penelec_Small Retail_Plug Loads_20707	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penelec_Small Retail_Plug Loads_20708	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penelec_Small Retail_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Retail_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Retail_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Retail_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penelec_Small Retail_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Retail_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Retail_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penelec_Small Retail_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Retail_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Small Retail_Space Heating_20910	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20911	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20913	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Retail_Space Heating_20915	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20916	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20917	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20919	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20923	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20925	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20927	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20929	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20932	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20934	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Space Heating_20936	0.0%	0.0%	24.5%	43.9%	7.1%	24.4%	0.000	0.000
Penelec_Small Retail_Total Electric_21701	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21702	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21703	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21704	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21705	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21706	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21707	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21708	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21709	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21710	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21711	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	1.000	1.000
Penelec_Small Retail_Total Electric_21712	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	1.000	1.000
Penelec_Small Retail_Total Electric_21713	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Total Electric_21714	34.3%	15.6%	12.9%	7.6%	19.0%	10.6%	0.901	0.901
Penelec_Small Retail_Ventilation_21001	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.472	0.472
Penelec_Small Retail_Ventilation_21002	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.472	0.472
Penelec_Small Retail_Ventilation_21003	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.472	0.472
Penelec_Small Retail_Ventilation_21005	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.472	0.472
Penelec_Small Retail_Ventilation_21006	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.472	0.472
Penelec_Small Retail_Ventilation_21007	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.952	0.952
Penelec_Small Retail_Ventilation_21008	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.952	0.952
Penelec_Small Retail_Ventilation_21009	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.952	0.952
Penelec_Small Retail_Ventilation_21010	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.952	0.952
Penelec_Small Retail_Water Heating_21103	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Retail_Water Heating_21107	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Retail_Water Heating_21109	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Retail_Water Heating_21114	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Retail_Water Heating_21115	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Small Retail_Water Heating_21118	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.900	0.900
Penelec_Small Warehouse_Cooling_20301	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20302	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20303	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20304	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20308	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Warehouse_Cooling_20309	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20311	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20312	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20313	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Penelec_Small Warehouse_Cooling_20314	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20315	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20316	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20317	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20318	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20319	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20320	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20321	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20322	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20323	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20326	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20327	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20328	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20329	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20330	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20331	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20333	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20334	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20335	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20336	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20337	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20338	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Cooling_20339	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Small Warehouse_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Warehouse_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Small Warehouse_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Warehouse_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Small Warehouse_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penelec_Small Warehouse_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penelec_Small Warehouse_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Small Warehouse_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Warehouse_Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Penelec_Small Warehouse_Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Penelec_Small Warehouse_Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
Penelec_Small Warehouse_Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Warehouse_Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Warehouse_Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Warehouse_Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Warehouse_Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Warehouse_Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Warehouse_Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Warehouse_Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Small Warehouse_Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Small Warehouse_Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Small Warehouse_Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Small Warehouse_Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Small Warehouse_Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Small Warehouse_Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Small Warehouse_Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Small Warehouse_Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Small Warehouse_Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Small Warehouse_Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Small Warehouse_Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Small Warehouse_Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
Penelec_Small Warehouse_Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Small Warehouse_Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
Penelec_Small Warehouse_Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Small Warehouse_Space Heating_20910	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20911	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20913	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20914	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20915	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20916	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20917	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20919	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20923	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20925	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20927	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20929	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20932	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20934	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Space Heating_20936	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Small Warehouse_Total Electric_21701	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21702	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21703	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21704	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Small Warehouse_Total Electric_21705	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21706	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21707	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21708	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21709	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21710	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21711	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	1.000	1.000
Penelec_Small Warehouse_Total Electric_21712	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	1.000	1.000
Penelec_Small Warehouse_Total Electric_21713	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Total Electric_21714	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Small Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Small Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Small Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Small Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Small Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Small Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penelec_Small Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penelec_Small Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penelec_Small Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penelec_Small Warehouse_Water Heating_21103	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Small Warehouse_Water Heating_21107	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Small Warehouse_Water Heating_21109	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Small Warehouse_Water Heating_21114	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Small Warehouse_Water Heating_21115	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Small Warehouse_Water Heating_21118	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.900	0.900
Penelec_Large Education - College/University_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - College/University_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - College/University_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - College/University_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - College/University_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - College/University_Cooling_20301	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20302	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20303	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20304	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20308	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20309	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20311	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20312	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20313	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	1.000	1.000
Penelec_Large Education - College/University_Cooling_20314	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20315	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20316	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20317	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20318	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20319	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Education - College/University_Cooling_20320	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20321	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20322	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20323	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20330	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20331	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20333	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20334	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20335	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20336	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20338	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Cooling_20339	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.429	0.429
Penelec_Large Education - College/University_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Education - College/University_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Education - College/University_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Education - College/University_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Education - College/University_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Penelec_Large Education - College/University_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Penelec_Large Education - College/University_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Penelec_Large Education - College/University_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Penelec_Large Education - College/University_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - College/University_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - College/University_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - College/University_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - College/University_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - College/University_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - College/University_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - College/University_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - College/University_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - College/University_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - College/University_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - College/University_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - College/University_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - College/University_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Education - College/University_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - College/University_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - College/University_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Penelec_Large Education - College/University_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - College/University_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - College/University_Space Heating_20910	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20911	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20913	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20914	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20915	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20916	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20917	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20919	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20923	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20929	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20932	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20934	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Space Heating_20936	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - College/University_Total Electric_21701	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21702	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21703	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21704	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21705	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21706	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21707	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21708	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21709	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21710	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21711	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	1.000	1.000
Penelec_Large Education - College/University_Total Electric_21712	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	1.000	1.000
Penelec_Large Education - College/University_Total Electric_21713	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Total Electric_21714	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - College/University_Ventilation_21001	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.362	0.362
Penelec_Large Education - College/University_Ventilation_21002	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.362	0.362
Penelec_Large Education - College/University_Ventilation_21003	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.362	0.362
Penelec_Large Education - College/University_Ventilation_21005	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.362	0.362
Penelec_Large Education - College/University_Ventilation_21006	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.362	0.362
Penelec_Large Education - College/University_Ventilation_21007	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penelec_Large Education - College/University_Ventilation_21008	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penelec_Large Education - College/University_Ventilation_21009	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penelec_Large Education - College/University_Ventilation_21010	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penelec_Large Education - College/University_Water Heating_21103	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - College/University_Water Heating_21107	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - College/University_Water Heating_21109	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - College/University_Water Heating_21114	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Education - College/University_Water Heating_21115	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - College/University_Water Heating_21116	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - College/University_Water Heating_21118	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.900	0.900
Penelec_Large Education - Other_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - Other_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - Other_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - Other_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - Other_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penelec_Large Education - Other_Cooling_20301	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20302	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20303	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20304	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20308	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20309	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20311	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20312	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20313	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	1.000	1.000
Penelec_Large Education - Other_Cooling_20314	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20315	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20316	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20317	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20318	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20319	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20320	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20321	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20322	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20323	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20330	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20331	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20333	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20334	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20335	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20336	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20338	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Cooling_20339	89.0%	7.0%	0.0%	0.0%	3.9%	0.1%	0.129	0.129
Penelec_Large Education - Other_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Education - Other_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Education - Other_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Education - Other_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Education - Other_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Education - Other_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Penelec_Large Education - Other_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Penelec_Large Education - Other_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Penelec_Large Education - Other_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Penelec_Large Education - Other_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penelec_Large Education - Other_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - Other_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - Other_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - Other_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - Other_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - Other_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - Other_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - Other_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penelec_Large Education - Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - Other_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - Other_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - Other_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
Penelec_Large Education - Other_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - Other_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - Other_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Penelec_Large Education - Other_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - Other_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Education - Other_Space Heating_20910	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20911	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20913	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20914	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20915	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20916	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20917	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20919	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20923	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20929	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20932	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20934	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Space Heating_20936	0.1%	0.2%	36.3%	35.7%	13.9%	13.9%	0.000	0.000
Penelec_Large Education - Other_Total Electric_21701	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21702	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21703	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21704	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Education - Other_Total Electric_21705	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21706	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21707	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21708	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21709	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21710	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21711	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	1.000	1.000
Penelec_Large Education - Other_Total Electric_21712	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	1.000	1.000
Penelec_Large Education - Other_Total Electric_21713	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Total Electric_21714	28.1%	14.1%	13.6%	10.5%	19.4%	14.3%	0.546	0.546
Penelec_Large Education - Other_Ventilation_21001	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.127	0.127
Penelec_Large Education - Other_Ventilation_21002	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.127	0.127
Penelec_Large Education - Other_Ventilation_21003	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.127	0.127
Penelec_Large Education - Other_Ventilation_21005	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.127	0.127
Penelec_Large Education - Other_Ventilation_21006	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.127	0.127
Penelec_Large Education - Other_Ventilation_21007	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penelec_Large Education - Other_Ventilation_21008	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penelec_Large Education - Other_Ventilation_21009	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penelec_Large Education - Other_Ventilation_21010	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penelec_Large Education - Other_Water Heating_21103	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - Other_Water Heating_21107	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - Other_Water Heating_21109	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - Other_Water Heating_21114	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - Other_Water Heating_21115	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - Other_Water Heating_21116	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.505	0.505
Penelec_Large Education - Other_Water Heating_21118	29.3%	8.0%	22.1%	6.4%	26.7%	7.4%	0.900	0.900
Penelec_Large Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penelec_Large Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penelec_Large Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penelec_Large Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penelec_Large Grocery_Cooling_20301	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20302	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20303	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20304	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20308	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20309	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20311	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20312	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20313	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	1.000	1.000
Penelec_Large Grocery_Cooling_20317	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20318	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20319	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20320	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20321	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20322	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Grocery_Cooling_20330	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20331	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20333	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20334	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20335	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20336	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20338	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Cooling_20339	54.1%	39.0%	0.0%	0.0%	5.0%	1.9%	0.262	0.262
Penelec_Large Grocery_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Grocery_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Grocery_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Grocery_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Penelec_Large Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Penelec_Large Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Penelec_Large Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Penelec_Large Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penelec_Large Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Large Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Large Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Large Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Large Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Large Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Large Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Large Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penelec_Large Grocery_Refrigeration_20803	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penelec_Large Grocery_Refrigeration_20805	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penelec_Large Grocery_Refrigeration_20806	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penelec_Large Grocery_Refrigeration_20807	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.094	0.094
Penelec_Large Grocery_Refrigeration_20808	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penelec_Large Grocery_Refrigeration_20811	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.403	0.403
Penelec_Large Grocery_Refrigeration_20818	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penelec_Large Grocery_Space Heating_20910	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20911	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Grocery_Space Heating_20913	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20915	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20916	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20917	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20919	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20923	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20929	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20932	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20934	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Space Heating_20936	0.0%	0.5%	27.3%	41.7%	7.9%	22.5%	0.000	0.000
Penelec_Large Grocery_Total Electric_21701	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21702	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21703	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21704	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21705	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21706	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21707	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21708	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21709	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21710	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21711	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	1.000	1.000
Penelec_Large Grocery_Total Electric_21712	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	1.000	1.000
Penelec_Large Grocery_Total Electric_21713	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Total Electric_21714	24.7%	23.0%	11.1%	10.7%	15.4%	15.0%	0.855	0.855
Penelec_Large Grocery_Ventilation_21001	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.242	0.242
Penelec_Large Grocery_Ventilation_21002	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.242	0.242
Penelec_Large Grocery_Ventilation_21003	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.242	0.242
Penelec_Large Grocery_Ventilation_21005	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.242	0.242
Penelec_Large Grocery_Ventilation_21006	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.242	0.242
Penelec_Large Grocery_Ventilation_21007	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Penelec_Large Grocery_Ventilation_21008	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Penelec_Large Grocery_Ventilation_21009	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Penelec_Large Grocery_Ventilation_21010	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Penelec_Large Grocery_Water Heating_21103	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Large Grocery_Water Heating_21107	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Large Grocery_Water Heating_21109	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Large Grocery_Water Heating_21114	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Large Grocery_Water Heating_21115	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.612	0.612
Penelec_Large Grocery_Water Heating_21118	22.4%	14.3%	18.4%	11.4%	20.4%	13.2%	0.900	0.900
Penelec_Large Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Large Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Large Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Large Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Large Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penelec_Large Health - Hospital_Cooling_20301	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Health - Hospital_Cooling_20302	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20303	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20304	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20308	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20309	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20311	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20312	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20313	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	1.000	1.000
Penelec_Large Health - Hospital_Cooling_20314	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20315	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20316	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20317	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20318	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20319	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20320	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20321	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20322	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20323	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20330	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20331	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20333	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20334	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20335	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20336	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20338	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Cooling_20339	46.1%	34.2%	3.2%	3.1%	7.2%	6.2%	0.377	0.377
Penelec_Large Health - Hospital_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Health - Hospital_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Health - Hospital_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Health - Hospital_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Penelec_Large Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Penelec_Large Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Penelec_Large Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Penelec_Large Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penelec_Large Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Penelec_Large Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Penelec_Large Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
Penelec_Large Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Large Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Large Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Large Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Large Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Large Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Large Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Large Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penelec_Large Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Large Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Large Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Large Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Large Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Large Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Large Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Large Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penelec_Large Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Large Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Large Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Large Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Large Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Penelec_Large Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Large Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Large Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Penelec_Large Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Large Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penelec_Large Health - Hospital_Space Heating_20910	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20911	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20913	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20914	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20915	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20916	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20917	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20919	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20923	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20929	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20932	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20934	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Space Heating_20936	0.3%	1.2%	27.7%	37.3%	11.0%	22.5%	0.040	0.040
Penelec_Large Health - Hospital_Total Electric_21701	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21702	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Health - Hospital_Total Electric_21703	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21704	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21705	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21706	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21707	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21708	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21709	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21710	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21711	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	1.000	1.000
Penelec_Large Health - Hospital_Total Electric_21712	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	1.000	1.000
Penelec_Large Health - Hospital_Total Electric_21713	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Total Electric_21714	27.2%	23.5%	10.7%	9.9%	14.8%	13.9%	0.754	0.754
Penelec_Large Health - Hospital_Ventilation_21001	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Large Health - Hospital_Ventilation_21002	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Large Health - Hospital_Ventilation_21003	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Large Health - Hospital_Ventilation_21005	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Large Health - Hospital_Ventilation_21006	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.400	0.400
Penelec_Large Health - Hospital_Ventilation_21007	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.761	0.761
Penelec_Large Health - Hospital_Ventilation_21008	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.761	0.761
Penelec_Large Health - Hospital_Ventilation_21009	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.761	0.761
Penelec_Large Health - Hospital_Ventilation_21010	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.761	0.761
Penelec_Large Health - Hospital_Water Heating_21103	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Large Health - Hospital_Water Heating_21107	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Large Health - Hospital_Water Heating_21114	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Large Health - Hospital_Water Heating_21115	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Large Health - Hospital_Water Heating_21116	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.540	0.540
Penelec_Large Health - Hospital_Water Heating_21118	20.3%	16.2%	16.9%	13.0%	18.7%	14.9%	0.900	0.900
Penelec_Large Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Large Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Large Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Large Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Large Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Large Health - Other_Cooling_20301	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20302	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20303	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20304	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20308	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20309	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20311	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20312	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20313	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	1.000	1.000
Penelec_Large Health - Other_Cooling_20314	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20315	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20316	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20317	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Health - Other_Cooling_20318	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20319	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20320	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20321	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20322	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20323	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20330	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20331	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20333	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20334	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20335	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20336	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20338	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Cooling_20339	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.285	0.285
Penelec_Large Health - Other_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Health - Other_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Health - Other_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Health - Other_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penelec_Large Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penelec_Large Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penelec_Large Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penelec_Large Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penelec_Large Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penelec_Large Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penelec_Large Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Penelec_Large Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Health - Other_Space Heating_20910	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20911	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20913	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20914	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20915	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20916	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20917	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20919	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20923	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20929	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20932	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20934	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Space Heating_20936	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Health - Other_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Penelec_Large Health - Other_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Penelec_Large Health - Other_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Health - Other_Ventilation_21001	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Large Health - Other_Ventilation_21002	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Large Health - Other_Ventilation_21003	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Large Health - Other_Ventilation_21005	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Large Health - Other_Ventilation_21006	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.251	0.251
Penelec_Large Health - Other_Ventilation_21007	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Large Health - Other_Ventilation_21008	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Large Health - Other_Ventilation_21009	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Large Health - Other_Ventilation_21010	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Health - Other_Water Heating_21103	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Health - Other_Water Heating_21107	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Health - Other_Water Heating_21114	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Health - Other_Water Heating_21115	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Health - Other_Water Heating_21116	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Health - Other_Water Heating_21118	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.900	0.900
Penelec_Large Industrial Manufacturing_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Industrial Manufacturing_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Industrial Manufacturing_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Industrial Manufacturing_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penelec_Large Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penelec_Large Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penelec_Large Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penelec_Large Institutional/Public Service_Cooling_20301	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20302	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20303	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20304	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20308	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20309	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20311	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20312	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20313	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	1.000	1.000
Penelec_Large Institutional/Public Service_Cooling_20315	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20316	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20317	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20318	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20319	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20320	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20321	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20322	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20323	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20330	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Institutional/Public Service_Cooling_20331	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20333	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20334	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20335	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20336	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20338	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Cooling_20339	86.6%	12.5%	0.0%	0.0%	0.9%	0.1%	0.486	0.486
Penelec_Large Institutional/Public Service_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Institutional/Public Service_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Institutional/Public Service_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Institutional/Public Service_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penelec_Large Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penelec_Large Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penelec_Large Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penelec_Large Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penelec_Large Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penelec_Large Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penelec_Large Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Penelec_Large Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penelec_Large Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penelec_Large Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penelec_Large Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penelec_Large Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penelec_Large Institutional/Public Service_Space Heating_20910	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20911	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20913	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20915	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20916	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20917	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20919	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20923	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20929	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20932	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20934	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Space Heating_20936	0.0%	0.0%	31.6%	35.2%	15.9%	17.3%	0.000	0.000
Penelec_Large Institutional/Public Service_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Penelec_Large Institutional/Public Service_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
Penelec_Large Institutional/Public Service_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.702	0.702
Penelec_Large Institutional/Public Service_Ventilation_21001	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Large Institutional/Public Service_Ventilation_21002	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Large Institutional/Public Service_Ventilation_21003	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Large Institutional/Public Service_Ventilation_21005	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Large Institutional/Public Service_Ventilation_21006	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.485	0.485
Penelec_Large Institutional/Public Service_Ventilation_21007	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Large Institutional/Public Service_Ventilation_21008	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Large Institutional/Public Service_Ventilation_21009	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Institutional/Public Service_Ventilation_21010	18.2%	2.6%	17.9%	19.3%	21.5%	20.5%	0.886	0.886
Penelec_Large Institutional/Public Service_Water Heating_21103	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Institutional/Public Service_Water Heating_21107	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Institutional/Public Service_Water Heating_21109	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Institutional/Public Service_Water Heating_21114	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Institutional/Public Service_Water Heating_21115	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.637	0.637
Penelec_Large Institutional/Public Service_Water Heating_21118	22.9%	13.7%	18.9%	10.9%	20.9%	12.7%	0.900	0.900
Penelec_Large Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Large Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Large Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Large Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Large Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penelec_Large Lodging_Cooling_20301	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20302	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20303	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20304	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20308	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20309	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20311	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20312	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20313	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	1.000	1.000
Penelec_Large Lodging_Cooling_20315	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20316	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20317	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20318	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20319	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20320	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20321	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20322	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20323	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20324	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20325	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20330	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20331	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20333	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20334	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20335	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20336	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20338	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Cooling_20339	62.7%	35.5%	0.0%	0.0%	1.7%	0.2%	0.781	0.781
Penelec_Large Lodging_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Lodging_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Lodging_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Lodging_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Penelec_Large Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Penelec_Large Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Penelec_Large Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Penelec_Large Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penelec_Large Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Penelec_Large Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Penelec_Large Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
Penelec_Large Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Large Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Large Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Large Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Large Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Large Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Large Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Large Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penelec_Large Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Large Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Large Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Large Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Large Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Large Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Large Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Large Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penelec_Large Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Large Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Large Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Large Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Large Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penelec_Large Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Large Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Large Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penelec_Large Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Large Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penelec_Large Lodging_Space Heating_20910	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Lodging_Space Heating_20911	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20913	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20914	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20915	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20916	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20917	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20919	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20921	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20923	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20929	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20932	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20934	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Space Heating_20936	0.0%	0.2%	28.0%	45.9%	6.8%	19.0%	0.000	0.000
Penelec_Large Lodging_Total Electric_21701	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21702	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21703	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21704	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21705	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21706	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21707	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21708	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21709	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21710	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21711	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	1.000	1.000
Penelec_Large Lodging_Total Electric_21712	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	1.000	1.000
Penelec_Large Lodging_Total Electric_21713	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Total Electric_21714	30.1%	24.0%	9.9%	9.5%	13.4%	13.1%	0.676	0.676
Penelec_Large Lodging_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.678	0.678
Penelec_Large Lodging_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.678	0.678
Penelec_Large Lodging_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.678	0.678
Penelec_Large Lodging_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.678	0.678
Penelec_Large Lodging_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.678	0.678
Penelec_Large Lodging_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Penelec_Large Lodging_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Penelec_Large Lodging_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Penelec_Large Lodging_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Penelec_Large Lodging_Water Heating_21103	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Large Lodging_Water Heating_21107	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Large Lodging_Water Heating_21109	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Large Lodging_Water Heating_21114	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Large Lodging_Water Heating_21115	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Large Lodging_Water Heating_21116	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.637	0.637
Penelec_Large Lodging_Water Heating_21118	20.5%	16.0%	17.0%	12.8%	18.9%	14.8%	0.900	0.900
Penelec_Large Miscellaneous/Other_Cooling_20301	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20302	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Miscellaneous/Other_Cooling_20303	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20304	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20308	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20309	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20311	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20312	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20313	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	1.000	1.000
Penelec_Large Miscellaneous/Other_Cooling_20317	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20318	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20319	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20320	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20321	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20322	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20330	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20331	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20333	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20334	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20335	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20336	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20338	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Cooling_20339	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.480	0.480
Penelec_Large Miscellaneous/Other_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Miscellaneous/Other_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Miscellaneous/Other_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Miscellaneous/Other_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Penelec_Large Miscellaneous/Other_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Penelec_Large Miscellaneous/Other_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Penelec_Large Miscellaneous/Other_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Penelec_Large Miscellaneous/Other_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penelec_Large Miscellaneous/Other_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Penelec_Large Miscellaneous/Other_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Penelec_Large Miscellaneous/Other_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
Penelec_Large Miscellaneous/Other_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Miscellaneous/Other_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Miscellaneous/Other_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Miscellaneous/Other_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Miscellaneous/Other_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Miscellaneous/Other_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Miscellaneous/Other_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Miscellaneous/Other_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Miscellaneous/Other_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Miscellaneous/Other_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Miscellaneous/Other_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Miscellaneous/Other_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Miscellaneous/Other_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Miscellaneous/Other_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Miscellaneous/Other_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Miscellaneous/Other_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Miscellaneous/Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Miscellaneous/Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Miscellaneous/Other_Total Electric_21701	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21702	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21703	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21704	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21705	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21706	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21707	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21708	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21709	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21710	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21711	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	1.000	1.000
Penelec_Large Miscellaneous/Other_Total Electric_21712	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	1.000	1.000
Penelec_Large Miscellaneous/Other_Total Electric_21713	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Total Electric_21714	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Miscellaneous/Other_Ventilation_21001	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.360	0.360
Penelec_Large Miscellaneous/Other_Ventilation_21002	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.360	0.360

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Miscellaneous/Other_Ventilation_21003	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.360	0.360
Penelec_Large Miscellaneous/Other_Ventilation_21005	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.360	0.360
Penelec_Large Miscellaneous/Other_Ventilation_21006	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.360	0.360
Penelec_Large Miscellaneous/Other_Ventilation_21007	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.761	0.761
Penelec_Large Miscellaneous/Other_Ventilation_21008	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.761	0.761
Penelec_Large Miscellaneous/Other_Ventilation_21009	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.761	0.761
Penelec_Large Miscellaneous/Other_Ventilation_21010	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.761	0.761
Penelec_Large Miscellaneous/Other_Water Heating_21103	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Miscellaneous/Other_Water Heating_21107	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Miscellaneous/Other_Water Heating_21109	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Miscellaneous/Other_Water Heating_21114	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Miscellaneous/Other_Water Heating_21115	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Miscellaneous/Other_Water Heating_21118	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.900	0.900
Penelec_Large Office_Cooking_20201	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Penelec_Large Office_Cooking_20202	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Penelec_Large Office_Cooking_20206	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Penelec_Large Office_Cooling_20301	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20302	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20303	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20304	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20308	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20309	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20311	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20312	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20313	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	1.000	1.000
Penelec_Large Office_Cooling_20314	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20315	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20316	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20317	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20318	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20319	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20320	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20321	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20322	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20323	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20330	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20331	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20333	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20334	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20335	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20336	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20338	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Cooling_20339	65.7%	12.0%	5.1%	2.6%	11.7%	2.9%	0.325	0.325
Penelec_Large Office_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Office_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Office_ Exterior Lighting_ 20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Office_ Exterior Lighting_ 20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Office_ Interior Lighting_ 20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Penelec_Large Office_ Interior Lighting_ 20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Penelec_Large Office_ Interior Lighting_ 20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Penelec_Large Office_ Interior Lighting_ 20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Penelec_Large Office_ Interior Lighting_ 20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Interior Lighting_ 20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penelec_Large Office_ Other_ 20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Penelec_Large Office_ Other_ 20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Penelec_Large Office_ Other_ 20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
Penelec_Large Office_ Other_ 20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Office_ Other_ 20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Office_ Other_ 20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Office_ Other_ 20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Office_ Other_ 20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Office_ Other_ 20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Office_ Other_ 20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Office_ Other_ 20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penelec_Large Office_ Plug Loads_ 20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Office_ Plug Loads_ 20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Office_ Plug Loads_ 20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Office_ Plug Loads_ 20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Office_ Plug Loads_ 20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Office_ Plug Loads_ 20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Office_ Plug Loads_ 20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Office_ Plug Loads_ 20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penelec_Large Office_ Refrigeration_ 20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penelec_Large Office_ Space Heating_ 20910	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_ Space Heating_ 20911	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_ Space Heating_ 20913	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_ Space Heating_ 20914	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_ Space Heating_ 20915	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_ Space Heating_ 20916	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_ Space Heating_ 20917	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Office_Space Heating_20919	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_Space Heating_20923	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_Space Heating_20929	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_Space Heating_20932	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_Space Heating_20934	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_Space Heating_20936	0.0%	0.0%	42.7%	30.7%	14.0%	12.6%	0.000	0.000
Penelec_Large Office_Total Electric_21701	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21702	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21703	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21704	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21705	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21706	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21707	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21708	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21709	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21710	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21711	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	1.000	1.000
Penelec_Large Office_Total Electric_21712	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	1.000	1.000
Penelec_Large Office_Total Electric_21713	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Total Electric_21714	32.1%	14.3%	13.3%	9.5%	18.6%	12.2%	0.764	0.764
Penelec_Large Office_Ventilation_21001	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.306	0.306
Penelec_Large Office_Ventilation_21002	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.306	0.306
Penelec_Large Office_Ventilation_21003	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.306	0.306
Penelec_Large Office_Ventilation_21005	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.306	0.306
Penelec_Large Office_Ventilation_21006	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.306	0.306
Penelec_Large Office_Ventilation_21007	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.761	0.761
Penelec_Large Office_Ventilation_21008	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.761	0.761
Penelec_Large Office_Ventilation_21009	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.761	0.761
Penelec_Large Office_Ventilation_21010	20.8%	4.9%	15.9%	17.5%	20.6%	20.3%	0.761	0.761
Penelec_Large Office_Water Heating_21103	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Office_Water Heating_21107	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Office_Water Heating_21109	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Office_Water Heating_21114	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Office_Water Heating_21115	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.632	0.632
Penelec_Large Office_Water Heating_21118	18.5%	18.0%	15.3%	14.5%	17.1%	16.6%	0.900	0.900
Penelec_Large Retail_Cooking_20201	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penelec_Large Retail_Cooking_20202	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penelec_Large Retail_Cooking_20204	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penelec_Large Retail_Cooking_20206	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penelec_Large Retail_Cooking_20208	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penelec_Large Retail_Cooling_20301	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20302	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20303	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20304	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20308	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Retail_Cooling_20309	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20311	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20312	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20313	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	1.000	1.000
Penelec_Large Retail_Cooling_20317	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20318	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20319	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20320	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20321	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20322	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20330	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20331	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20333	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20334	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20335	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20336	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20338	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Cooling_20339	68.1%	31.5%	0.0%	0.0%	0.5%	0.0%	0.495	0.495
Penelec_Large Retail_Exterior Lighting_20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Retail_Exterior Lighting_20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Retail_Exterior Lighting_20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Retail_Exterior Lighting_20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Retail_Interior Lighting_20508	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20509	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20511	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20512	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20514	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20515	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20517	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
Penelec_Large Retail_Interior Lighting_20518	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
Penelec_Large Retail_Interior Lighting_20520	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20521	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20522	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
Penelec_Large Retail_Interior Lighting_20524	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20525	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20529	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
Penelec_Large Retail_Interior Lighting_20531	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Interior Lighting_20532	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penelec_Large Retail_Other_20601	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
Penelec_Large Retail_Other_20602	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
Penelec_Large Retail_Other_20603	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.405	0.405
Penelec_Large Retail_Other_20604	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penelec_Large Retail_Other_20606	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penelec_Large Retail_Other_20607	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penelec_Large Retail_Other_20610	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Retail_Other_20611	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penelec_Large Retail_Other_20613	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penelec_Large Retail_Other_20614	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penelec_Large Retail_Other_20615	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penelec_Large Retail_Plug Loads_20701	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penelec_Large Retail_Plug Loads_20702	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penelec_Large Retail_Plug Loads_20703	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penelec_Large Retail_Plug Loads_20704	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penelec_Large Retail_Plug Loads_20705	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penelec_Large Retail_Plug Loads_20706	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penelec_Large Retail_Plug Loads_20707	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penelec_Large Retail_Plug Loads_20708	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penelec_Large Retail_Refrigeration_20801	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penelec_Large Retail_Refrigeration_20805	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penelec_Large Retail_Refrigeration_20806	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penelec_Large Retail_Refrigeration_20807	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.094	0.094
Penelec_Large Retail_Refrigeration_20808	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penelec_Large Retail_Refrigeration_20809	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penelec_Large Retail_Refrigeration_20811	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.403	0.403
Penelec_Large Retail_Refrigeration_20818	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penelec_Large Retail_Refrigeration_20821	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penelec_Large Retail_Space Heating_20910	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20911	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20913	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20915	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20916	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20917	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20919	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20923	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20929	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20932	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20934	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Space Heating_20936	0.0%	0.0%	40.7%	27.9%	18.3%	13.1%	0.000	0.000
Penelec_Large Retail_Total Electric_21701	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21702	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21703	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21704	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21705	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21706	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21707	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21708	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21709	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21710	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21711	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	1.000	1.000
Penelec_Large Retail_Total Electric_21712	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Retail_Total Electric_21713	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Total Electric_21714	34.9%	19.5%	10.9%	8.9%	14.5%	11.4%	0.686	0.686
Penelec_Large Retail_Ventilation_21001	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.472	0.472
Penelec_Large Retail_Ventilation_21002	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.472	0.472
Penelec_Large Retail_Ventilation_21003	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.472	0.472
Penelec_Large Retail_Ventilation_21005	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.472	0.472
Penelec_Large Retail_Ventilation_21006	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.472	0.472
Penelec_Large Retail_Ventilation_21007	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.995	0.995
Penelec_Large Retail_Ventilation_21008	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.995	0.995
Penelec_Large Retail_Ventilation_21009	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.995	0.995
Penelec_Large Retail_Ventilation_21010	21.4%	10.8%	14.7%	15.8%	19.0%	18.4%	0.995	0.995
Penelec_Large Retail_Water Heating_21103	23.0%	13.7%	18.9%	10.9%	21.0%	12.6%	0.628	0.628
Penelec_Large Retail_Water Heating_21107	23.0%	13.7%	18.9%	10.9%	21.0%	12.6%	0.628	0.628
Penelec_Large Retail_Water Heating_21109	23.0%	13.7%	18.9%	10.9%	21.0%	12.6%	0.628	0.628
Penelec_Large Retail_Water Heating_21114	23.0%	13.7%	18.9%	10.9%	21.0%	12.6%	0.628	0.628
Penelec_Large Retail_Water Heating_21115	23.0%	13.7%	18.9%	10.9%	21.0%	12.6%	0.628	0.628
Penelec_Large Retail_Water Heating_21118	23.0%	13.7%	18.9%	10.9%	21.0%	12.6%	0.900	0.900
Penelec_Large Warehouse_Cooling_20301	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20302	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20303	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20304	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20308	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20309	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20311	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20312	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20313	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Penelec_Large Warehouse_Cooling_20314	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20315	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20316	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20317	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20318	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20319	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20320	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20321	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20322	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20323	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20330	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20331	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20333	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20334	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20335	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20336	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20337	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20338	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171
Penelec_Large Warehouse_Cooling_20339	59.7%	40.3%	0.0%	0.0%	0.0%	0.0%	0.171	0.171

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Warehouse_ Exterior Lighting_ 20401	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Warehouse_ Exterior Lighting_ 20402	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.000	0.000
Penelec_Large Warehouse_ Exterior Lighting_ 20403	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Warehouse_ Exterior Lighting_ 20404	8.9%	26.6%	10.0%	19.3%	10.6%	24.6%	0.110	0.110
Penelec_Large Warehouse_ Interior Lighting_ 20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penelec_Large Warehouse_ Interior Lighting_ 20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penelec_Large Warehouse_ Interior Lighting_ 20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Interior Lighting_ 20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penelec_Large Warehouse_ Other_ 20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Penelec_Large Warehouse_ Other_ 20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Penelec_Large Warehouse_ Other_ 20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
Penelec_Large Warehouse_ Other_ 20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Warehouse_ Other_ 20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Warehouse_ Other_ 20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Warehouse_ Other_ 20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Warehouse_ Other_ 20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Warehouse_ Other_ 20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Warehouse_ Other_ 20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Warehouse_ Other_ 20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penelec_Large Warehouse_ Plug Loads_ 20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Large Warehouse_ Plug Loads_ 20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Large Warehouse_ Plug Loads_ 20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Large Warehouse_ Plug Loads_ 20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Large Warehouse_ Plug Loads_ 20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Large Warehouse_ Plug Loads_ 20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Large Warehouse_ Plug Loads_ 20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Large Warehouse_ Plug Loads_ 20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penelec_Large Warehouse_ Refrigeration_ 20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Large Warehouse_ Refrigeration_ 20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Large Warehouse_ Refrigeration_ 20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Large Warehouse_ Refrigeration_ 20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
Penelec_Large Warehouse_ Refrigeration_ 20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Large Warehouse_ Refrigeration_ 20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
Penelec_Large Warehouse_ Refrigeration_ 20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penelec_Large Warehouse_ Space Heating_ 20910	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penelec_Large Warehouse_Space Heating_20911	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20913	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20914	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20915	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20916	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20917	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20919	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20923	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20929	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20932	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20934	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Space Heating_20936	0.0%	0.0%	28.0%	35.0%	14.0%	23.0%	0.000	0.000
Penelec_Large Warehouse_Total Electric_21701	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21702	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21703	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21704	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21705	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21706	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21707	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21708	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21709	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21710	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21711	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	1.000	1.000
Penelec_Large Warehouse_Total Electric_21712	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	1.000	1.000
Penelec_Large Warehouse_Total Electric_21713	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Total Electric_21714	26.8%	17.3%	14.6%	9.3%	19.4%	12.6%	0.787	0.787
Penelec_Large Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Large Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Large Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Large Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Large Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.171	0.171
Penelec_Large Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penelec_Large Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penelec_Large Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penelec_Large Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penelec_Large Warehouse_Water Heating_21103	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Large Warehouse_Water Heating_21107	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Large Warehouse_Water Heating_21109	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Large Warehouse_Water Heating_21114	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Large Warehouse_Water Heating_21115	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.613	0.613
Penelec_Large Warehouse_Water Heating_21118	25.7%	10.9%	21.1%	8.8%	23.5%	10.1%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Single Family_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Penn Power_Single Family_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Penn Power_Single Family_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
Penn Power_Single Family_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penn Power_Single Family_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penn Power_Single Family_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penn Power_Single Family_Cooling_10301	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10303	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10305	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10306	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10309	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10311	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10313	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10314	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.000	0.000
Penn Power_Single Family_Cooling_10315	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.000	0.000
Penn Power_Single Family_Cooling_10316	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10318	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Cooling_10319	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
Penn Power_Single Family_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penn Power_Single Family_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penn Power_Single Family_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730
Penn Power_Single Family_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penn Power_Single Family_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
Penn Power_Single Family_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.337	0.337
Penn Power_Single Family_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
Penn Power_Single Family_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
Penn Power_Single Family_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penn Power_Single Family_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penn Power_Single Family_Space Heating_10910	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Space Heating_10911	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Space Heating_10914	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Space Heating_10915	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Space Heating_10918	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Space Heating_10919	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Space Heating_10920	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Space Heating_10921	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Space Heating_10922	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family_Total Electric_11702	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family_Total Electric_11703	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family_Total Electric_11704	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family_Total Electric_11705	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family_Total Electric_11706	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Single Family_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penn Power_Single Family_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
Penn Power_Single Family_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penn Power_Single Family_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penn Power_Single Family_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
Penn Power_Single Family_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Penn Power_Single Family_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Penn Power_Multifamily_Appliances_10101	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.026	0.026
Penn Power_Multifamily_Appliances_10102	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.026	0.026
Penn Power_Multifamily_Appliances_10103	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.405	0.405
Penn Power_Multifamily_Appliances_10105	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily_Appliances_10107	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily_Appliances_10108	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily_Appliances_10109	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily_Appliances_10111	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily_Cooling_10301	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Cooling_10303	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Cooling_10305	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Cooling_10306	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Cooling_10309	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Cooling_10311	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Cooling_10313	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Cooling_10314	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.000	0.000
Penn Power_Multifamily_Cooling_10315	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.000	0.000
Penn Power_Multifamily_Cooling_10318	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Cooling_10319	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
Penn Power_Multifamily_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penn Power_Multifamily_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penn Power_Multifamily_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
Penn Power_Multifamily_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penn Power_Multifamily_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penn Power_Multifamily_Other_10601	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.106	0.106
Penn Power_Multifamily_Other_10602	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.000	0.000
Penn Power_Multifamily_Other_10603	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.625	0.625
Penn Power_Multifamily_Other_10604	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.337	0.337
Penn Power_Multifamily_Other_10605	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.310	0.310
Penn Power_Multifamily_Plug Loads_10701	21.3%	20.6%	12.8%	11.9%	17.0%	16.4%	0.410	0.410
Penn Power_Multifamily_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penn Power_Multifamily_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penn Power_Multifamily_Space Heating_10910	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Multifamily_Space Heating_10911	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily_Space Heating_10914	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily_Space Heating_10915	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily_Space Heating_10916	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily_Space Heating_10918	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily_Space Heating_10920	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily_Space Heating_10921	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily_Space Heating_10922	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penn Power_Multifamily_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
Penn Power_Multifamily_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penn Power_Multifamily_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penn Power_Multifamily_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
Penn Power_Multifamily_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penn Power_Multifamily_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penn Power_Multifamily_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penn Power_Multifamily_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penn Power_Single Family LI_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Penn Power_Single Family LI_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
Penn Power_Single Family LI_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
Penn Power_Single Family LI_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penn Power_Single Family LI_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penn Power_Single Family LI_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
Penn Power_Single Family LI_Cooling_10301	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10303	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10305	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10306	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10309	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10311	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10313	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10314	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.000	0.000
Penn Power_Single Family LI_Cooling_10315	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.000	0.000
Penn Power_Single Family LI_Cooling_10316	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10318	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Cooling_10319	55.0%	43.5%	0.0%	0.0%	0.4%	1.1%	0.337	0.337
Penn Power_Single Family LI_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
Penn Power_Single Family LI_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penn Power_Single Family LI_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penn Power_Single Family LI_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Single Family LI_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
Penn Power_Single Family LI_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
Penn Power_Single Family LI_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.337	0.337
Penn Power_Single Family LI_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
Penn Power_Single Family LI_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
Penn Power_Single Family LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penn Power_Single Family LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penn Power_Single Family LI_Space Heating_10910	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Space Heating_10911	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Space Heating_10914	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Space Heating_10915	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Space Heating_10918	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Space Heating_10919	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Space Heating_10920	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Space Heating_10921	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Space Heating_10922	1.4%	2.3%	29.6%	34.1%	14.2%	18.4%	0.000	0.000
Penn Power_Single Family LI_Total Electric_11702	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family LI_Total Electric_11703	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family LI_Total Electric_11704	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family LI_Total Electric_11705	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family LI_Total Electric_11706	23.8%	22.4%	12.1%	11.0%	15.7%	15.0%	0.575	0.575
Penn Power_Single Family LI_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family LI_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family LI_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family LI_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family LI_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family LI_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penn Power_Single Family LI_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
Penn Power_Single Family LI_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
Penn Power_Single Family LI_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penn Power_Single Family LI_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
Penn Power_Single Family LI_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
Penn Power_Single Family LI_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Penn Power_Single Family LI_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
Penn Power_Multifamily LI_Appliances_10101	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.026	0.026
Penn Power_Multifamily LI_Appliances_10102	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.026	0.026
Penn Power_Multifamily LI_Appliances_10103	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.405	0.405
Penn Power_Multifamily LI_Appliances_10105	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily LI_Appliances_10107	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily LI_Appliances_10108	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily LI_Appliances_10109	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily LI_Appliances_10111	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.029	0.029
Penn Power_Multifamily LI_Cooling_10301	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily LI_Cooling_10303	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily LI_Cooling_10305	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Multifamily LI_Cooling_10306	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily LI_Cooling_10309	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily LI_Cooling_10311	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily LI_Cooling_10313	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily LI_Cooling_10314	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.000	0.000
Penn Power_Multifamily LI_Cooling_10315	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.000	0.000
Penn Power_Multifamily LI_Cooling_10318	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily LI_Cooling_10319	54.8%	43.8%	0.0%	0.0%	0.5%	0.9%	0.337	0.337
Penn Power_Multifamily LI_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
Penn Power_Multifamily LI_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penn Power_Multifamily LI_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penn Power_Multifamily LI_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
Penn Power_Multifamily LI_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penn Power_Multifamily LI_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
Penn Power_Multifamily LI_Other_10601	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.106	0.106
Penn Power_Multifamily LI_Other_10602	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.000	0.000
Penn Power_Multifamily LI_Other_10603	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.625	0.625
Penn Power_Multifamily LI_Other_10604	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.337	0.337
Penn Power_Multifamily LI_Other_10605	20.2%	21.8%	12.0%	12.6%	16.1%	17.3%	0.310	0.310
Penn Power_Multifamily LI_Plug Loads_10701	21.3%	20.6%	12.8%	11.9%	17.0%	16.4%	0.410	0.410
Penn Power_Multifamily LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penn Power_Multifamily LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
Penn Power_Multifamily LI_Space Heating_10910	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_10911	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_10914	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_10915	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_10916	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_10918	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_10920	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_10921	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_10922	2.0%	2.8%	29.1%	30.1%	16.9%	19.1%	0.000	0.000
Penn Power_Multifamily LI_Space Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily LI_Space Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily LI_Space Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily LI_Space Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily LI_Space Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily LI_Space Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penn Power_Multifamily LI_Space Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.287	0.287
Penn Power_Multifamily LI_Space Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
Penn Power_Multifamily LI_Space Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penn Power_Multifamily LI_Space Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
Penn Power_Multifamily LI_Space Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
Penn Power_Multifamily LI_Space Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penn Power_Multifamily LI_Space Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penn Power_Multifamily LI_Space Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Multifamily LI_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
Penn Power_Small Education - College/University_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - College/University_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - College/University_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - College/University_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - College/University_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - College/University_Cooking_20301	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20302	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20303	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20304	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20308	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20309	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20311	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20312	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20313	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	1.000	1.000
Penn Power_Small Education - College/University_Cooling_20314	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20315	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20316	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20317	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20318	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20319	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20320	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20321	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20322	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20323	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20326	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20327	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20328	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20329	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20330	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20331	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20333	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20334	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20335	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20336	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20338	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Cooling_20339	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Small Education - College/University_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Education - College/University_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Education - College/University_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Education - College/University_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Education - College/University_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - College/University_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - College/University_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - College/University_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Education - College/University_Total Electric_21701	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21702	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21703	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21704	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21705	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21706	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21707	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21708	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21709	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21710	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21711	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	1.000	1.000
Penn Power_Small Education - College/University_Total Electric_21712	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	1.000	1.000
Penn Power_Small Education - College/University_Total Electric_21713	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Total Electric_21714	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - College/University_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.390	0.390
Penn Power_Small Education - College/University_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.390	0.390
Penn Power_Small Education - College/University_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.390	0.390
Penn Power_Small Education - College/University_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.390	0.390
Penn Power_Small Education - College/University_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.390	0.390
Penn Power_Small Education - College/University_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penn Power_Small Education - College/University_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penn Power_Small Education - College/University_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penn Power_Small Education - College/University_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penn Power_Small Education - College/University_Water Heating_21103	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - College/University_Water Heating_21107	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - College/University_Water Heating_21109	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - College/University_Water Heating_21114	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - College/University_Water Heating_21115	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - College/University_Water Heating_21116	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - College/University_Water Heating_21118	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.900	0.900
Penn Power_Small Education - Other_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - Other_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - Other_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - Other_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - Other_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
Penn Power_Small Education - Other_Cooling_20301	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20302	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20303	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20304	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20308	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20309	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20311	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20312	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20313	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	1.000	1.000
Penn Power_Small Education - Other_Cooling_20314	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Education - Other_Cooling_20315	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20316	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20317	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20318	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20319	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20320	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20321	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20322	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20323	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20326	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20327	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20328	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20329	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20330	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20331	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20333	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20334	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20335	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20336	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20338	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Cooling_20339	90.5%	6.4%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Small Education - Other_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Education - Other_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Education - Other_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Education - Other_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Education - Other_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
Penn Power_Small Education - Other_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
Penn Power_Small Education - Other_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
Penn Power_Small Education - Other_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
Penn Power_Small Education - Other_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
Penn Power_Small Education - Other_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penn Power_Small Education - Other_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penn Power_Small Education - Other_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penn Power_Small Education - Other_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Education - Other_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penn Power_Small Education - Other_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penn Power_Small Education - Other_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penn Power_Small Education - Other_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
Penn Power_Small Education - Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Education - Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Education - Other_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Education - Other_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Education - Other_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
Penn Power_Small Education - Other_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Education - Other_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Education - Other_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Penn Power_Small Education - Other_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Education - Other_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Education - Other_Space Heating_20910	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20911	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20913	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20914	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20915	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20916	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20917	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20919	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20923	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20925	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20927	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20929	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20932	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20934	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Space Heating_20936	0.0%	0.0%	34.6%	34.3%	17.1%	13.9%	0.000	0.000
Penn Power_Small Education - Other_Total Electric_21701	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21702	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21703	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21704	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21705	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21706	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21707	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21708	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21709	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21710	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21711	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	1.000	1.000
Penn Power_Small Education - Other_Total Electric_21712	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	1.000	1.000
Penn Power_Small Education - Other_Total Electric_21713	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Total Electric_21714	29.1%	8.8%	15.7%	10.9%	21.9%	13.5%	0.260	0.260
Penn Power_Small Education - Other_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.153	0.153
Penn Power_Small Education - Other_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.153	0.153

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Education - Other_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.153	0.153
Penn Power_Small Education - Other_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.153	0.153
Penn Power_Small Education - Other_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.153	0.153
Penn Power_Small Education - Other_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penn Power_Small Education - Other_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penn Power_Small Education - Other_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penn Power_Small Education - Other_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.8%	21.1%	0.481	0.481
Penn Power_Small Education - Other_Water Heating_21103	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - Other_Water Heating_21107	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - Other_Water Heating_21109	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - Other_Water Heating_21114	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - Other_Water Heating_21115	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - Other_Water Heating_21116	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.395	0.395
Penn Power_Small Education - Other_Water Heating_21118	29.7%	7.5%	22.7%	6.0%	27.2%	6.9%	0.900	0.900
Penn Power_Small Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penn Power_Small Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penn Power_Small Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penn Power_Small Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penn Power_Small Grocery_Cooling_20301	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20302	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20303	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20304	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20308	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20309	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20311	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20312	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20313	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	1.000	1.000
Penn Power_Small Grocery_Cooling_20317	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20318	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20319	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20320	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20321	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20322	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20326	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20327	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20328	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20329	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20330	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20331	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20333	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20334	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20335	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20336	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20338	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270
Penn Power_Small Grocery_Cooling_20339	39.0%	36.0%	2.1%	0.9%	13.6%	8.5%	0.270	0.270



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Grocery_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Grocery_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Grocery_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Grocery_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Penn Power_Small Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Penn Power_Small Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Penn Power_Small Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Penn Power_Small Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Small Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Grocery_Refrigeration_20803	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penn Power_Small Grocery_Refrigeration_20805	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penn Power_Small Grocery_Refrigeration_20806	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penn Power_Small Grocery_Refrigeration_20807	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.094	0.094
Penn Power_Small Grocery_Refrigeration_20808	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penn Power_Small Grocery_Refrigeration_20811	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.403	0.403
Penn Power_Small Grocery_Refrigeration_20818	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
Penn Power_Small Grocery_Space Heating_20910	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20911	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20913	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20915	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20916	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20917	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20919	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20923	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20925	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20927	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Grocery_Space Heating_20929	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20932	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20934	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Space Heating_20936	0.0%	0.0%	15.3%	74.9%	0.3%	9.4%	0.000	0.000
Penn Power_Small Grocery_Total Electric_21701	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21702	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21703	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21704	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21705	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21706	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21707	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21708	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21709	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21710	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21711	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	1.000	1.000
Penn Power_Small Grocery_Total Electric_21712	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	1.000	1.000
Penn Power_Small Grocery_Total Electric_21713	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Total Electric_21714	24.0%	23.3%	10.9%	10.3%	16.3%	15.2%	0.938	0.938
Penn Power_Small Grocery_Ventilation_21001	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.269	0.269
Penn Power_Small Grocery_Ventilation_21002	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.269	0.269
Penn Power_Small Grocery_Ventilation_21003	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.269	0.269
Penn Power_Small Grocery_Ventilation_21005	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.269	0.269
Penn Power_Small Grocery_Ventilation_21006	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.269	0.269
Penn Power_Small Grocery_Ventilation_21007	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.883	0.883
Penn Power_Small Grocery_Ventilation_21008	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.883	0.883
Penn Power_Small Grocery_Ventilation_21009	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.883	0.883
Penn Power_Small Grocery_Ventilation_21010	19.4%	21.5%	12.3%	13.7%	15.6%	17.5%	0.883	0.883
Penn Power_Small Grocery_Water Heating_21103	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Small Grocery_Water Heating_21107	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Small Grocery_Water Heating_21109	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Small Grocery_Water Heating_21114	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Small Grocery_Water Heating_21115	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Small Grocery_Water Heating_21118	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.900	0.900
Penn Power_Small Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Small Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Small Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Small Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Small Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Small Health - Hospital_Cooling_20301	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20302	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20303	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20304	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20308	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20309	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20311	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Health - Hospital_Cooling_20312	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20313	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	1.000	1.000
Penn Power_Small Health - Hospital_Cooling_20314	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20315	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20316	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20317	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20318	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20319	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20320	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20321	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20322	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20323	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20326	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20327	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20328	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20329	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20330	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20331	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20333	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20334	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20335	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20336	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20338	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Cooling_20339	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Small Health - Hospital_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Health - Hospital_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Health - Hospital_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Health - Hospital_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Penn Power_Small Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Penn Power_Small Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Penn Power_Small Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Penn Power_Small Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Small Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Penn Power_Small Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
Penn Power_Small Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Small Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Small Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Small Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Small Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Small Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Small Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Small Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Small Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Small Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Small Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Small Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Small Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Small Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Small Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Small Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Small Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Small Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Small Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Small Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Small Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Penn Power_Small Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Small Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Small Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Penn Power_Small Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Small Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Small Health - Hospital_Space Heating_20910	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20911	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20913	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20914	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20915	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20916	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20917	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20919	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20923	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20925	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20927	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20929	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20932	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20934	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Space Heating_20936	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Small Health - Hospital_Total Electric_21701	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21702	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Health - Hospital_Total Electric_21703	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21704	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21705	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21706	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21707	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21708	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21709	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21710	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21711	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	1.000	1.000
Penn Power_Small Health - Hospital_Total Electric_21712	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	1.000	1.000
Penn Power_Small Health - Hospital_Total Electric_21713	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Total Electric_21714	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Small Health - Hospital_Ventilation_21001	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Small Health - Hospital_Ventilation_21002	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Small Health - Hospital_Ventilation_21003	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Small Health - Hospital_Ventilation_21005	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Small Health - Hospital_Ventilation_21006	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Small Health - Hospital_Ventilation_21007	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.754	0.754
Penn Power_Small Health - Hospital_Ventilation_21008	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.754	0.754
Penn Power_Small Health - Hospital_Ventilation_21009	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.754	0.754
Penn Power_Small Health - Hospital_Ventilation_21010	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.754	0.754
Penn Power_Small Health - Hospital_Water Heating_21103	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Small Health - Hospital_Water Heating_21107	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Small Health - Hospital_Water Heating_21114	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Small Health - Hospital_Water Heating_21115	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Small Health - Hospital_Water Heating_21116	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Small Health - Hospital_Water Heating_21118	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.900	0.900
Penn Power_Small Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Small Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Small Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Small Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Small Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Small Health - Other_Cooling_20301	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20302	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20303	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20304	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20308	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20309	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20311	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20312	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20313	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	1.000	1.000
Penn Power_Small Health - Other_Cooling_20314	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20315	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20316	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20317	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Health - Other_Cooling_20318	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20319	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20320	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20321	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20322	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20323	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20326	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20327	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20328	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20329	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20330	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20331	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20333	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20334	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20335	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20336	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20338	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Cooling_20339	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Small Health - Other_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Health - Other_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Health - Other_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Health - Other_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penn Power_Small Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penn Power_Small Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penn Power_Small Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penn Power_Small Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Small Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penn Power_Small Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penn Power_Small Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Penn Power_Small Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Small Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Small Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Small Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Small Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Small Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Small Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Small Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Small Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Small Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Small Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Small Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Small Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Small Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Small Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Small Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Small Health - Other_Space Heating_20910	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20911	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20913	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20914	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20915	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20916	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20917	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20919	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20923	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20925	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20927	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20929	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20932	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20934	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Space Heating_20936	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Small Health - Other_Total Electric_21701	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21702	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21703	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21704	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21705	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21706	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21707	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21708	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21709	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21710	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21711	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	1.000	1.000
Penn Power_Small Health - Other_Total Electric_21712	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	1.000	1.000
Penn Power_Small Health - Other_Total Electric_21713	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Total Electric_21714	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Health - Other_Ventilation_21001	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Small Health - Other_Ventilation_21002	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Small Health - Other_Ventilation_21003	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Health - Other_Ventilation_21005	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Small Health - Other_Ventilation_21006	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Small Health - Other_Ventilation_21007	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Small Health - Other_Ventilation_21008	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Small Health - Other_Ventilation_21009	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Small Health - Other_Ventilation_21010	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Small Health - Other_Water Heating_21103	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Health - Other_Water Heating_21107	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Health - Other_Water Heating_21114	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Health - Other_Water Heating_21115	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Health - Other_Water Heating_21116	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Health - Other_Water Heating_21118	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.900	0.900
Penn Power_Small Industrial Manufacturing_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Industrial Manufacturing_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Industrial Manufacturing_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Industrial Manufacturing_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penn Power_Small Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penn Power_Small Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Small Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Small Institutional/Public Service_Cooling_20301	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20302	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20303	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20304	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20308	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20309	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20311	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20312	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20313	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	1.000	1.000
Penn Power_Small Institutional/Public Service_Cooling_20315	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20316	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20317	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Small Institutional/Public Service_Cooling_20318	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527







## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Institutional/Public Service_Total Electric_21711	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	1.000	1.000
Penn Power_Small Institutional/Public Service_Total Electric_21712	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	1.000	1.000
Penn Power_Small Institutional/Public Service_Total Electric_21713	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Institutional/Public Service_Total Electric_21714	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Small Institutional/Public Service_Ventilation_21001	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Small Institutional/Public Service_Ventilation_21002	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Small Institutional/Public Service_Ventilation_21003	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Small Institutional/Public Service_Ventilation_21005	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Small Institutional/Public Service_Ventilation_21006	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Small Institutional/Public Service_Ventilation_21007	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Small Institutional/Public Service_Ventilation_21008	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Small Institutional/Public Service_Ventilation_21009	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Small Institutional/Public Service_Ventilation_21010	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Small Institutional/Public Service_Water Heating_21103	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Institutional/Public Service_Water Heating_21107	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Institutional/Public Service_Water Heating_21109	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Institutional/Public Service_Water Heating_21114	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Institutional/Public Service_Water Heating_21115	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Institutional/Public Service_Water Heating_21118	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.900	0.900
Penn Power_Small Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Small Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Small Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Small Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Small Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Small Lodging_Cooling_20301	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20302	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20303	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20304	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20308	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20309	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20311	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20312	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20313	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	1.000	1.000
Penn Power_Small Lodging_Cooling_20315	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20316	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20317	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20318	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20319	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20320	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20321	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20322	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20323	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20324	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20325	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20326	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Lodging_Cooling_20327	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20328	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20329	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20330	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20331	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20333	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20334	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20335	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20336	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20338	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Cooling_20339	61.2%	38.7%	0.0%	0.0%	0.1%	0.0%	0.812	0.812
Penn Power_Small Lodging_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Lodging_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Lodging_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Lodging_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Penn Power_Small Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Penn Power_Small Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Penn Power_Small Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Penn Power_Small Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Small Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Penn Power_Small Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Penn Power_Small Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
Penn Power_Small Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Small Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Small Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Small Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Small Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Small Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Small Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Small Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Small Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Small Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Small Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Small Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Small Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Small Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Small Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Small Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Small Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Small Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Small Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Small Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penn Power_Small Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Small Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Small Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penn Power_Small Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Small Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Small Lodging_Space Heating_20910	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20911	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20913	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20914	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20915	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20916	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20917	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20919	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20921	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20923	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20925	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20927	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20929	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20932	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20934	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Space Heating_20936	0.1%	0.2%	29.3%	39.3%	10.1%	21.0%	0.000	0.000
Penn Power_Small Lodging_Total Electric_21701	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21702	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21703	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21704	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21705	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21706	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21707	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21708	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21709	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21710	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21711	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	1.000	1.000
Penn Power_Small Lodging_Total Electric_21712	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	1.000	1.000
Penn Power_Small Lodging_Total Electric_21713	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680
Penn Power_Small Lodging_Total Electric_21714	27.9%	24.2%	10.3%	10.2%	13.5%	13.8%	0.680	0.680

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Lodging_Ventilation_21001	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.706	0.706
Penn Power_Small Lodging_Ventilation_21002	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.706	0.706
Penn Power_Small Lodging_Ventilation_21003	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.706	0.706
Penn Power_Small Lodging_Ventilation_21005	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.706	0.706
Penn Power_Small Lodging_Ventilation_21006	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.706	0.706
Penn Power_Small Lodging_Ventilation_21007	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Penn Power_Small Lodging_Ventilation_21008	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Penn Power_Small Lodging_Ventilation_21009	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Penn Power_Small Lodging_Ventilation_21010	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
Penn Power_Small Lodging_Water Heating_21103	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Small Lodging_Water Heating_21107	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Small Lodging_Water Heating_21109	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Small Lodging_Water Heating_21114	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Small Lodging_Water Heating_21115	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Small Lodging_Water Heating_21116	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Small Lodging_Water Heating_21118	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.900	0.900
Penn Power_Small Miscellaneous/Other_Cooling_20301	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20302	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20303	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20304	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20308	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20309	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20311	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20312	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20313	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	1.000	1.000
Penn Power_Small Miscellaneous/Other_Cooling_20317	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20318	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20319	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20320	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20321	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20322	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20326	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20327	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20328	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20329	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20330	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20331	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20333	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20334	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20335	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20336	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20338	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Cooling_20339	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.480	0.480
Penn Power_Small Miscellaneous/Other_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Miscellaneous/Other_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Miscellaneous/Other_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Miscellaneous/Other_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Miscellaneous/Other_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Penn Power_Small Miscellaneous/Other_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Penn Power_Small Miscellaneous/Other_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Penn Power_Small Miscellaneous/Other_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Penn Power_Small Miscellaneous/Other_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
Penn Power_Small Miscellaneous/Other_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Penn Power_Small Miscellaneous/Other_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Penn Power_Small Miscellaneous/Other_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
Penn Power_Small Miscellaneous/Other_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Miscellaneous/Other_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Miscellaneous/Other_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Miscellaneous/Other_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Miscellaneous/Other_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Miscellaneous/Other_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Miscellaneous/Other_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Miscellaneous/Other_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Miscellaneous/Other_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Miscellaneous/Other_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Miscellaneous/Other_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Miscellaneous/Other_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Miscellaneous/Other_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Miscellaneous/Other_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Miscellaneous/Other_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Miscellaneous/Other_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Miscellaneous/Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Miscellaneous/Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Miscellaneous/Other_Space Heating_20910	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20911	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20913	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20915	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20916	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20917	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Miscellaneous/Other_Space Heating_20919	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20923	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20925	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20927	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20929	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20932	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20934	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Space Heating_20936	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Miscellaneous/Other_Total Electric_21701	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21702	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21703	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21704	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21705	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21706	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21707	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21708	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21709	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21710	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21711	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	1.000	1.000
Penn Power_Small Miscellaneous/Other_Total Electric_21712	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	1.000	1.000
Penn Power_Small Miscellaneous/Other_Total Electric_21713	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Total Electric_21714	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Miscellaneous/Other_Ventilation_21001	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.392	0.392
Penn Power_Small Miscellaneous/Other_Ventilation_21002	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.392	0.392
Penn Power_Small Miscellaneous/Other_Ventilation_21003	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.392	0.392
Penn Power_Small Miscellaneous/Other_Ventilation_21005	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.392	0.392
Penn Power_Small Miscellaneous/Other_Ventilation_21006	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.392	0.392
Penn Power_Small Miscellaneous/Other_Ventilation_21007	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penn Power_Small Miscellaneous/Other_Ventilation_21008	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penn Power_Small Miscellaneous/Other_Ventilation_21009	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penn Power_Small Miscellaneous/Other_Ventilation_21010	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penn Power_Small Miscellaneous/Other_Water Heating_21103	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Miscellaneous/Other_Water Heating_21107	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Miscellaneous/Other_Water Heating_21109	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Miscellaneous/Other_Water Heating_21114	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Miscellaneous/Other_Water Heating_21115	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Miscellaneous/Other_Water Heating_21118	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.900	0.900
Penn Power_Small Office_Cooking_20201	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Penn Power_Small Office_Cooking_20202	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Penn Power_Small Office_Cooking_20206	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
Penn Power_Small Office_Cooling_20301	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20302	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20303	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20304	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20308	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Office_Cooling_20309	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20311	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20312	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20313	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	1.000	1.000
Penn Power_Small Office_Cooling_20314	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20315	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20316	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20317	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20318	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20319	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20320	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20321	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20322	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20323	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20326	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20327	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20328	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20329	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20330	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20331	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20333	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20334	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20335	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20336	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20338	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Cooling_20339	76.2%	16.3%	0.0%	0.0%	7.4%	0.1%	0.338	0.338
Penn Power_Small Office_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Office_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Office_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Office_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Office_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Penn Power_Small Office_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
Penn Power_Small Office_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Penn Power_Small Office_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
Penn Power_Small Office_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Office_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
Penn Power_Small Office_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Penn Power_Small Office_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
Penn Power_Small Office_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
Penn Power_Small Office_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Office_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Office_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Office_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Office_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Office_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Office_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Office_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
Penn Power_Small Office_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Office_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Office_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Office_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Office_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Office_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Office_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Office_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
Penn Power_Small Office_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Small Office_Space Heating_20910	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20911	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20913	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20914	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20915	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20916	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20917	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20919	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20923	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20925	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20927	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20929	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20932	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20934	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Space Heating_20936	0.0%	0.1%	26.6%	39.6%	9.5%	24.2%	0.000	0.000
Penn Power_Small Office_Total Electric_21701	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21702	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21703	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21704	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21705	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21706	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21707	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21708	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21709	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Office_Total Electric_21710	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21711	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	1.000	1.000
Penn Power_Small Office_Total Electric_21712	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	1.000	1.000
Penn Power_Small Office_Total Electric_21713	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Total Electric_21714	35.1%	15.1%	13.2%	7.4%	19.2%	10.0%	0.753	0.753
Penn Power_Small Office_Ventilation_21001	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.329	0.329
Penn Power_Small Office_Ventilation_21002	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.329	0.329
Penn Power_Small Office_Ventilation_21003	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.329	0.329
Penn Power_Small Office_Ventilation_21005	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.329	0.329
Penn Power_Small Office_Ventilation_21006	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.329	0.329
Penn Power_Small Office_Ventilation_21007	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penn Power_Small Office_Ventilation_21008	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penn Power_Small Office_Ventilation_21009	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penn Power_Small Office_Ventilation_21010	19.5%	21.7%	12.1%	13.0%	15.9%	17.7%	0.962	0.962
Penn Power_Small Office_Water Heating_21103	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Office_Water Heating_21107	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Office_Water Heating_21109	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Office_Water Heating_21114	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Office_Water Heating_21115	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.618	0.618
Penn Power_Small Office_Water Heating_21118	18.7%	17.6%	15.7%	14.4%	17.3%	16.3%	0.900	0.900
Penn Power_Small Restaurant_Cooking_20201	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penn Power_Small Restaurant_Cooking_20202	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penn Power_Small Restaurant_Cooking_20204	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penn Power_Small Restaurant_Cooking_20206	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penn Power_Small Restaurant_Cooking_20208	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
Penn Power_Small Restaurant_Cooling_20301	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20302	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20303	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20304	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20308	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20309	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20311	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20312	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20313	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	1.000	1.000
Penn Power_Small Restaurant_Cooling_20317	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20318	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20319	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20320	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20321	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20322	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20326	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20327	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20328	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20329	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20330	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Restaurant_Cooling_20331	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20333	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20334	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20335	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20336	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20338	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Cooling_20339	49.1%	38.2%	0.1%	0.0%	8.9%	3.5%	0.454	0.454
Penn Power_Small Restaurant_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Restaurant_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Restaurant_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Restaurant_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Restaurant_Interior Lighting_20508	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20509	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20511	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20512	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20514	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20515	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20517	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
Penn Power_Small Restaurant_Interior Lighting_20518	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
Penn Power_Small Restaurant_Interior Lighting_20520	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20521	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20522	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
Penn Power_Small Restaurant_Interior Lighting_20524	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20525	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20529	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
Penn Power_Small Restaurant_Interior Lighting_20531	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Interior Lighting_20532	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
Penn Power_Small Restaurant_Other_20601	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
Penn Power_Small Restaurant_Other_20602	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
Penn Power_Small Restaurant_Other_20603	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.405	0.405
Penn Power_Small Restaurant_Other_20604	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penn Power_Small Restaurant_Other_20606	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penn Power_Small Restaurant_Other_20607	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penn Power_Small Restaurant_Other_20610	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penn Power_Small Restaurant_Other_20611	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penn Power_Small Restaurant_Other_20613	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penn Power_Small Restaurant_Other_20614	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penn Power_Small Restaurant_Other_20615	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
Penn Power_Small Restaurant_Plug Loads_20701	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Restaurant_Plug Loads_20702	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Restaurant_Plug Loads_20703	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Restaurant_Plug Loads_20704	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Restaurant_Plug Loads_20705	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Restaurant_Plug Loads_20706	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Restaurant_Plug Loads_20707	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Restaurant_Plug Loads_20708	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Small Restaurant_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penn Power_Small Restaurant_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penn Power_Small Restaurant_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penn Power_Small Restaurant_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penn Power_Small Restaurant_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Penn Power_Small Restaurant_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penn Power_Small Restaurant_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penn Power_Small Restaurant_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Penn Power_Small Restaurant_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penn Power_Small Restaurant_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
Penn Power_Small Restaurant_Space Heating_20910	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20911	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20913	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20914	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20915	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20916	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20917	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20923	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20925	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20927	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20929	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20932	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20934	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Space Heating_20936	0.0%	0.0%	28.3%	48.6%	4.7%	18.3%	0.000	0.000
Penn Power_Small Restaurant_Total Electric_21701	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21702	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21703	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21704	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21705	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21706	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21707	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21708	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21709	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21710	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21711	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	1.000	1.000
Penn Power_Small Restaurant_Total Electric_21712	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	1.000	1.000
Penn Power_Small Restaurant_Total Electric_21713	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Total Electric_21714	26.2%	23.3%	10.8%	9.9%	15.8%	14.1%	0.928	0.928
Penn Power_Small Restaurant_Ventilation_21001	19.0%	21.0%	12.6%	13.6%	15.8%	18.1%	0.454	0.454
Penn Power_Small Restaurant_Ventilation_21002	19.0%	21.0%	12.6%	13.6%	15.8%	18.1%	0.454	0.454
Penn Power_Small Restaurant_Ventilation_21003	19.0%	21.0%	12.6%	13.6%	15.8%	18.1%	0.454	0.454
Penn Power_Small Restaurant_Ventilation_21007	19.0%	21.0%	12.6%	13.6%	15.8%	18.1%	0.892	0.892
Penn Power_Small Restaurant_Ventilation_21008	19.0%	21.0%	12.6%	13.6%	15.8%	18.1%	0.892	0.892
Penn Power_Small Restaurant_Ventilation_21009	19.0%	21.0%	12.6%	13.6%	15.8%	18.1%	0.892	0.892

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Restaurant_Ventilation_21010	19.0%	21.0%	12.6%	13.6%	15.8%	18.1%	0.892	0.892
Penn Power_Small Restaurant_Water Heating_21103	22.0%	14.5%	18.4%	11.7%	20.1%	13.3%	0.584	0.584
Penn Power_Small Restaurant_Water Heating_21107	22.0%	14.5%	18.4%	11.7%	20.1%	13.3%	0.584	0.584
Penn Power_Small Restaurant_Water Heating_21109	22.0%	14.5%	18.4%	11.7%	20.1%	13.3%	0.584	0.584
Penn Power_Small Restaurant_Water Heating_21114	22.0%	14.5%	18.4%	11.7%	20.1%	13.3%	0.584	0.584
Penn Power_Small Restaurant_Water Heating_21115	22.0%	14.5%	18.4%	11.7%	20.1%	13.3%	0.584	0.584
Penn Power_Small Restaurant_Water Heating_21118	22.0%	14.5%	18.4%	11.7%	20.1%	13.3%	0.900	0.900
Penn Power_Small Retail_Cooking_20201	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penn Power_Small Retail_Cooking_20202	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penn Power_Small Retail_Cooking_20204	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penn Power_Small Retail_Cooking_20206	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penn Power_Small Retail_Cooking_20208	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
Penn Power_Small Retail_Cooling_20301	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20302	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20303	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20304	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20308	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20309	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20311	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20312	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20313	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	1.000	1.000
Penn Power_Small Retail_Cooling_20317	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20318	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20319	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20320	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20321	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20322	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20326	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20327	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20328	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20329	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20330	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20331	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20333	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20334	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20335	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20336	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20338	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Cooling_20339	73.5%	15.7%	0.0%	0.0%	9.5%	1.3%	0.530	0.530
Penn Power_Small Retail_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Retail_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Retail_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Retail_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Retail_Interior Lighting_20508	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20509	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Retail_Interior Lighting_20511	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20512	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20514	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20515	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20517	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
Penn Power_Small Retail_Interior Lighting_20518	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
Penn Power_Small Retail_Interior Lighting_20520	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20521	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20522	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
Penn Power_Small Retail_Interior Lighting_20524	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20525	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20529	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
Penn Power_Small Retail_Interior Lighting_20531	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Interior Lighting_20532	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
Penn Power_Small Retail_Other_20601	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
Penn Power_Small Retail_Other_20602	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
Penn Power_Small Retail_Other_20603	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.405	0.405
Penn Power_Small Retail_Other_20604	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penn Power_Small Retail_Other_20606	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penn Power_Small Retail_Other_20607	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penn Power_Small Retail_Other_20610	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penn Power_Small Retail_Other_20611	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penn Power_Small Retail_Other_20613	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penn Power_Small Retail_Other_20614	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penn Power_Small Retail_Other_20615	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
Penn Power_Small Retail_Plug Loads_20701	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penn Power_Small Retail_Plug Loads_20702	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penn Power_Small Retail_Plug Loads_20703	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penn Power_Small Retail_Plug Loads_20704	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penn Power_Small Retail_Plug Loads_20705	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penn Power_Small Retail_Plug Loads_20706	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penn Power_Small Retail_Plug Loads_20707	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penn Power_Small Retail_Plug Loads_20708	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
Penn Power_Small Retail_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Small Retail_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Small Retail_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Small Retail_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penn Power_Small Retail_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Small Retail_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Small Retail_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penn Power_Small Retail_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Small Retail_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Small Retail_Space Heating_20910	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20911	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20913	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Retail_Space Heating_20915	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20916	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20917	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20919	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20923	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20925	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20927	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20929	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20932	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20934	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Space Heating_20936	0.0%	0.0%	24.8%	42.8%	7.6%	24.7%	0.000	0.000
Penn Power_Small Retail_Total Electric_21701	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21702	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21703	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21704	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21705	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21706	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21707	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21708	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21709	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21710	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21711	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	1.000	1.000
Penn Power_Small Retail_Total Electric_21712	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	1.000	1.000
Penn Power_Small Retail_Total Electric_21713	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Total Electric_21714	34.2%	15.3%	13.1%	7.7%	19.0%	10.7%	0.895	0.895
Penn Power_Small Retail_Ventilation_21001	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.510	0.510
Penn Power_Small Retail_Ventilation_21002	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.510	0.510
Penn Power_Small Retail_Ventilation_21003	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.510	0.510
Penn Power_Small Retail_Ventilation_21005	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.510	0.510
Penn Power_Small Retail_Ventilation_21006	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.510	0.510
Penn Power_Small Retail_Ventilation_21007	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.952	0.952
Penn Power_Small Retail_Ventilation_21008	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.952	0.952
Penn Power_Small Retail_Ventilation_21009	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.952	0.952
Penn Power_Small Retail_Ventilation_21010	17.1%	20.5%	13.2%	14.2%	16.4%	18.7%	0.952	0.952
Penn Power_Small Retail_Water Heating_21103	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Retail_Water Heating_21107	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Retail_Water Heating_21109	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Retail_Water Heating_21114	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Retail_Water Heating_21115	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Small Retail_Water Heating_21118	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.900	0.900
Penn Power_Small Warehouse_Cooling_20301	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20302	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20303	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20304	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20308	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Warehouse_Cooling_20309	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20311	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20312	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20313	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Penn Power_Small Warehouse_Cooling_20314	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20315	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20316	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20317	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20318	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20319	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20320	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20321	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20322	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20323	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20326	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20327	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20328	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20329	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20330	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20331	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20333	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20334	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20335	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20336	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20337	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20338	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Cooling_20339	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Small Warehouse_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Warehouse_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Small Warehouse_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Warehouse_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Small Warehouse_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penn Power_Small Warehouse_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penn Power_Small Warehouse_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Small Warehouse_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Warehouse_Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Penn Power_Small Warehouse_Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Penn Power_Small Warehouse_Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
Penn Power_Small Warehouse_Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Warehouse_Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Warehouse_Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Warehouse_Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Warehouse_Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Warehouse_Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Warehouse_Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Warehouse_Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Small Warehouse_Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Small Warehouse_Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Small Warehouse_Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Small Warehouse_Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Small Warehouse_Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Small Warehouse_Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Small Warehouse_Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Small Warehouse_Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Small Warehouse_Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Small Warehouse_Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Small Warehouse_Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Small Warehouse_Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
Penn Power_Small Warehouse_Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Small Warehouse_Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
Penn Power_Small Warehouse_Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Small Warehouse_Space Heating_20910	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20911	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20913	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20914	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20915	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20916	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20917	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20919	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20923	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20925	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20927	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20929	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20932	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20934	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Space Heating_20936	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Small Warehouse_Total Electric_21701	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21702	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21703	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21704	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Small Warehouse_Total Electric_21705	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21706	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21707	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21708	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21709	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21710	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21711	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	1.000	1.000
Penn Power_Small Warehouse_Total Electric_21712	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	1.000	1.000
Penn Power_Small Warehouse_Total Electric_21713	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Total Electric_21714	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Small Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Small Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Small Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Small Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Small Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Small Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penn Power_Small Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penn Power_Small Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penn Power_Small Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penn Power_Small Warehouse_Water Heating_21103	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Small Warehouse_Water Heating_21107	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Small Warehouse_Water Heating_21109	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Small Warehouse_Water Heating_21114	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Small Warehouse_Water Heating_21115	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Small Warehouse_Water Heating_21118	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.900	0.900
Penn Power_Large Education - College/University_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - College/University_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - College/University_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - College/University_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - College/University_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - College/University_Cooling_20301	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20302	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20303	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20304	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20308	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20309	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20311	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20312	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20313	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	1.000	1.000
Penn Power_Large Education - College/University_Cooling_20314	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20315	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20316	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20317	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20318	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20319	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Education - College/University_Cooling_20320	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20321	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20322	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20323	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20330	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20331	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20333	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20334	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20335	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20336	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20338	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Cooling_20339	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.450	0.450
Penn Power_Large Education - College/University_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Education - College/University_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Education - College/University_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Education - College/University_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Education - College/University_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Penn Power_Large Education - College/University_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Penn Power_Large Education - College/University_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Penn Power_Large Education - College/University_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Penn Power_Large Education - College/University_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - College/University_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - College/University_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - College/University_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - College/University_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - College/University_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - College/University_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - College/University_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - College/University_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - College/University_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - College/University_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - College/University_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - College/University_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - College/University_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Education - College/University_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - College/University_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - College/University_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Penn Power_Large Education - College/University_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - College/University_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - College/University_Space Heating_20910	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20911	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20913	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20914	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20915	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20916	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20917	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20919	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20923	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20929	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20932	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20934	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Space Heating_20936	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - College/University_Total Electric_21701	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21702	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21703	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21704	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21705	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21706	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21707	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21708	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21709	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21710	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21711	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	1.000	1.000
Penn Power_Large Education - College/University_Total Electric_21712	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	1.000	1.000
Penn Power_Large Education - College/University_Total Electric_21713	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Total Electric_21714	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - College/University_Ventilation_21001	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.390	0.390
Penn Power_Large Education - College/University_Ventilation_21002	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.390	0.390
Penn Power_Large Education - College/University_Ventilation_21003	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.390	0.390
Penn Power_Large Education - College/University_Ventilation_21005	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.390	0.390
Penn Power_Large Education - College/University_Ventilation_21006	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.390	0.390
Penn Power_Large Education - College/University_Ventilation_21007	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penn Power_Large Education - College/University_Ventilation_21008	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penn Power_Large Education - College/University_Ventilation_21009	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penn Power_Large Education - College/University_Ventilation_21010	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penn Power_Large Education - College/University_Water Heating_21103	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - College/University_Water Heating_21107	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - College/University_Water Heating_21109	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - College/University_Water Heating_21114	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Education - College/University_Water Heating_21115	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - College/University_Water Heating_21116	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - College/University_Water Heating_21118	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.900	0.900
Penn Power_Large Education - Other_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - Other_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - Other_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - Other_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - Other_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
Penn Power_Large Education - Other_Cooling_20301	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20302	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20303	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20304	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20308	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20309	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20311	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20312	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20313	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	1.000	1.000
Penn Power_Large Education - Other_Cooling_20314	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20315	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20316	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20317	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20318	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20319	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20320	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20321	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20322	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20323	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20330	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20331	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20333	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20334	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20335	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20336	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20338	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Cooling_20339	90.5%	6.5%	0.0%	0.0%	3.0%	0.0%	0.153	0.153
Penn Power_Large Education - Other_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Education - Other_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Education - Other_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Education - Other_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Education - Other_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Education - Other_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Penn Power_Large Education - Other_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
Penn Power_Large Education - Other_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Penn Power_Large Education - Other_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
Penn Power_Large Education - Other_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
Penn Power_Large Education - Other_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - Other_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - Other_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - Other_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - Other_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - Other_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - Other_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - Other_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
Penn Power_Large Education - Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - Other_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - Other_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - Other_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
Penn Power_Large Education - Other_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - Other_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - Other_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
Penn Power_Large Education - Other_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - Other_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Education - Other_Space Heating_20910	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20911	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20913	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20914	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20915	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20916	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20917	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20919	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20923	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20929	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20932	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20934	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Space Heating_20936	0.1%	0.2%	35.3%	36.3%	13.8%	14.3%	0.000	0.000
Penn Power_Large Education - Other_Total Electric_21701	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21702	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21703	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21704	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Education - Other_Total Electric_21705	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21706	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21707	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21708	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21709	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21710	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21711	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	1.000	1.000
Penn Power_Large Education - Other_Total Electric_21712	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	1.000	1.000
Penn Power_Large Education - Other_Total Electric_21713	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Total Electric_21714	27.9%	14.1%	13.7%	10.5%	19.4%	14.4%	0.537	0.537
Penn Power_Large Education - Other_Ventilation_21001	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.153	0.153
Penn Power_Large Education - Other_Ventilation_21002	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.153	0.153
Penn Power_Large Education - Other_Ventilation_21003	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.153	0.153
Penn Power_Large Education - Other_Ventilation_21005	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.153	0.153
Penn Power_Large Education - Other_Ventilation_21006	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.153	0.153
Penn Power_Large Education - Other_Ventilation_21007	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penn Power_Large Education - Other_Ventilation_21008	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penn Power_Large Education - Other_Ventilation_21009	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penn Power_Large Education - Other_Ventilation_21010	18.0%	13.3%	14.0%	15.1%	18.8%	20.7%	0.558	0.558
Penn Power_Large Education - Other_Water Heating_21103	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - Other_Water Heating_21107	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - Other_Water Heating_21109	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - Other_Water Heating_21114	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - Other_Water Heating_21115	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - Other_Water Heating_21116	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.494	0.494
Penn Power_Large Education - Other_Water Heating_21118	29.1%	8.0%	22.4%	6.5%	26.6%	7.4%	0.900	0.900
Penn Power_Large Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penn Power_Large Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penn Power_Large Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penn Power_Large Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
Penn Power_Large Grocery_Cooling_20301	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20302	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20303	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20304	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20308	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20309	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20311	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20312	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20313	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	1.000	1.000
Penn Power_Large Grocery_Cooling_20317	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20318	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20319	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20320	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20321	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20322	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Grocery_Cooling_20330	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20331	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20333	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20334	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20335	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20336	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20338	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Cooling_20339	55.7%	38.6%	0.0%	0.0%	4.2%	1.5%	0.270	0.270
Penn Power_Large Grocery_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Grocery_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Grocery_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Grocery_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Penn Power_Large Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
Penn Power_Large Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Penn Power_Large Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
Penn Power_Large Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
Penn Power_Large Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Large Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Large Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Large Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Large Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Large Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Large Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Large Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
Penn Power_Large Grocery_Refrigeration_20803	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penn Power_Large Grocery_Refrigeration_20805	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penn Power_Large Grocery_Refrigeration_20806	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penn Power_Large Grocery_Refrigeration_20807	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.094	0.094
Penn Power_Large Grocery_Refrigeration_20808	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penn Power_Large Grocery_Refrigeration_20811	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.403	0.403
Penn Power_Large Grocery_Refrigeration_20818	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
Penn Power_Large Grocery_Space Heating_20910	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20911	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Grocery_Space Heating_20913	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20915	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20916	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20917	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20919	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20923	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20929	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20932	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20934	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Space Heating_20936	0.0%	0.6%	27.3%	41.2%	8.2%	22.7%	0.000	0.000
Penn Power_Large Grocery_Total Electric_21701	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21702	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21703	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21704	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21705	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21706	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21707	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21708	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21709	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21710	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21711	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	1.000	1.000
Penn Power_Large Grocery_Total Electric_21712	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	1.000	1.000
Penn Power_Large Grocery_Total Electric_21713	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Total Electric_21714	24.5%	22.8%	11.2%	10.9%	15.5%	15.1%	0.894	0.894
Penn Power_Large Grocery_Ventilation_21001	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.269	0.269
Penn Power_Large Grocery_Ventilation_21002	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.269	0.269
Penn Power_Large Grocery_Ventilation_21003	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.269	0.269
Penn Power_Large Grocery_Ventilation_21005	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.269	0.269
Penn Power_Large Grocery_Ventilation_21006	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.269	0.269
Penn Power_Large Grocery_Ventilation_21007	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Penn Power_Large Grocery_Ventilation_21008	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Penn Power_Large Grocery_Ventilation_21009	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Penn Power_Large Grocery_Ventilation_21010	19.8%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
Penn Power_Large Grocery_Water Heating_21103	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Large Grocery_Water Heating_21107	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Large Grocery_Water Heating_21109	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Large Grocery_Water Heating_21114	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Large Grocery_Water Heating_21115	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.598	0.598
Penn Power_Large Grocery_Water Heating_21118	22.2%	14.2%	18.6%	11.5%	20.3%	13.1%	0.900	0.900
Penn Power_Large Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Large Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Large Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Large Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Large Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
Penn Power_Large Health - Hospital_Cooling_20301	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Health - Hospital_Cooling_20302	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20303	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20304	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20308	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20309	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20311	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20312	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20313	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	1.000	1.000
Penn Power_Large Health - Hospital_Cooling_20314	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20315	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20316	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20317	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20318	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20319	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20320	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20321	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20322	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20323	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20330	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20331	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20333	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20334	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20335	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20336	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20338	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Cooling_20339	48.2%	32.7%	3.2%	2.9%	7.3%	5.7%	0.384	0.384
Penn Power_Large Health - Hospital_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Health - Hospital_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Health - Hospital_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Health - Hospital_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Penn Power_Large Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
Penn Power_Large Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Penn Power_Large Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
Penn Power_Large Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
Penn Power_Large Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Penn Power_Large Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
Penn Power_Large Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
Penn Power_Large Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Large Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Large Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Large Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Large Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Large Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Large Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Large Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
Penn Power_Large Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Large Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Large Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Large Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Large Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Large Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Large Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Large Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
Penn Power_Large Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Large Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Large Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Large Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Large Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
Penn Power_Large Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Large Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Large Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
Penn Power_Large Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Large Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
Penn Power_Large Health - Hospital_Space Heating_20910	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20911	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20913	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20914	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20915	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20916	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20917	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20919	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20923	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20929	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20932	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20934	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Space Heating_20936	0.4%	1.2%	27.3%	38.0%	10.2%	22.8%	0.050	0.050
Penn Power_Large Health - Hospital_Total Electric_21701	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21702	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Health - Hospital_Total Electric_21703	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21704	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21705	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21706	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21707	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21708	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21709	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21710	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21711	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	1.000	1.000
Penn Power_Large Health - Hospital_Total Electric_21712	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	1.000	1.000
Penn Power_Large Health - Hospital_Total Electric_21713	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Total Electric_21714	27.7%	23.1%	10.7%	9.9%	14.8%	13.8%	0.754	0.754
Penn Power_Large Health - Hospital_Ventilation_21001	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Large Health - Hospital_Ventilation_21002	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Large Health - Hospital_Ventilation_21003	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Large Health - Hospital_Ventilation_21005	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Large Health - Hospital_Ventilation_21006	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.432	0.432
Penn Power_Large Health - Hospital_Ventilation_21007	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.754	0.754
Penn Power_Large Health - Hospital_Ventilation_21008	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.754	0.754
Penn Power_Large Health - Hospital_Ventilation_21009	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.754	0.754
Penn Power_Large Health - Hospital_Ventilation_21010	20.0%	22.5%	11.7%	12.6%	15.8%	17.4%	0.754	0.754
Penn Power_Large Health - Hospital_Water Heating_21103	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Large Health - Hospital_Water Heating_21107	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Large Health - Hospital_Water Heating_21114	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Large Health - Hospital_Water Heating_21115	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Large Health - Hospital_Water Heating_21116	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.528	0.528
Penn Power_Large Health - Hospital_Water Heating_21118	20.2%	16.1%	17.1%	13.2%	18.6%	14.9%	0.900	0.900
Penn Power_Large Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Large Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Large Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Large Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Large Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Large Health - Other_Cooling_20301	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20302	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20303	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20304	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20308	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20309	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20311	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20312	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20313	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	1.000	1.000
Penn Power_Large Health - Other_Cooling_20314	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20315	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20316	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20317	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Health - Other_Cooling_20318	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20319	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20320	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20321	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20322	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20323	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20330	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20331	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20333	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20334	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20335	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20336	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20338	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Cooling_20339	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.305	0.305
Penn Power_Large Health - Other_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Health - Other_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Health - Other_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Health - Other_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penn Power_Large Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penn Power_Large Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penn Power_Large Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penn Power_Large Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
Penn Power_Large Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penn Power_Large Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penn Power_Large Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Penn Power_Large Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Health - Other_Space Heating_20910	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20911	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20913	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20914	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20915	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20916	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20917	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20919	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20923	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20929	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20932	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20934	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Space Heating_20936	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Health - Other_Total Electric_21701	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21702	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21703	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21704	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21705	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21706	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21707	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21708	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21709	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21710	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21711	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	1.000	1.000
Penn Power_Large Health - Other_Total Electric_21712	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	1.000	1.000
Penn Power_Large Health - Other_Total Electric_21713	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Total Electric_21714	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Health - Other_Ventilation_21001	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Large Health - Other_Ventilation_21002	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Large Health - Other_Ventilation_21003	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Large Health - Other_Ventilation_21005	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Large Health - Other_Ventilation_21006	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.272	0.272
Penn Power_Large Health - Other_Ventilation_21007	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Large Health - Other_Ventilation_21008	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Large Health - Other_Ventilation_21009	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Large Health - Other_Ventilation_21010	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Health - Other_Water Heating_21103	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Health - Other_Water Heating_21107	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Health - Other_Water Heating_21114	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Health - Other_Water Heating_21115	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Health - Other_Water Heating_21116	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Health - Other_Water Heating_21118	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.900	0.900
Penn Power_Large Industrial Manufacturing_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Industrial Manufacturing_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Industrial Manufacturing_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Industrial Manufacturing_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penn Power_Large Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penn Power_Large Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
Penn Power_Large Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Institutional/Public Service_Cooling_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
Penn Power_Large Institutional/Public Service_Cooling_20301	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20302	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20303	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20304	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20308	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20309	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20311	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20312	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20313	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	1.000	1.000
Penn Power_Large Institutional/Public Service_Cooling_20315	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20316	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20317	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20318	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20319	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20320	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20321	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20322	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20323	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20330	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Institutional/Public Service_Cooling_20331	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20333	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20334	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20335	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20336	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20338	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Cooling_20339	87.1%	12.4%	0.0%	0.0%	0.4%	0.1%	0.527	0.527
Penn Power_Large Institutional/Public Service_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Institutional/Public Service_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Institutional/Public Service_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Institutional/Public Service_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penn Power_Large Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
Penn Power_Large Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penn Power_Large Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
Penn Power_Large Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
Penn Power_Large Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penn Power_Large Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
Penn Power_Large Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
Penn Power_Large Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
Penn Power_Large Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
Penn Power_Large Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penn Power_Large Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penn Power_Large Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
Penn Power_Large Institutional/Public Service_Space Heating_20910	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20911	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20913	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20915	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20916	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20917	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20919	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20923	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20929	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20932	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20934	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Space Heating_20936	0.0%	0.0%	31.1%	35.1%	16.2%	17.7%	0.000	0.000
Penn Power_Large Institutional/Public Service_Total Electric_21701	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21702	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21703	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21704	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21705	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21706	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21707	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21708	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21709	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21710	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21711	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	1.000	1.000
Penn Power_Large Institutional/Public Service_Total Electric_21712	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	1.000	1.000
Penn Power_Large Institutional/Public Service_Total Electric_21713	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Total Electric_21714	29.8%	13.3%	14.8%	10.0%	19.3%	12.8%	0.727	0.727
Penn Power_Large Institutional/Public Service_Ventilation_21001	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Large Institutional/Public Service_Ventilation_21002	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Large Institutional/Public Service_Ventilation_21003	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Large Institutional/Public Service_Ventilation_21005	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Large Institutional/Public Service_Ventilation_21006	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.527	0.527
Penn Power_Large Institutional/Public Service_Ventilation_21007	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Large Institutional/Public Service_Ventilation_21008	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Large Institutional/Public Service_Ventilation_21009	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Institutional/Public Service_Ventilation_21010	18.2%	2.6%	17.9%	19.3%	21.4%	20.5%	0.886	0.886
Penn Power_Large Institutional/Public Service_Water Heating_21103	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Institutional/Public Service_Water Heating_21107	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Institutional/Public Service_Water Heating_21109	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Institutional/Public Service_Water Heating_21114	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Institutional/Public Service_Water Heating_21115	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.623	0.623
Penn Power_Large Institutional/Public Service_Water Heating_21118	22.8%	13.6%	19.1%	11.0%	20.9%	12.6%	0.900	0.900
Penn Power_Large Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Large Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Large Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Large Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Large Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
Penn Power_Large Lodging_Cooling_20301	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20302	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20303	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20304	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20308	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20309	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20311	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20312	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20313	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	1.000	1.000
Penn Power_Large Lodging_Cooling_20315	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20316	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20317	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20318	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20319	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20320	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20321	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20322	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20323	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20324	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20325	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20330	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20331	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20333	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20334	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20335	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20336	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20338	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Cooling_20339	64.5%	34.6%	0.0%	0.0%	0.8%	0.1%	0.812	0.812
Penn Power_Large Lodging_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Lodging_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Lodging_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Lodging_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Penn Power_Large Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
Penn Power_Large Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Penn Power_Large Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
Penn Power_Large Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
Penn Power_Large Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Penn Power_Large Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
Penn Power_Large Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
Penn Power_Large Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Large Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Large Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Large Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Large Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Large Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Large Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Large Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
Penn Power_Large Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Large Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Large Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Large Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Large Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Large Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Large Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Large Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
Penn Power_Large Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Large Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Large Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Large Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Large Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
Penn Power_Large Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Large Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Large Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
Penn Power_Large Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Large Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
Penn Power_Large Lodging_Space Heating_20910	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Lodging_Space Heating_20911	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20913	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20914	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20915	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20916	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20917	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20919	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20921	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20923	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20929	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20932	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20934	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Space Heating_20936	0.0%	0.2%	28.3%	43.9%	8.0%	19.5%	0.000	0.000
Penn Power_Large Lodging_Total Electric_21701	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21702	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21703	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21704	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21705	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21706	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21707	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21708	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21709	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21710	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21711	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	1.000	1.000
Penn Power_Large Lodging_Total Electric_21712	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	1.000	1.000
Penn Power_Large Lodging_Total Electric_21713	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Total Electric_21714	29.3%	23.4%	10.2%	9.9%	13.7%	13.5%	0.660	0.660
Penn Power_Large Lodging_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.706	0.706
Penn Power_Large Lodging_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.706	0.706
Penn Power_Large Lodging_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.706	0.706
Penn Power_Large Lodging_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.706	0.706
Penn Power_Large Lodging_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.706	0.706
Penn Power_Large Lodging_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Penn Power_Large Lodging_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Penn Power_Large Lodging_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Penn Power_Large Lodging_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
Penn Power_Large Lodging_Water Heating_21103	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Large Lodging_Water Heating_21107	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Large Lodging_Water Heating_21109	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Large Lodging_Water Heating_21114	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Large Lodging_Water Heating_21115	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Large Lodging_Water Heating_21116	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.623	0.623
Penn Power_Large Lodging_Water Heating_21118	20.4%	15.9%	17.2%	13.0%	18.8%	14.7%	0.900	0.900
Penn Power_Large Miscellaneous/Other_Cooling_20301	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20302	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Miscellaneous/Other_Cooling_20303	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20304	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20308	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20309	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20311	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20312	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20313	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	1.000	1.000
Penn Power_Large Miscellaneous/Other_Cooling_20317	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20318	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20319	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20320	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20321	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20322	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20330	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20331	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20333	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20334	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20335	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20336	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20338	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Cooling_20339	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.480	0.480
Penn Power_Large Miscellaneous/Other_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Miscellaneous/Other_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Miscellaneous/Other_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Miscellaneous/Other_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Penn Power_Large Miscellaneous/Other_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Penn Power_Large Miscellaneous/Other_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Penn Power_Large Miscellaneous/Other_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Penn Power_Large Miscellaneous/Other_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
Penn Power_Large Miscellaneous/Other_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Penn Power_Large Miscellaneous/Other_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Penn Power_Large Miscellaneous/Other_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
Penn Power_Large Miscellaneous/Other_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Miscellaneous/Other_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Miscellaneous/Other_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Miscellaneous/Other_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Miscellaneous/Other_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Miscellaneous/Other_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Miscellaneous/Other_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Miscellaneous/Other_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Miscellaneous/Other_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Miscellaneous/Other_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Miscellaneous/Other_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Miscellaneous/Other_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Miscellaneous/Other_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Miscellaneous/Other_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Miscellaneous/Other_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Miscellaneous/Other_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Miscellaneous/Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Miscellaneous/Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Miscellaneous/Other_Total Electric_21701	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21702	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21703	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21704	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21705	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21706	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21707	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21708	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21709	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21710	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21711	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	1.000	1.000
Penn Power_Large Miscellaneous/Other_Total Electric_21712	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	1.000	1.000
Penn Power_Large Miscellaneous/Other_Total Electric_21713	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Total Electric_21714	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Miscellaneous/Other_Ventilation_21001	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.392	0.392
Penn Power_Large Miscellaneous/Other_Ventilation_21002	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.392	0.392

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Miscellaneous/Other_Ventilation_21003	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.392	0.392
Penn Power_Large Miscellaneous/Other_Ventilation_21005	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.392	0.392
Penn Power_Large Miscellaneous/Other_Ventilation_21006	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.392	0.392
Penn Power_Large Miscellaneous/Other_Ventilation_21007	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.753	0.753
Penn Power_Large Miscellaneous/Other_Ventilation_21008	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.753	0.753
Penn Power_Large Miscellaneous/Other_Ventilation_21009	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.753	0.753
Penn Power_Large Miscellaneous/Other_Ventilation_21010	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.753	0.753
Penn Power_Large Miscellaneous/Other_Water Heating_21103	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Miscellaneous/Other_Water Heating_21107	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Miscellaneous/Other_Water Heating_21109	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Miscellaneous/Other_Water Heating_21114	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Miscellaneous/Other_Water Heating_21115	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Miscellaneous/Other_Water Heating_21118	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.900	0.900
Penn Power_Large Office_Cooking_20201	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Penn Power_Large Office_Cooking_20202	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Penn Power_Large Office_Cooking_20206	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
Penn Power_Large Office_Cooling_20301	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20302	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20303	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20304	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20308	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20309	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20311	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20312	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20313	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	1.000	1.000
Penn Power_Large Office_Cooling_20314	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20315	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20316	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20317	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20318	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20319	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20320	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20321	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20322	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20323	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20330	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20331	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20333	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20334	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20335	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20336	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20338	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Cooling_20339	66.3%	11.3%	5.5%	2.7%	11.3%	2.9%	0.338	0.338
Penn Power_Large Office_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Office_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Office_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Office_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Office_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Penn Power_Large Office_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
Penn Power_Large Office_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Penn Power_Large Office_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
Penn Power_Large Office_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
Penn Power_Large Office_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Penn Power_Large Office_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
Penn Power_Large Office_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
Penn Power_Large Office_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Office_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Office_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Office_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Office_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Office_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Office_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Office_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
Penn Power_Large Office_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Office_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Office_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Office_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Office_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Office_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Office_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Office_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
Penn Power_Large Office_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
Penn Power_Large Office_Space Heating_20910	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20911	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20913	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20914	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20915	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20916	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20917	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Office_Space Heating_20919	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20923	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20929	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20932	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20934	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Space Heating_20936	0.0%	0.0%	41.4%	31.3%	14.6%	12.6%	0.000	0.000
Penn Power_Large Office_Total Electric_21701	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21702	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21703	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21704	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21705	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21706	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21707	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21708	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21709	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21710	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21711	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	1.000	1.000
Penn Power_Large Office_Total Electric_21712	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	1.000	1.000
Penn Power_Large Office_Total Electric_21713	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Total Electric_21714	32.1%	14.2%	13.4%	9.6%	18.5%	12.2%	0.759	0.759
Penn Power_Large Office_Ventilation_21001	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.329	0.329
Penn Power_Large Office_Ventilation_21002	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.329	0.329
Penn Power_Large Office_Ventilation_21003	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.329	0.329
Penn Power_Large Office_Ventilation_21005	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.329	0.329
Penn Power_Large Office_Ventilation_21006	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.329	0.329
Penn Power_Large Office_Ventilation_21007	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.753	0.753
Penn Power_Large Office_Ventilation_21008	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.753	0.753
Penn Power_Large Office_Ventilation_21009	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.753	0.753
Penn Power_Large Office_Ventilation_21010	20.8%	4.9%	15.9%	17.5%	20.6%	20.4%	0.753	0.753
Penn Power_Large Office_Water Heating_21103	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Office_Water Heating_21107	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Office_Water Heating_21109	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Office_Water Heating_21114	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Office_Water Heating_21115	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.618	0.618
Penn Power_Large Office_Water Heating_21118	18.4%	17.9%	15.5%	14.7%	17.0%	16.5%	0.900	0.900
Penn Power_Large Retail_Cooking_20201	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penn Power_Large Retail_Cooking_20202	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penn Power_Large Retail_Cooking_20204	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penn Power_Large Retail_Cooking_20206	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penn Power_Large Retail_Cooking_20208	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
Penn Power_Large Retail_Cooling_20301	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20302	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20303	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20304	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20308	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Retail_Cooling_20309	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20311	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20312	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20313	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	1.000	1.000
Penn Power_Large Retail_Cooling_20317	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20318	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20319	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20320	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20321	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20322	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20330	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20331	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20333	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20334	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20335	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20336	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20338	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Cooling_20339	69.1%	30.7%	0.0%	0.0%	0.1%	0.0%	0.530	0.530
Penn Power_Large Retail_Exterior Lighting_20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Retail_Exterior Lighting_20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Retail_Exterior Lighting_20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Retail_Exterior Lighting_20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Retail_Interior Lighting_20508	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20509	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20511	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20512	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20514	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20515	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20517	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
Penn Power_Large Retail_Interior Lighting_20518	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
Penn Power_Large Retail_Interior Lighting_20520	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20521	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20522	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
Penn Power_Large Retail_Interior Lighting_20524	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20525	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20529	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
Penn Power_Large Retail_Interior Lighting_20531	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Interior Lighting_20532	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
Penn Power_Large Retail_Other_20601	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
Penn Power_Large Retail_Other_20602	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
Penn Power_Large Retail_Other_20603	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.405	0.405
Penn Power_Large Retail_Other_20604	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penn Power_Large Retail_Other_20606	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penn Power_Large Retail_Other_20607	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penn Power_Large Retail_Other_20610	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Retail_Other_20611	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penn Power_Large Retail_Other_20613	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penn Power_Large Retail_Other_20614	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penn Power_Large Retail_Other_20615	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
Penn Power_Large Retail_Plug Loads_20701	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penn Power_Large Retail_Plug Loads_20702	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penn Power_Large Retail_Plug Loads_20703	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penn Power_Large Retail_Plug Loads_20704	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penn Power_Large Retail_Plug Loads_20705	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penn Power_Large Retail_Plug Loads_20706	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penn Power_Large Retail_Plug Loads_20707	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penn Power_Large Retail_Plug Loads_20708	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
Penn Power_Large Retail_Refrigeration_20801	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penn Power_Large Retail_Refrigeration_20805	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penn Power_Large Retail_Refrigeration_20806	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penn Power_Large Retail_Refrigeration_20807	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.094	0.094
Penn Power_Large Retail_Refrigeration_20808	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penn Power_Large Retail_Refrigeration_20809	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penn Power_Large Retail_Refrigeration_20811	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.403	0.403
Penn Power_Large Retail_Refrigeration_20818	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penn Power_Large Retail_Refrigeration_20821	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
Penn Power_Large Retail_Space Heating_20910	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20911	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20913	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20915	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20916	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20917	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20919	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20923	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20929	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20932	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20934	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Space Heating_20936	0.0%	0.0%	39.8%	28.4%	18.5%	13.3%	0.000	0.000
Penn Power_Large Retail_Total Electric_21701	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21702	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21703	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21704	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21705	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21706	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21707	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21708	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21709	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21710	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21711	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	1.000	1.000
Penn Power_Large Retail_Total Electric_21712	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Retail_Total Electric_21713	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Total Electric_21714	34.4%	19.0%	11.1%	9.1%	14.7%	11.7%	0.683	0.683
Penn Power_Large Retail_Ventilation_21001	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.510	0.510
Penn Power_Large Retail_Ventilation_21002	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.510	0.510
Penn Power_Large Retail_Ventilation_21003	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.510	0.510
Penn Power_Large Retail_Ventilation_21005	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.510	0.510
Penn Power_Large Retail_Ventilation_21006	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.510	0.510
Penn Power_Large Retail_Ventilation_21007	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Penn Power_Large Retail_Ventilation_21008	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Penn Power_Large Retail_Ventilation_21009	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Penn Power_Large Retail_Ventilation_21010	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
Penn Power_Large Retail_Water Heating_21103	22.9%	13.6%	19.1%	11.0%	20.9%	12.6%	0.614	0.614
Penn Power_Large Retail_Water Heating_21107	22.9%	13.6%	19.1%	11.0%	20.9%	12.6%	0.614	0.614
Penn Power_Large Retail_Water Heating_21109	22.9%	13.6%	19.1%	11.0%	20.9%	12.6%	0.614	0.614
Penn Power_Large Retail_Water Heating_21114	22.9%	13.6%	19.1%	11.0%	20.9%	12.6%	0.614	0.614
Penn Power_Large Retail_Water Heating_21115	22.9%	13.6%	19.1%	11.0%	20.9%	12.6%	0.614	0.614
Penn Power_Large Retail_Water Heating_21118	22.9%	13.6%	19.1%	11.0%	20.9%	12.6%	0.900	0.900
Penn Power_Large Warehouse_Cooling_20301	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20302	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20303	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20304	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20308	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20309	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20311	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20312	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20313	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
Penn Power_Large Warehouse_Cooling_20314	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20315	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20316	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20317	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20318	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20319	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20320	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20321	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20322	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20323	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20330	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20331	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20333	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20334	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20335	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20336	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20337	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20338	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200
Penn Power_Large Warehouse_Cooling_20339	62.5%	37.5%	0.0%	0.0%	0.0%	0.0%	0.200	0.200

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Warehouse_ Exterior Lighting_ 20401	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Warehouse_ Exterior Lighting_ 20402	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.000	0.000
Penn Power_Large Warehouse_ Exterior Lighting_ 20403	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Warehouse_ Exterior Lighting_ 20404	9.4%	26.9%	10.2%	19.3%	10.3%	23.9%	0.110	0.110
Penn Power_Large Warehouse_ Interior Lighting_ 20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penn Power_Large Warehouse_ Interior Lighting_ 20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
Penn Power_Large Warehouse_ Interior Lighting_ 20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Interior Lighting_ 20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
Penn Power_Large Warehouse_ Other_ 20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Penn Power_Large Warehouse_ Other_ 20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
Penn Power_Large Warehouse_ Other_ 20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
Penn Power_Large Warehouse_ Other_ 20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Warehouse_ Other_ 20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Warehouse_ Other_ 20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Warehouse_ Other_ 20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Warehouse_ Other_ 20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Warehouse_ Other_ 20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Warehouse_ Other_ 20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Warehouse_ Other_ 20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
Penn Power_Large Warehouse_ Plug Loads_ 20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Large Warehouse_ Plug Loads_ 20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Large Warehouse_ Plug Loads_ 20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Large Warehouse_ Plug Loads_ 20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Large Warehouse_ Plug Loads_ 20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Large Warehouse_ Plug Loads_ 20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Large Warehouse_ Plug Loads_ 20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Large Warehouse_ Plug Loads_ 20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
Penn Power_Large Warehouse_ Refrigeration_ 20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Large Warehouse_ Refrigeration_ 20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Large Warehouse_ Refrigeration_ 20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Large Warehouse_ Refrigeration_ 20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
Penn Power_Large Warehouse_ Refrigeration_ 20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Large Warehouse_ Refrigeration_ 20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
Penn Power_Large Warehouse_ Refrigeration_ 20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
Penn Power_Large Warehouse_ Space Heating_ 20910	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
Penn Power_Large Warehouse_Space Heating_20911	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20913	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20914	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20915	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20916	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20917	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20919	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20923	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20929	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20932	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20934	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Space Heating_20936	0.0%	0.1%	27.6%	34.6%	14.3%	23.4%	0.000	0.000
Penn Power_Large Warehouse_Total Electric_21701	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21702	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21703	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21704	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21705	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21706	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21707	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21708	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21709	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21710	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21711	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	1.000	1.000
Penn Power_Large Warehouse_Total Electric_21712	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	1.000	1.000
Penn Power_Large Warehouse_Total Electric_21713	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Total Electric_21714	26.8%	17.0%	14.8%	9.3%	19.5%	12.6%	0.792	0.792
Penn Power_Large Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Large Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Large Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Large Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Large Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.200	0.200
Penn Power_Large Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penn Power_Large Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penn Power_Large Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penn Power_Large Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
Penn Power_Large Warehouse_Water Heating_21103	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Large Warehouse_Water Heating_21107	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Large Warehouse_Water Heating_21109	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Large Warehouse_Water Heating_21114	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Large Warehouse_Water Heating_21115	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.599	0.599
Penn Power_Large Warehouse_Water Heating_21118	25.5%	10.8%	21.4%	8.9%	23.4%	10.0%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Single Family_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
West Penn Power_Single Family_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
West Penn Power_Single Family_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
West Penn Power_Single Family_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
West Penn Power_Single Family_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
West Penn Power_Single Family_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
West Penn Power_Single Family_Cooling_10301	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10303	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10305	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10306	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10309	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10311	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10313	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10314	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
West Penn Power_Single Family_Cooling_10315	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
West Penn Power_Single Family_Cooling_10316	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10318	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Cooling_10319	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
West Penn Power_Single Family_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
West Penn Power_Single Family_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
West Penn Power_Single Family_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730
West Penn Power_Single Family_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
West Penn Power_Single Family_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
West Penn Power_Single Family_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.373	0.373
West Penn Power_Single Family_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
West Penn Power_Single Family_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
West Penn Power_Single Family_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
West Penn Power_Single Family_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
West Penn Power_Single Family_Space Heating_10910	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Space Heating_10911	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Space Heating_10914	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Space Heating_10915	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Space Heating_10918	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Space Heating_10919	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Space Heating_10920	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Space Heating_10921	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Space Heating_10922	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family_Total Electric_11702	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family_Total Electric_11703	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family_Total Electric_11704	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family_Total Electric_11705	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family_Total Electric_11706	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Single Family_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
West Penn Power_Single Family_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
West Penn Power_Single Family_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
West Penn Power_Single Family_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
West Penn Power_Single Family_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
West Penn Power_Single Family_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
West Penn Power_Single Family_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
West Penn Power_Multifamily_Appliances_10101	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
West Penn Power_Multifamily_Appliances_10102	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
West Penn Power_Multifamily_Appliances_10103	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.405	0.405
West Penn Power_Multifamily_Appliances_10105	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily_Appliances_10107	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily_Appliances_10108	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily_Appliances_10109	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily_Appliances_10111	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily_Cooling_10301	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Cooling_10303	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Cooling_10305	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Cooling_10306	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Cooling_10309	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Cooling_10311	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Cooling_10313	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Cooling_10314	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
West Penn Power_Multifamily_Cooling_10315	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
West Penn Power_Multifamily_Cooling_10318	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Cooling_10319	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
West Penn Power_Multifamily_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
West Penn Power_Multifamily_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
West Penn Power_Multifamily_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
West Penn Power_Multifamily_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
West Penn Power_Multifamily_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
West Penn Power_Multifamily_Other_10601	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.106	0.106
West Penn Power_Multifamily_Other_10602	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.000	0.000
West Penn Power_Multifamily_Other_10603	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.625	0.625
West Penn Power_Multifamily_Other_10604	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.373	0.373
West Penn Power_Multifamily_Other_10605	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.310	0.310
West Penn Power_Multifamily_Plug Loads_10701	21.4%	20.5%	12.8%	11.9%	17.1%	16.4%	0.410	0.410
West Penn Power_Multifamily_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
West Penn Power_Multifamily_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
West Penn Power_Multifamily_Space Heating_10910	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Multifamily_Space Heating_10911	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily_Space Heating_10914	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily_Space Heating_10915	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily_Space Heating_10916	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily_Space Heating_10918	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily_Space Heating_10920	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily_Space Heating_10921	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily_Space Heating_10922	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
West Penn Power_Multifamily_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
West Penn Power_Multifamily_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
West Penn Power_Multifamily_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
West Penn Power_Multifamily_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
West Penn Power_Multifamily_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
West Penn Power_Multifamily_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
West Penn Power_Multifamily_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
West Penn Power_Multifamily_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
West Penn Power_Single Family LI_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
West Penn Power_Single Family LI_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
West Penn Power_Single Family LI_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
West Penn Power_Single Family LI_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
West Penn Power_Single Family LI_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
West Penn Power_Single Family LI_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
West Penn Power_Single Family LI_Cooling_10301	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10303	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10305	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10306	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10309	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10311	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10313	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10314	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
West Penn Power_Single Family LI_Cooling_10315	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
West Penn Power_Single Family LI_Cooling_10316	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10318	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Cooling_10319	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Single Family LI_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
West Penn Power_Single Family LI_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
West Penn Power_Single Family LI_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
West Penn Power_Single Family LI_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Single Family LI_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
West Penn Power_Single Family LI_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
West Penn Power_Single Family LI_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.373	0.373
West Penn Power_Single Family LI_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
West Penn Power_Single Family LI_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
West Penn Power_Single Family LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
West Penn Power_Single Family LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
West Penn Power_Single Family LI_Space Heating_10910	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Space Heating_10911	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Space Heating_10914	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Space Heating_10915	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Space Heating_10918	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Space Heating_10919	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Space Heating_10920	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Space Heating_10921	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Space Heating_10922	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
West Penn Power_Single Family LI_Total Electric_11702	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family LI_Total Electric_11703	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family LI_Total Electric_11704	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family LI_Total Electric_11705	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family LI_Total Electric_11706	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
West Penn Power_Single Family LI_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family LI_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family LI_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family LI_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family LI_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family LI_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
West Penn Power_Single Family LI_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
West Penn Power_Single Family LI_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
West Penn Power_Single Family LI_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
West Penn Power_Single Family LI_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
West Penn Power_Single Family LI_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
West Penn Power_Single Family LI_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
West Penn Power_Single Family LI_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
West Penn Power_Multifamily LI_Appliances_10101	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
West Penn Power_Multifamily LI_Appliances_10102	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
West Penn Power_Multifamily LI_Appliances_10103	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.405	0.405
West Penn Power_Multifamily LI_Appliances_10105	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily LI_Appliances_10107	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily LI_Appliances_10108	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily LI_Appliances_10109	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily LI_Appliances_10111	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
West Penn Power_Multifamily LI_Cooling_10301	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily LI_Cooling_10303	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily LI_Cooling_10305	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Multifamily LI_Cooling_10306	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily LI_Cooling_10309	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily LI_Cooling_10311	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily LI_Cooling_10313	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily LI_Cooling_10314	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
West Penn Power_Multifamily LI_Cooling_10315	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
West Penn Power_Multifamily LI_Cooling_10318	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily LI_Cooling_10319	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.373	0.373
West Penn Power_Multifamily LI_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
West Penn Power_Multifamily LI_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
West Penn Power_Multifamily LI_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
West Penn Power_Multifamily LI_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
West Penn Power_Multifamily LI_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
West Penn Power_Multifamily LI_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
West Penn Power_Multifamily LI_Other_10601	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.106	0.106
West Penn Power_Multifamily LI_Other_10602	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.000	0.000
West Penn Power_Multifamily LI_Other_10603	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.625	0.625
West Penn Power_Multifamily LI_Other_10604	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.373	0.373
West Penn Power_Multifamily LI_Other_10605	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.310	0.310
West Penn Power_Multifamily LI_Plug Loads_10701	21.4%	20.5%	12.8%	11.9%	17.1%	16.4%	0.410	0.410
West Penn Power_Multifamily LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
West Penn Power_Multifamily LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
West Penn Power_Multifamily LI_Space Heating_10910	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Space Heating_10911	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Space Heating_10914	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Space Heating_10915	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Space Heating_10916	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Space Heating_10918	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Space Heating_10920	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Space Heating_10921	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Space Heating_10922	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
West Penn Power_Multifamily LI_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily LI_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily LI_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily LI_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily LI_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily LI_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
West Penn Power_Multifamily LI_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
West Penn Power_Multifamily LI_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
West Penn Power_Multifamily LI_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
West Penn Power_Multifamily LI_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
West Penn Power_Multifamily LI_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
West Penn Power_Multifamily LI_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
West Penn Power_Multifamily LI_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
West Penn Power_Multifamily LI_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Multifamily LI_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
West Penn Power_Small Education - College/University_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - College/University_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - College/University_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - College/University_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - College/University_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - College/University_Cooling_20301	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20302	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20303	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20304	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20308	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20309	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20311	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20312	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20313	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	1.000	1.000
West Penn Power_Small Education - College/University_Cooling_20314	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20315	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20316	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20317	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20318	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20319	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20320	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20321	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20322	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20323	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20326	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20327	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20328	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20329	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20330	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20331	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20333	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20334	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20335	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20336	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20338	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Cooling_20339	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.476	0.476
West Penn Power_Small Education - College/University_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Education - College/University_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Education - College/University_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Education - College/University_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Education - College/University_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - College/University_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - College/University_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - College/University_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Education - College/University_Total Electric_21701	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21702	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21703	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21704	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21705	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21706	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21707	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21708	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21709	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21710	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21711	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
West Penn Power_Small Education - College/University_Total Electric_21712	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
West Penn Power_Small Education - College/University_Total Electric_21713	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Total Electric_21714	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - College/University_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.416	0.416
West Penn Power_Small Education - College/University_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.416	0.416
West Penn Power_Small Education - College/University_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.416	0.416
West Penn Power_Small Education - College/University_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.416	0.416
West Penn Power_Small Education - College/University_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.416	0.416
West Penn Power_Small Education - College/University_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
West Penn Power_Small Education - College/University_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
West Penn Power_Small Education - College/University_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
West Penn Power_Small Education - College/University_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
West Penn Power_Small Education - College/University_Water Heating_21103	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - College/University_Water Heating_21107	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - College/University_Water Heating_21109	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - College/University_Water Heating_21114	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - College/University_Water Heating_21115	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - College/University_Water Heating_21116	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - College/University_Water Heating_21118	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.900	0.900
West Penn Power_Small Education - Other_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - Other_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - Other_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - Other_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - Other_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
West Penn Power_Small Education - Other_Cooling_20301	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20302	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20303	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20304	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20308	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20309	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20311	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20312	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20313	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	1.000	1.000
West Penn Power_Small Education - Other_Cooling_20314	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Education - Other_Cooling_20315	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20316	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20317	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20318	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20319	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20320	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20321	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20322	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20323	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20326	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20327	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20328	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20329	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20330	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20331	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20333	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20334	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20335	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20336	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20338	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Cooling_20339	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.171	0.171
West Penn Power_Small Education - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Education - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Education - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Education - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Education - Other_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
West Penn Power_Small Education - Other_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
West Penn Power_Small Education - Other_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
West Penn Power_Small Education - Other_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
West Penn Power_Small Education - Other_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
West Penn Power_Small Education - Other_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
West Penn Power_Small Education - Other_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
West Penn Power_Small Education - Other_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
West Penn Power_Small Education - Other_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Education - Other_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
West Penn Power_Small Education - Other_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
West Penn Power_Small Education - Other_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
West Penn Power_Small Education - Other_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
West Penn Power_Small Education - Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Education - Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Education - Other_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Education - Other_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Education - Other_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
West Penn Power_Small Education - Other_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Education - Other_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Education - Other_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
West Penn Power_Small Education - Other_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Education - Other_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Education - Other_Space Heating_20910	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20911	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20913	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20914	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20915	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20916	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20917	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20919	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20923	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20925	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20927	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20929	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20932	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20934	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Space Heating_20936	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
West Penn Power_Small Education - Other_Total Electric_21701	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21702	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21703	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21704	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21705	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21706	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21707	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21708	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21709	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21710	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21711	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
West Penn Power_Small Education - Other_Total Electric_21712	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
West Penn Power_Small Education - Other_Total Electric_21713	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Total Electric_21714	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
West Penn Power_Small Education - Other_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.170	0.170
West Penn Power_Small Education - Other_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.170	0.170

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Education - Other_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.170	0.170
West Penn Power_Small Education - Other_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.170	0.170
West Penn Power_Small Education - Other_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.170	0.170
West Penn Power_Small Education - Other_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
West Penn Power_Small Education - Other_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
West Penn Power_Small Education - Other_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
West Penn Power_Small Education - Other_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
West Penn Power_Small Education - Other_Water Heating_21103	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - Other_Water Heating_21107	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - Other_Water Heating_21109	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - Other_Water Heating_21114	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - Other_Water Heating_21115	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - Other_Water Heating_21116	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
West Penn Power_Small Education - Other_Water Heating_21118	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.900	0.900
West Penn Power_Small Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
West Penn Power_Small Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
West Penn Power_Small Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
West Penn Power_Small Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
West Penn Power_Small Grocery_Cooling_20301	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20302	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20303	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20304	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20308	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20309	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20311	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20312	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20313	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	1.000	1.000
West Penn Power_Small Grocery_Cooling_20317	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20318	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20319	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20320	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20321	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20322	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20326	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20327	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20328	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20329	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20330	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20331	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20333	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20334	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20335	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20336	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20338	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264
West Penn Power_Small Grocery_Cooling_20339	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.264	0.264

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Grocery_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Grocery_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Grocery_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Grocery_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
West Penn Power_Small Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
West Penn Power_Small Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
West Penn Power_Small Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
West Penn Power_Small Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Small Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Grocery_Refrigeration_20803	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
West Penn Power_Small Grocery_Refrigeration_20805	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
West Penn Power_Small Grocery_Refrigeration_20806	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
West Penn Power_Small Grocery_Refrigeration_20807	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.094	0.094
West Penn Power_Small Grocery_Refrigeration_20808	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
West Penn Power_Small Grocery_Refrigeration_20811	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.403	0.403
West Penn Power_Small Grocery_Refrigeration_20818	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
West Penn Power_Small Grocery_Space Heating_20910	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20911	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20913	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20915	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20916	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20917	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20919	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20923	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20925	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20927	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Grocery_Space Heating_20929	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20932	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20934	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Space Heating_20936	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
West Penn Power_Small Grocery_Total Electric_21701	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21702	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21703	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21704	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21705	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21706	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21707	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21708	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21709	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21710	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21711	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	1.000	1.000
West Penn Power_Small Grocery_Total Electric_21712	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	1.000	1.000
West Penn Power_Small Grocery_Total Electric_21713	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Total Electric_21714	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
West Penn Power_Small Grocery_Ventilation_21001	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.275	0.275
West Penn Power_Small Grocery_Ventilation_21002	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.275	0.275
West Penn Power_Small Grocery_Ventilation_21003	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.275	0.275
West Penn Power_Small Grocery_Ventilation_21005	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.275	0.275
West Penn Power_Small Grocery_Ventilation_21006	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.275	0.275
West Penn Power_Small Grocery_Ventilation_21007	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
West Penn Power_Small Grocery_Ventilation_21008	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
West Penn Power_Small Grocery_Ventilation_21009	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
West Penn Power_Small Grocery_Ventilation_21010	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
West Penn Power_Small Grocery_Water Heating_21103	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Small Grocery_Water Heating_21107	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Small Grocery_Water Heating_21109	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Small Grocery_Water Heating_21114	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Small Grocery_Water Heating_21115	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Small Grocery_Water Heating_21118	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
West Penn Power_Small Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Small Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Small Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Small Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Small Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Small Health - Hospital_Cooling_20301	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20302	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20303	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20304	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20308	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20309	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20311	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Health - Hospital_Cooling_20312	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20313	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	1.000	1.000
West Penn Power_Small Health - Hospital_Cooling_20314	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20315	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20316	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20317	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20318	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20319	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20320	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20321	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20322	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20323	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20326	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20327	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20328	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20329	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20330	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20331	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20333	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20334	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20335	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20336	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20338	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Cooling_20339	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391
West Penn Power_Small Health - Hospital_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Health - Hospital_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Health - Hospital_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Health - Hospital_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
West Penn Power_Small Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
West Penn Power_Small Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
West Penn Power_Small Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
West Penn Power_Small Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Small Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
West Penn Power_Small Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
West Penn Power_Small Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Small Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Small Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Small Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Small Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Small Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Small Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Small Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Small Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Small Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Small Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Small Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Small Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Small Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Small Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Small Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Small Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Small Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Small Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Small Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Small Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
West Penn Power_Small Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Small Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Small Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
West Penn Power_Small Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Small Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Small Health - Hospital_Space Heating_20910	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20911	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20913	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20914	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20915	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20916	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20917	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20919	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20923	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20925	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20927	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20929	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20932	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20934	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Space Heating_20936	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Small Health - Hospital_Total Electric_21701	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21702	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Health - Hospital_Total Electric_21703	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21704	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21705	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21706	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21707	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21708	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21709	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21710	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21711	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
West Penn Power_Small Health - Hospital_Total Electric_21712	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
West Penn Power_Small Health - Hospital_Total Electric_21713	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Total Electric_21714	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Small Health - Hospital_Ventilation_21001	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Small Health - Hospital_Ventilation_21002	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Small Health - Hospital_Ventilation_21003	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Small Health - Hospital_Ventilation_21005	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Small Health - Hospital_Ventilation_21006	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Small Health - Hospital_Ventilation_21007	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
West Penn Power_Small Health - Hospital_Ventilation_21008	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
West Penn Power_Small Health - Hospital_Ventilation_21009	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
West Penn Power_Small Health - Hospital_Ventilation_21010	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
West Penn Power_Small Health - Hospital_Water Heating_21103	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Small Health - Hospital_Water Heating_21107	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Small Health - Hospital_Water Heating_21114	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Small Health - Hospital_Water Heating_21115	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Small Health - Hospital_Water Heating_21116	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Small Health - Hospital_Water Heating_21118	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.900	0.900
West Penn Power_Small Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Small Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Small Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Small Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Small Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Small Health - Other_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
West Penn Power_Small Health - Other_Cooling_20314	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Health - Other_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20326	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20327	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20328	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20329	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Small Health - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Health - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Health - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Health - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
West Penn Power_Small Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
West Penn Power_Small Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
West Penn Power_Small Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
West Penn Power_Small Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Small Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
West Penn Power_Small Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
West Penn Power_Small Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
West Penn Power_Small Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Small Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Small Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Small Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Small Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Small Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Small Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Small Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Small Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Small Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Small Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Small Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Small Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Small Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Small Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Small Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Small Health - Other_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20914	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20925	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20927	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Small Health - Other_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
West Penn Power_Small Health - Other_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
West Penn Power_Small Health - Other_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Health - Other_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Small Health - Other_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Small Health - Other_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Health - Other_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Small Health - Other_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Small Health - Other_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Small Health - Other_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Small Health - Other_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Small Health - Other_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Small Health - Other_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Health - Other_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Health - Other_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Health - Other_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Health - Other_Water Heating_21116	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Health - Other_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
West Penn Power_Small Industrial Manufacturing_ Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Industrial Manufacturing_ Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Industrial Manufacturing_ Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Industrial Manufacturing_ Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Small Industrial Manufacturing_ Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Small Institutional/Public Service_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
West Penn Power_Small Institutional/Public Service_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550





## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Institutional/Public Service_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
West Penn Power_Small Institutional/Public Service_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
West Penn Power_Small Institutional/Public Service_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Institutional/Public Service_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Small Institutional/Public Service_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.550	0.550
West Penn Power_Small Institutional/Public Service_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Small Institutional/Public Service_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Small Institutional/Public Service_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Small Institutional/Public Service_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Small Institutional/Public Service_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Institutional/Public Service_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Institutional/Public Service_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Institutional/Public Service_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Institutional/Public Service_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Institutional/Public Service_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
West Penn Power_Small Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Small Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Small Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Small Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Small Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Small Lodging_Cooling_20301	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20302	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20303	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20304	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20308	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20309	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20311	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20312	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20313	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
West Penn Power_Small Lodging_Cooling_20315	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20316	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20317	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20318	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20319	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20320	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20321	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20322	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20323	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20324	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20325	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20326	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Lodging_Cooling_20327	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20328	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20329	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20330	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20331	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20333	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20334	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20335	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20336	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20338	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Cooling_20339	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.815	0.815
West Penn Power_Small Lodging_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Lodging_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Lodging_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Lodging_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
West Penn Power_Small Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
West Penn Power_Small Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
West Penn Power_Small Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
West Penn Power_Small Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Small Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
West Penn Power_Small Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
West Penn Power_Small Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
West Penn Power_Small Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Small Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Small Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Small Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Small Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Small Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Small Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Small Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Small Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Small Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Small Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Small Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Small Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Small Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Small Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Small Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Small Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Small Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Small Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Small Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
West Penn Power_Small Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Small Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Small Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
West Penn Power_Small Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Small Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Small Lodging_Space Heating_20910	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20911	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20913	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20914	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20915	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20916	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20917	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20919	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20921	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20923	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20925	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20927	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20929	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20932	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20934	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Space Heating_20936	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
West Penn Power_Small Lodging_Total Electric_21701	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21702	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21703	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21704	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21705	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21706	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21707	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21708	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21709	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21710	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21711	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	1.000	1.000
West Penn Power_Small Lodging_Total Electric_21712	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	1.000	1.000
West Penn Power_Small Lodging_Total Electric_21713	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
West Penn Power_Small Lodging_Total Electric_21714	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Lodging_Ventilation_21001	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.720	0.720
West Penn Power_Small Lodging_Ventilation_21002	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.720	0.720
West Penn Power_Small Lodging_Ventilation_21003	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.720	0.720
West Penn Power_Small Lodging_Ventilation_21005	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.720	0.720
West Penn Power_Small Lodging_Ventilation_21006	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.720	0.720
West Penn Power_Small Lodging_Ventilation_21007	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
West Penn Power_Small Lodging_Ventilation_21008	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
West Penn Power_Small Lodging_Ventilation_21009	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
West Penn Power_Small Lodging_Ventilation_21010	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
West Penn Power_Small Lodging_Water Heating_21103	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Small Lodging_Water Heating_21107	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Small Lodging_Water Heating_21109	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Small Lodging_Water Heating_21114	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Small Lodging_Water Heating_21115	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Small Lodging_Water Heating_21116	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Small Lodging_Water Heating_21118	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.900	0.900
West Penn Power_Small Miscellaneous/Other_Cooling_20301	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20302	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20303	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20304	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20308	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20309	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20311	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20312	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20313	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	1.000	1.000
West Penn Power_Small Miscellaneous/Other_Cooling_20317	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20318	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20319	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20320	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20321	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20322	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20326	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20327	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20328	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20329	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20330	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20331	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20333	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20334	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20335	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20336	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20338	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Cooling_20339	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
West Penn Power_Small Miscellaneous/Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Miscellaneous/Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Miscellaneous/Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Miscellaneous/Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
West Penn Power_Small Miscellaneous/Other_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
West Penn Power_Small Miscellaneous/Other_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
West Penn Power_Small Miscellaneous/Other_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
West Penn Power_Small Miscellaneous/Other_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Miscellaneous/Other_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Miscellaneous/Other_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Miscellaneous/Other_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Miscellaneous/Other_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Miscellaneous/Other_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Miscellaneous/Other_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Miscellaneous/Other_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Miscellaneous/Other_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Miscellaneous/Other_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Miscellaneous/Other_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Miscellaneous/Other_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Miscellaneous/Other_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Miscellaneous/Other_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Miscellaneous/Other_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Miscellaneous/Other_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Miscellaneous/Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Miscellaneous/Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Miscellaneous/Other_Space Heating_20910	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20911	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20913	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20915	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20916	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20917	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Miscellaneous/Other_Space Heating_20919	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20923	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20925	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20927	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20929	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20932	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20934	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Space Heating_20936	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Miscellaneous/Other_Total Electric_21701	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21702	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21703	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21704	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21705	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21706	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21707	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21708	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21709	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21710	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21711	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
West Penn Power_Small Miscellaneous/Other_Total Electric_21712	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
West Penn Power_Small Miscellaneous/Other_Total Electric_21713	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Total Electric_21714	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Miscellaneous/Other_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.409	0.409
West Penn Power_Small Miscellaneous/Other_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.409	0.409
West Penn Power_Small Miscellaneous/Other_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.409	0.409
West Penn Power_Small Miscellaneous/Other_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.409	0.409
West Penn Power_Small Miscellaneous/Other_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.409	0.409
West Penn Power_Small Miscellaneous/Other_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
West Penn Power_Small Miscellaneous/Other_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
West Penn Power_Small Miscellaneous/Other_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
West Penn Power_Small Miscellaneous/Other_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
West Penn Power_Small Miscellaneous/Other_Water Heating_21103	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Miscellaneous/Other_Water Heating_21107	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Miscellaneous/Other_Water Heating_21109	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Miscellaneous/Other_Water Heating_21114	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Miscellaneous/Other_Water Heating_21115	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Miscellaneous/Other_Water Heating_21118	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.900	0.900
West Penn Power_Small Office_Cooking_20201	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
West Penn Power_Small Office_Cooking_20202	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
West Penn Power_Small Office_Cooking_20206	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
West Penn Power_Small Office_Cooling_20301	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20302	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20303	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20304	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20308	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Office_Cooling_20309	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20311	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20312	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20313	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	1.000	1.000
West Penn Power_Small Office_Cooling_20314	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20315	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20316	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20317	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20318	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20319	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20320	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20321	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20322	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20323	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20326	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20327	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20328	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20329	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20330	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20331	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20333	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20334	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20335	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20336	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20338	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Cooling_20339	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.355	0.355
West Penn Power_Small Office_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Office_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Office_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Office_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Office_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
West Penn Power_Small Office_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
West Penn Power_Small Office_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
West Penn Power_Small Office_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
West Penn Power_Small Office_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Office_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
West Penn Power_Small Office_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
West Penn Power_Small Office_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
West Penn Power_Small Office_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
West Penn Power_Small Office_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Office_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Office_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Office_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Office_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Office_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Office_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Office_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
West Penn Power_Small Office_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Office_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Office_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Office_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Office_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Office_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Office_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Office_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
West Penn Power_Small Office_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Small Office_Space Heating_20910	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20911	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20913	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20914	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20915	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20916	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20917	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20919	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20923	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20925	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20927	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20929	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20932	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20934	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Space Heating_20936	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
West Penn Power_Small Office_Total Electric_21701	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21702	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21703	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21704	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21705	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21706	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21707	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21708	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21709	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Office_Total Electric_21710	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21711	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
West Penn Power_Small Office_Total Electric_21712	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
West Penn Power_Small Office_Total Electric_21713	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Total Electric_21714	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
West Penn Power_Small Office_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.345	0.345
West Penn Power_Small Office_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.345	0.345
West Penn Power_Small Office_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.345	0.345
West Penn Power_Small Office_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.345	0.345
West Penn Power_Small Office_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.345	0.345
West Penn Power_Small Office_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
West Penn Power_Small Office_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
West Penn Power_Small Office_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
West Penn Power_Small Office_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
West Penn Power_Small Office_Water Heating_21103	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Office_Water Heating_21107	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Office_Water Heating_21109	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Office_Water Heating_21114	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Office_Water Heating_21115	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
West Penn Power_Small Office_Water Heating_21118	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.900	0.900
West Penn Power_Small Restaurant_Cooking_20201	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
West Penn Power_Small Restaurant_Cooking_20202	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
West Penn Power_Small Restaurant_Cooking_20204	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
West Penn Power_Small Restaurant_Cooking_20206	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
West Penn Power_Small Restaurant_Cooking_20208	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
West Penn Power_Small Restaurant_Cooling_20301	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20302	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20303	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20304	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20308	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20309	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20311	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20312	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20313	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	1.000	1.000
West Penn Power_Small Restaurant_Cooling_20317	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20318	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20319	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20320	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20321	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20322	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20326	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20327	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20328	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20329	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20330	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Restaurant_Cooling_20331	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20333	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20334	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20335	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20336	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20338	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Cooling_20339	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.471	0.471
West Penn Power_Small Restaurant_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Restaurant_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Restaurant_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Restaurant_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Restaurant_Interior Lighting_20508	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20509	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20511	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20512	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20514	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20515	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20517	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
West Penn Power_Small Restaurant_Interior Lighting_20518	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
West Penn Power_Small Restaurant_Interior Lighting_20520	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20521	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20522	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
West Penn Power_Small Restaurant_Interior Lighting_20524	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20525	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20529	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
West Penn Power_Small Restaurant_Interior Lighting_20531	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Interior Lighting_20532	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
West Penn Power_Small Restaurant_Other_20601	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
West Penn Power_Small Restaurant_Other_20602	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
West Penn Power_Small Restaurant_Other_20603	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.405	0.405
West Penn Power_Small Restaurant_Other_20604	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
West Penn Power_Small Restaurant_Other_20606	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
West Penn Power_Small Restaurant_Other_20607	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
West Penn Power_Small Restaurant_Other_20610	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
West Penn Power_Small Restaurant_Other_20611	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
West Penn Power_Small Restaurant_Other_20613	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
West Penn Power_Small Restaurant_Other_20614	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
West Penn Power_Small Restaurant_Other_20615	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
West Penn Power_Small Restaurant_Plug Loads_20701	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Restaurant_Plug Loads_20702	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Restaurant_Plug Loads_20703	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Restaurant_Plug Loads_20704	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Restaurant_Plug Loads_20705	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Restaurant_Plug Loads_20706	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Restaurant_Plug Loads_20707	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Restaurant_Plug Loads_20708	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Small Restaurant_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
West Penn Power_Small Restaurant_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
West Penn Power_Small Restaurant_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
West Penn Power_Small Restaurant_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
West Penn Power_Small Restaurant_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
West Penn Power_Small Restaurant_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
West Penn Power_Small Restaurant_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
West Penn Power_Small Restaurant_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
West Penn Power_Small Restaurant_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
West Penn Power_Small Restaurant_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
West Penn Power_Small Restaurant_Space Heating_20910	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20911	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20913	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20914	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20915	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20916	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20917	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20923	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20925	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20927	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20929	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20932	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20934	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Space Heating_20936	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
West Penn Power_Small Restaurant_Total Electric_21701	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21702	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21703	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21704	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21705	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21706	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21707	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21708	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21709	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21710	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21711	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	1.000	1.000
West Penn Power_Small Restaurant_Total Electric_21712	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	1.000	1.000
West Penn Power_Small Restaurant_Total Electric_21713	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Total Electric_21714	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
West Penn Power_Small Restaurant_Ventilation_21001	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.469	0.469
West Penn Power_Small Restaurant_Ventilation_21002	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.469	0.469
West Penn Power_Small Restaurant_Ventilation_21003	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.469	0.469
West Penn Power_Small Restaurant_Ventilation_21007	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
West Penn Power_Small Restaurant_Ventilation_21008	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
West Penn Power_Small Restaurant_Ventilation_21009	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Restaurant_Ventilation_21010	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
West Penn Power_Small Restaurant_Water Heating_21103	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
West Penn Power_Small Restaurant_Water Heating_21107	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
West Penn Power_Small Restaurant_Water Heating_21109	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
West Penn Power_Small Restaurant_Water Heating_21114	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
West Penn Power_Small Restaurant_Water Heating_21115	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
West Penn Power_Small Restaurant_Water Heating_21118	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.900	0.900
West Penn Power_Small Retail_Cooking_20201	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
West Penn Power_Small Retail_Cooking_20202	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
West Penn Power_Small Retail_Cooking_20204	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
West Penn Power_Small Retail_Cooking_20206	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
West Penn Power_Small Retail_Cooking_20208	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
West Penn Power_Small Retail_Cooling_20301	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20302	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20303	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20304	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20308	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20309	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20311	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20312	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20313	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	1.000	1.000
West Penn Power_Small Retail_Cooling_20317	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20318	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20319	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20320	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20321	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20322	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20326	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20327	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20328	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20329	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20330	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20331	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20333	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20334	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20335	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20336	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20338	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Cooling_20339	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.543	0.543
West Penn Power_Small Retail_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Retail_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Retail_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Retail_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Retail_Interior Lighting_20508	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20509	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Retail_Interior Lighting_20511	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20512	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20514	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20515	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20517	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
West Penn Power_Small Retail_Interior Lighting_20518	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
West Penn Power_Small Retail_Interior Lighting_20520	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20521	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20522	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
West Penn Power_Small Retail_Interior Lighting_20524	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20525	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20529	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
West Penn Power_Small Retail_Interior Lighting_20531	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Interior Lighting_20532	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
West Penn Power_Small Retail_Other_20601	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
West Penn Power_Small Retail_Other_20602	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
West Penn Power_Small Retail_Other_20603	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.405	0.405
West Penn Power_Small Retail_Other_20604	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
West Penn Power_Small Retail_Other_20606	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
West Penn Power_Small Retail_Other_20607	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
West Penn Power_Small Retail_Other_20610	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
West Penn Power_Small Retail_Other_20611	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
West Penn Power_Small Retail_Other_20613	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
West Penn Power_Small Retail_Other_20614	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
West Penn Power_Small Retail_Other_20615	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
West Penn Power_Small Retail_Plug Loads_20701	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
West Penn Power_Small Retail_Plug Loads_20702	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
West Penn Power_Small Retail_Plug Loads_20703	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
West Penn Power_Small Retail_Plug Loads_20704	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
West Penn Power_Small Retail_Plug Loads_20705	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
West Penn Power_Small Retail_Plug Loads_20706	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
West Penn Power_Small Retail_Plug Loads_20707	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
West Penn Power_Small Retail_Plug Loads_20708	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
West Penn Power_Small Retail_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Small Retail_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Small Retail_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Small Retail_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
West Penn Power_Small Retail_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Small Retail_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Small Retail_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
West Penn Power_Small Retail_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Small Retail_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Small Retail_Space Heating_20910	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20911	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20913	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Retail_Space Heating_20915	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20916	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20917	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20919	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20923	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20925	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20927	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20929	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20932	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20934	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Space Heating_20936	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
West Penn Power_Small Retail_Total Electric_21701	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21702	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21703	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21704	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21705	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21706	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21707	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21708	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21709	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21710	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21711	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	1.000	1.000
West Penn Power_Small Retail_Total Electric_21712	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	1.000	1.000
West Penn Power_Small Retail_Total Electric_21713	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Total Electric_21714	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
West Penn Power_Small Retail_Ventilation_21001	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.526	0.526
West Penn Power_Small Retail_Ventilation_21002	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.526	0.526
West Penn Power_Small Retail_Ventilation_21003	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.526	0.526
West Penn Power_Small Retail_Ventilation_21005	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.526	0.526
West Penn Power_Small Retail_Ventilation_21006	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.526	0.526
West Penn Power_Small Retail_Ventilation_21007	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
West Penn Power_Small Retail_Ventilation_21008	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
West Penn Power_Small Retail_Ventilation_21009	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
West Penn Power_Small Retail_Ventilation_21010	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
West Penn Power_Small Retail_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Retail_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Retail_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Retail_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Retail_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Small Retail_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
West Penn Power_Small Warehouse_Cooling_20301	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20302	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20303	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20304	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20308	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Warehouse_Cooling_20309	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20311	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20312	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20313	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
West Penn Power_Small Warehouse_Cooling_20314	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20315	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20316	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20317	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20318	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20319	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20320	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20321	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20322	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20323	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20326	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20327	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20328	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20329	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20330	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20331	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20333	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20334	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20335	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20336	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20337	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20338	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Cooling_20339	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Small Warehouse_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Warehouse_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Small Warehouse_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Warehouse_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Small Warehouse_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
West Penn Power_Small Warehouse_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
West Penn Power_Small Warehouse_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Small Warehouse_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Warehouse_Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
West Penn Power_Small Warehouse_Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
West Penn Power_Small Warehouse_Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
West Penn Power_Small Warehouse_Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Warehouse_Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Warehouse_Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Warehouse_Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Warehouse_Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Warehouse_Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Warehouse_Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Warehouse_Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Small Warehouse_Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Small Warehouse_Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Small Warehouse_Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Small Warehouse_Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Small Warehouse_Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Small Warehouse_Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Small Warehouse_Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Small Warehouse_Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Small Warehouse_Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Small Warehouse_Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Small Warehouse_Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Small Warehouse_Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
West Penn Power_Small Warehouse_Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Small Warehouse_Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
West Penn Power_Small Warehouse_Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Small Warehouse_Space Heating_20910	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20911	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20913	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20914	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20915	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20916	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20917	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20919	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20923	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20925	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20927	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20929	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20932	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20934	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Space Heating_20936	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Small Warehouse_Total Electric_21701	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21702	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21703	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21704	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Small Warehouse_Total Electric_21705	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21706	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21707	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21708	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21709	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21710	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21711	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
West Penn Power_Small Warehouse_Total Electric_21712	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
West Penn Power_Small Warehouse_Total Electric_21713	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Total Electric_21714	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Small Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Small Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Small Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Small Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Small Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Small Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
West Penn Power_Small Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
West Penn Power_Small Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
West Penn Power_Small Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
West Penn Power_Small Warehouse_Water Heating_21103	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Small Warehouse_Water Heating_21107	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Small Warehouse_Water Heating_21109	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Small Warehouse_Water Heating_21114	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Small Warehouse_Water Heating_21115	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Small Warehouse_Water Heating_21118	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.900	0.900
West Penn Power_Large Education - College/University_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - College/University_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - College/University_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - College/University_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - College/University_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - College/University_Cooling_20301	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20302	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20303	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20304	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20308	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20309	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20311	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20312	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20313	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	1.000	1.000
West Penn Power_Large Education - College/University_Cooling_20314	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20315	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20316	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20317	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20318	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476
West Penn Power_Large Education - College/University_Cooling_20319	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.476	0.476





## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Education - College/University_Water Heating_21115	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
West Penn Power_Large Education - College/University_Water Heating_21116	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
West Penn Power_Large Education - College/University_Water Heating_21118	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
West Penn Power_Large Education - Other_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - Other_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - Other_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - Other_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - Other_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
West Penn Power_Large Education - Other_Cooling_20301	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20302	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20303	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20304	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20308	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20309	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20311	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20312	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20313	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	1.000	1.000
West Penn Power_Large Education - Other_Cooling_20314	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20315	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20316	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20317	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20318	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20319	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20320	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20321	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20322	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20323	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20330	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20331	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20333	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20334	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20335	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20336	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20338	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Cooling_20339	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.171	0.171
West Penn Power_Large Education - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Education - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Large Education - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Education - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Education - Other_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Education - Other_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
West Penn Power_Large Education - Other_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
West Penn Power_Large Education - Other_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
West Penn Power_Large Education - Other_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
West Penn Power_Large Education - Other_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
West Penn Power_Large Education - Other_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
West Penn Power_Large Education - Other_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
West Penn Power_Large Education - Other_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
West Penn Power_Large Education - Other_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
West Penn Power_Large Education - Other_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
West Penn Power_Large Education - Other_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
West Penn Power_Large Education - Other_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
West Penn Power_Large Education - Other_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
West Penn Power_Large Education - Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Education - Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Education - Other_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Education - Other_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Education - Other_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
West Penn Power_Large Education - Other_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Education - Other_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Education - Other_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
West Penn Power_Large Education - Other_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Education - Other_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Education - Other_Space Heating_20910	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20911	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20913	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20914	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20915	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20916	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20917	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20919	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20923	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20929	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20932	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20934	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Space Heating_20936	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
West Penn Power_Large Education - Other_Total Electric_21701	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21702	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21703	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21704	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Education - Other_Total Electric_21705	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21706	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21707	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21708	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21709	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21710	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21711	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
West Penn Power_Large Education - Other_Total Electric_21712	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
West Penn Power_Large Education - Other_Total Electric_21713	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Total Electric_21714	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
West Penn Power_Large Education - Other_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.170	0.170
West Penn Power_Large Education - Other_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.170	0.170
West Penn Power_Large Education - Other_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.170	0.170
West Penn Power_Large Education - Other_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.170	0.170
West Penn Power_Large Education - Other_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.170	0.170
West Penn Power_Large Education - Other_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
West Penn Power_Large Education - Other_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
West Penn Power_Large Education - Other_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
West Penn Power_Large Education - Other_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
West Penn Power_Large Education - Other_Water Heating_21103	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
West Penn Power_Large Education - Other_Water Heating_21107	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
West Penn Power_Large Education - Other_Water Heating_21109	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
West Penn Power_Large Education - Other_Water Heating_21114	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
West Penn Power_Large Education - Other_Water Heating_21115	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
West Penn Power_Large Education - Other_Water Heating_21116	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
West Penn Power_Large Education - Other_Water Heating_21118	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
West Penn Power_Large Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
West Penn Power_Large Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
West Penn Power_Large Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
West Penn Power_Large Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
West Penn Power_Large Grocery_Cooling_20301	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20302	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20303	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20304	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20308	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20309	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20311	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20312	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20313	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	1.000	1.000
West Penn Power_Large Grocery_Cooling_20317	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20318	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20319	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20320	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20321	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20322	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Grocery_Cooling_20330	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20331	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20333	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20334	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20335	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20336	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20338	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Cooling_20339	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.264	0.264
West Penn Power_Large Grocery_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Grocery_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Large Grocery_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Grocery_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
West Penn Power_Large Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
West Penn Power_Large Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
West Penn Power_Large Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
West Penn Power_Large Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
West Penn Power_Large Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Large Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Large Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Large Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Large Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Large Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Large Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Large Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
West Penn Power_Large Grocery_Refrigeration_20803	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
West Penn Power_Large Grocery_Refrigeration_20805	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
West Penn Power_Large Grocery_Refrigeration_20806	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
West Penn Power_Large Grocery_Refrigeration_20807	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.094	0.094
West Penn Power_Large Grocery_Refrigeration_20808	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
West Penn Power_Large Grocery_Refrigeration_20811	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.403	0.403
West Penn Power_Large Grocery_Refrigeration_20818	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
West Penn Power_Large Grocery_Space Heating_20910	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20911	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Grocery_Space Heating_20913	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20915	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20916	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20917	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20919	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20923	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20929	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20932	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20934	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Space Heating_20936	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
West Penn Power_Large Grocery_Total Electric_21701	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21702	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21703	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21704	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21705	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21706	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21707	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21708	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21709	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21710	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21711	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	1.000	1.000
West Penn Power_Large Grocery_Total Electric_21712	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	1.000	1.000
West Penn Power_Large Grocery_Total Electric_21713	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Total Electric_21714	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
West Penn Power_Large Grocery_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.275	0.275
West Penn Power_Large Grocery_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.275	0.275
West Penn Power_Large Grocery_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.275	0.275
West Penn Power_Large Grocery_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.275	0.275
West Penn Power_Large Grocery_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.275	0.275
West Penn Power_Large Grocery_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
West Penn Power_Large Grocery_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
West Penn Power_Large Grocery_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
West Penn Power_Large Grocery_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
West Penn Power_Large Grocery_Water Heating_21103	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Large Grocery_Water Heating_21107	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Large Grocery_Water Heating_21109	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Large Grocery_Water Heating_21114	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Large Grocery_Water Heating_21115	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
West Penn Power_Large Grocery_Water Heating_21118	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
West Penn Power_Large Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Large Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Large Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Large Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Large Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
West Penn Power_Large Health - Hospital_Cooling_20301	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.391	0.391



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
West Penn Power_Large Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
West Penn Power_Large Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
West Penn Power_Large Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
West Penn Power_Large Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Large Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Large Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Large Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Large Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Large Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Large Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Large Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
West Penn Power_Large Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Large Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Large Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Large Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Large Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Large Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Large Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Large Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
West Penn Power_Large Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Large Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Large Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Large Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Large Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
West Penn Power_Large Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Large Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Large Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
West Penn Power_Large Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Large Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
West Penn Power_Large Health - Hospital_Space Heating_20910	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20911	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20913	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20914	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20915	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20916	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20917	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20919	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20923	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20929	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20932	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20934	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Space Heating_20936	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
West Penn Power_Large Health - Hospital_Total Electric_21701	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21702	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Health - Hospital_Total Electric_21703	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21704	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21705	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21706	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21707	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21708	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21709	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21710	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21711	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
West Penn Power_Large Health - Hospital_Total Electric_21712	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
West Penn Power_Large Health - Hospital_Total Electric_21713	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Total Electric_21714	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
West Penn Power_Large Health - Hospital_Ventilation_21001	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Large Health - Hospital_Ventilation_21002	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Large Health - Hospital_Ventilation_21003	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Large Health - Hospital_Ventilation_21005	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Large Health - Hospital_Ventilation_21006	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.439	0.439
West Penn Power_Large Health - Hospital_Ventilation_21007	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
West Penn Power_Large Health - Hospital_Ventilation_21008	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
West Penn Power_Large Health - Hospital_Ventilation_21009	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
West Penn Power_Large Health - Hospital_Ventilation_21010	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
West Penn Power_Large Health - Hospital_Water Heating_21103	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Large Health - Hospital_Water Heating_21107	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Large Health - Hospital_Water Heating_21114	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Large Health - Hospital_Water Heating_21115	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Large Health - Hospital_Water Heating_21116	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
West Penn Power_Large Health - Hospital_Water Heating_21118	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.900	0.900
West Penn Power_Large Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Large Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Large Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Large Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Large Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Large Health - Other_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
West Penn Power_Large Health - Other_Cooling_20314	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Health - Other_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.311	0.311
West Penn Power_Large Health - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Health - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Large Health - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Health - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
West Penn Power_Large Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
West Penn Power_Large Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
West Penn Power_Large Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
West Penn Power_Large Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
West Penn Power_Large Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
West Penn Power_Large Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
West Penn Power_Large Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
West Penn Power_Large Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Large Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Large Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Large Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Large Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Large Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Large Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
West Penn Power_Large Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Large Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Large Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Large Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Large Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Large Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Large Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Large Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
West Penn Power_Large Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
West Penn Power_Large Health - Other_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20914	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
West Penn Power_Large Health - Other_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
West Penn Power_Large Health - Other_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
West Penn Power_Large Health - Other_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
West Penn Power_Large Health - Other_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Large Health - Other_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Large Health - Other_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Large Health - Other_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Large Health - Other_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.284	0.284
West Penn Power_Large Health - Other_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Large Health - Other_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Large Health - Other_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Large Health - Other_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Health - Other_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Health - Other_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Health - Other_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Health - Other_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Health - Other_Water Heating_21116	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Health - Other_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
West Penn Power_Large Industrial Manufacturing_ Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Industrial Manufacturing_ Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Large Industrial Manufacturing_ Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Industrial Manufacturing_ Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
West Penn Power_Large Industrial Manufacturing_ Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Institutional/Public Service_Cooling_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
West Penn Power_Large Institutional/Public Service_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
West Penn Power_Large Institutional/Public Service_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550
West Penn Power_Large Institutional/Public Service_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.550	0.550





## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Institutional/Public Service_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
West Penn Power_Large Institutional/Public Service_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Institutional/Public Service_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Institutional/Public Service_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Institutional/Public Service_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Institutional/Public Service_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
West Penn Power_Large Institutional/Public Service_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
West Penn Power_Large Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Large Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Large Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Large Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Large Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
West Penn Power_Large Lodging_Cooling_20301	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20302	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20303	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20304	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20308	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20309	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20311	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20312	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20313	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	1.000	1.000
West Penn Power_Large Lodging_Cooling_20315	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20316	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20317	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20318	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20319	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20320	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20321	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20322	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20323	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20324	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20325	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20330	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20331	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20333	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20334	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20335	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20336	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20338	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Cooling_20339	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.815	0.815
West Penn Power_Large Lodging_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Lodging_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Large Lodging_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Lodging_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
West Penn Power_Large Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
West Penn Power_Large Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
West Penn Power_Large Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
West Penn Power_Large Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
West Penn Power_Large Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
West Penn Power_Large Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
West Penn Power_Large Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
West Penn Power_Large Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Large Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Large Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Large Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Large Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Large Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Large Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Large Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
West Penn Power_Large Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Large Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Large Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Large Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Large Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Large Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Large Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Large Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
West Penn Power_Large Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Large Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Large Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Large Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Large Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
West Penn Power_Large Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Large Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Large Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
West Penn Power_Large Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Large Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
West Penn Power_Large Lodging_Space Heating_20910	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Lodging_Space Heating_20911	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20913	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20914	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20915	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20916	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20917	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20919	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20921	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20923	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20929	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20932	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20934	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Space Heating_20936	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
West Penn Power_Large Lodging_Total Electric_21701	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21702	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21703	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21704	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21705	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21706	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21707	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21708	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21709	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21710	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21711	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	1.000	1.000
West Penn Power_Large Lodging_Total Electric_21712	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	1.000	1.000
West Penn Power_Large Lodging_Total Electric_21713	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Total Electric_21714	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
West Penn Power_Large Lodging_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.720	0.720
West Penn Power_Large Lodging_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.720	0.720
West Penn Power_Large Lodging_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.720	0.720
West Penn Power_Large Lodging_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.720	0.720
West Penn Power_Large Lodging_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.720	0.720
West Penn Power_Large Lodging_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
West Penn Power_Large Lodging_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
West Penn Power_Large Lodging_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
West Penn Power_Large Lodging_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
West Penn Power_Large Lodging_Water Heating_21103	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Large Lodging_Water Heating_21107	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Large Lodging_Water Heating_21109	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Large Lodging_Water Heating_21114	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Large Lodging_Water Heating_21115	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Large Lodging_Water Heating_21116	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
West Penn Power_Large Lodging_Water Heating_21118	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.900	0.900
West Penn Power_Large Miscellaneous/Other_Cooling_20301	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20302	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Miscellaneous/Other_Cooling_20303	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20304	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20308	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20309	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20311	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20312	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20313	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	1.000	1.000
West Penn Power_Large Miscellaneous/Other_Cooling_20317	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20318	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20319	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20320	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20321	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20322	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20330	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20331	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20333	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20334	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20335	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20336	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20338	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Cooling_20339	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
West Penn Power_Large Miscellaneous/Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Miscellaneous/Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Miscellaneous/Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
West Penn Power_Large Miscellaneous/Other_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
West Penn Power_Large Miscellaneous/Other_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
West Penn Power_Large Miscellaneous/Other_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
West Penn Power_Large Miscellaneous/Other_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Miscellaneous/Other_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Miscellaneous/Other_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Miscellaneous/Other_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Miscellaneous/Other_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Miscellaneous/Other_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Miscellaneous/Other_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Miscellaneous/Other_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Miscellaneous/Other_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Miscellaneous/Other_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Miscellaneous/Other_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Miscellaneous/Other_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Miscellaneous/Other_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Miscellaneous/Other_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Miscellaneous/Other_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Miscellaneous/Other_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Miscellaneous/Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Miscellaneous/Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Miscellaneous/Other_Total Electric_21701	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21702	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21703	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21704	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21705	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21706	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21707	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21708	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21709	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21710	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21711	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
West Penn Power_Large Miscellaneous/Other_Total Electric_21712	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
West Penn Power_Large Miscellaneous/Other_Total Electric_21713	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Total Electric_21714	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Miscellaneous/Other_Ventilation_21001	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.409	0.409
West Penn Power_Large Miscellaneous/Other_Ventilation_21002	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.409	0.409

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Miscellaneous/Other_Ventilation_21003	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.409	0.409
West Penn Power_Large Miscellaneous/Other_Ventilation_21005	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.409	0.409
West Penn Power_Large Miscellaneous/Other_Ventilation_21006	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.409	0.409
West Penn Power_Large Miscellaneous/Other_Ventilation_21007	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
West Penn Power_Large Miscellaneous/Other_Ventilation_21008	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
West Penn Power_Large Miscellaneous/Other_Ventilation_21009	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
West Penn Power_Large Miscellaneous/Other_Ventilation_21010	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
West Penn Power_Large Miscellaneous/Other_Water Heating_21103	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Miscellaneous/Other_Water Heating_21107	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Miscellaneous/Other_Water Heating_21109	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Miscellaneous/Other_Water Heating_21114	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Miscellaneous/Other_Water Heating_21115	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Miscellaneous/Other_Water Heating_21118	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.900	0.900
West Penn Power_Large Office_Cooking_20201	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
West Penn Power_Large Office_Cooking_20202	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
West Penn Power_Large Office_Cooking_20206	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
West Penn Power_Large Office_Cooling_20301	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20302	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20303	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20304	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20308	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20309	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20311	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20312	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20313	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	1.000	1.000
West Penn Power_Large Office_Cooling_20314	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20315	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20316	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20317	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20318	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20319	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20320	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20321	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20322	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20323	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20330	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20331	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20333	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20334	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20335	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20336	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20338	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Cooling_20339	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.355	0.355
West Penn Power_Large Office_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Office_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Office_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Office_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Office_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
West Penn Power_Large Office_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
West Penn Power_Large Office_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
West Penn Power_Large Office_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
West Penn Power_Large Office_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
West Penn Power_Large Office_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
West Penn Power_Large Office_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
West Penn Power_Large Office_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
West Penn Power_Large Office_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Office_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Office_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Office_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Office_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Office_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Office_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Office_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
West Penn Power_Large Office_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Office_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Office_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Office_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Office_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Office_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Office_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Office_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
West Penn Power_Large Office_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
West Penn Power_Large Office_Space Heating_20910	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20911	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20913	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20914	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20915	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20916	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20917	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Office_Space Heating_20919	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20923	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20929	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20932	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20934	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Space Heating_20936	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
West Penn Power_Large Office_Total Electric_21701	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21702	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21703	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21704	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21705	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21706	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21707	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21708	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21709	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21710	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21711	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
West Penn Power_Large Office_Total Electric_21712	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
West Penn Power_Large Office_Total Electric_21713	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Total Electric_21714	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
West Penn Power_Large Office_Ventilation_21001	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.345	0.345
West Penn Power_Large Office_Ventilation_21002	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.345	0.345
West Penn Power_Large Office_Ventilation_21003	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.345	0.345
West Penn Power_Large Office_Ventilation_21005	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.345	0.345
West Penn Power_Large Office_Ventilation_21006	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.345	0.345
West Penn Power_Large Office_Ventilation_21007	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
West Penn Power_Large Office_Ventilation_21008	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
West Penn Power_Large Office_Ventilation_21009	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
West Penn Power_Large Office_Ventilation_21010	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
West Penn Power_Large Office_Water Heating_21103	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Office_Water Heating_21107	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Office_Water Heating_21109	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Office_Water Heating_21114	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Office_Water Heating_21115	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
West Penn Power_Large Office_Water Heating_21118	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.900	0.900
West Penn Power_Large Retail_Cooking_20201	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
West Penn Power_Large Retail_Cooking_20202	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
West Penn Power_Large Retail_Cooking_20204	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
West Penn Power_Large Retail_Cooking_20206	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
West Penn Power_Large Retail_Cooking_20208	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
West Penn Power_Large Retail_Cooling_20301	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20302	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20303	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20304	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20308	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Retail_Cooling_20309	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20311	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20312	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20313	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
West Penn Power_Large Retail_Cooling_20317	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20318	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20319	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20320	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20321	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20322	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20330	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20331	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20333	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20334	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20335	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20336	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20338	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Cooling_20339	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.543	0.543
West Penn Power_Large Retail_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Retail_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Large Retail_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Retail_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Retail_Interior Lighting_20508	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20509	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20511	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20512	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20514	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20515	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20517	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
West Penn Power_Large Retail_Interior Lighting_20518	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
West Penn Power_Large Retail_Interior Lighting_20520	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20521	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20522	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
West Penn Power_Large Retail_Interior Lighting_20524	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20525	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20529	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
West Penn Power_Large Retail_Interior Lighting_20531	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Interior Lighting_20532	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
West Penn Power_Large Retail_Other_20601	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
West Penn Power_Large Retail_Other_20602	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
West Penn Power_Large Retail_Other_20603	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.405	0.405
West Penn Power_Large Retail_Other_20604	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
West Penn Power_Large Retail_Other_20606	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
West Penn Power_Large Retail_Other_20607	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
West Penn Power_Large Retail_Other_20610	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Retail_Other_20611	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
West Penn Power_Large Retail_Other_20613	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
West Penn Power_Large Retail_Other_20614	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
West Penn Power_Large Retail_Other_20615	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
West Penn Power_Large Retail_Plug Loads_20701	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
West Penn Power_Large Retail_Plug Loads_20702	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
West Penn Power_Large Retail_Plug Loads_20703	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
West Penn Power_Large Retail_Plug Loads_20704	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
West Penn Power_Large Retail_Plug Loads_20705	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
West Penn Power_Large Retail_Plug Loads_20706	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
West Penn Power_Large Retail_Plug Loads_20707	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
West Penn Power_Large Retail_Plug Loads_20708	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
West Penn Power_Large Retail_Refrigeration_20801	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
West Penn Power_Large Retail_Refrigeration_20805	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
West Penn Power_Large Retail_Refrigeration_20806	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
West Penn Power_Large Retail_Refrigeration_20807	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.094	0.094
West Penn Power_Large Retail_Refrigeration_20808	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
West Penn Power_Large Retail_Refrigeration_20809	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
West Penn Power_Large Retail_Refrigeration_20811	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.403	0.403
West Penn Power_Large Retail_Refrigeration_20818	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
West Penn Power_Large Retail_Refrigeration_20821	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
West Penn Power_Large Retail_Space Heating_20910	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20911	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20913	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20915	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20916	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20917	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20919	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20923	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20929	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20932	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20934	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Space Heating_20936	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
West Penn Power_Large Retail_Total Electric_21701	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21702	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21703	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21704	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21705	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21706	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21707	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21708	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21709	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21710	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21711	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	1.000	1.000
West Penn Power_Large Retail_Total Electric_21712	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Retail_Total Electric_21713	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Total Electric_21714	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
West Penn Power_Large Retail_Ventilation_21001	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.526	0.526
West Penn Power_Large Retail_Ventilation_21002	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.526	0.526
West Penn Power_Large Retail_Ventilation_21003	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.526	0.526
West Penn Power_Large Retail_Ventilation_21005	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.526	0.526
West Penn Power_Large Retail_Ventilation_21006	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.526	0.526
West Penn Power_Large Retail_Ventilation_21007	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
West Penn Power_Large Retail_Ventilation_21008	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
West Penn Power_Large Retail_Ventilation_21009	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
West Penn Power_Large Retail_Ventilation_21010	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
West Penn Power_Large Retail_Water Heating_21103	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
West Penn Power_Large Retail_Water Heating_21107	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
West Penn Power_Large Retail_Water Heating_21109	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
West Penn Power_Large Retail_Water Heating_21114	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
West Penn Power_Large Retail_Water Heating_21115	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
West Penn Power_Large Retail_Water Heating_21118	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.900	0.900
West Penn Power_Large Warehouse_Cooling_20301	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20302	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20303	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20304	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20308	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20309	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20311	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20312	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20313	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
West Penn Power_Large Warehouse_Cooling_20314	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20315	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20316	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20317	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20318	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20319	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20320	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20321	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20322	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20323	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20330	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20331	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20333	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20334	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20335	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20336	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20337	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20338	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222
West Penn Power_Large Warehouse_Cooling_20339	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.222	0.222

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Warehouse_ Exterior Lighting_ 20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Warehouse_ Exterior Lighting_ 20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
West Penn Power_Large Warehouse_ Exterior Lighting_ 20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Warehouse_ Exterior Lighting_ 20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
West Penn Power_Large Warehouse_ Interior Lighting_ 20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
West Penn Power_Large Warehouse_ Interior Lighting_ 20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
West Penn Power_Large Warehouse_ Interior Lighting_ 20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Interior Lighting_ 20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
West Penn Power_Large Warehouse_ Other_ 20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
West Penn Power_Large Warehouse_ Other_ 20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
West Penn Power_Large Warehouse_ Other_ 20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
West Penn Power_Large Warehouse_ Other_ 20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Warehouse_ Other_ 20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Warehouse_ Other_ 20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Warehouse_ Other_ 20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Warehouse_ Other_ 20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Warehouse_ Other_ 20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Warehouse_ Other_ 20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Warehouse_ Other_ 20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
West Penn Power_Large Warehouse_ Plug Loads_ 20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Large Warehouse_ Plug Loads_ 20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Large Warehouse_ Plug Loads_ 20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Large Warehouse_ Plug Loads_ 20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Large Warehouse_ Plug Loads_ 20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Large Warehouse_ Plug Loads_ 20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Large Warehouse_ Plug Loads_ 20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Large Warehouse_ Plug Loads_ 20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
West Penn Power_Large Warehouse_ Refrigeration_ 20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Large Warehouse_ Refrigeration_ 20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Large Warehouse_ Refrigeration_ 20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Large Warehouse_ Refrigeration_ 20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
West Penn Power_Large Warehouse_ Refrigeration_ 20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Large Warehouse_ Refrigeration_ 20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
West Penn Power_Large Warehouse_ Refrigeration_ 20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
West Penn Power_Large Warehouse_ Space Heating_ 20910	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
West Penn Power_Large Warehouse_Space Heating_20911	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20913	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20914	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20915	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20916	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20917	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20919	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20923	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20929	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20932	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20934	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Space Heating_20936	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
West Penn Power_Large Warehouse_Total Electric_21701	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21702	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21703	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21704	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21705	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21706	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21707	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21708	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21709	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21710	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21711	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
West Penn Power_Large Warehouse_Total Electric_21712	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
West Penn Power_Large Warehouse_Total Electric_21713	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Total Electric_21714	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
West Penn Power_Large Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Large Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Large Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Large Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Large Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.222	0.222
West Penn Power_Large Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
West Penn Power_Large Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
West Penn Power_Large Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
West Penn Power_Large Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
West Penn Power_Large Warehouse_Water Heating_21103	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Large Warehouse_Water Heating_21107	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Large Warehouse_Water Heating_21109	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Large Warehouse_Water Heating_21114	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Large Warehouse_Water Heating_21115	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
West Penn Power_Large Warehouse_Water Heating_21118	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Single Family_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
PECO_Single Family_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
PECO_Single Family_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
PECO_Single Family_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PECO_Single Family_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PECO_Single Family_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PECO_Single Family_Cooling_10301	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10303	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10305	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10306	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10309	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10311	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10313	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10314	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.000	0.000
PECO_Single Family_Cooling_10315	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.000	0.000
PECO_Single Family_Cooling_10316	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10318	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Cooling_10319	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
PECO_Single Family_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PECO_Single Family_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PECO_Single Family_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730
PECO_Single Family_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PECO_Single Family_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
PECO_Single Family_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.424	0.424
PECO_Single Family_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
PECO_Single Family_Plug Loads_10701	21.6%	20.3%	12.9%	11.8%	17.2%	16.2%	0.410	0.410
PECO_Single Family_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PECO_Single Family_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PECO_Single Family_Space Heating_10910	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Space Heating_10911	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Space Heating_10914	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Space Heating_10915	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Space Heating_10918	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Space Heating_10919	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Space Heating_10920	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Space Heating_10921	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Space Heating_10922	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family_Total Electric_11702	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family_Total Electric_11703	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family_Total Electric_11704	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family_Total Electric_11705	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family_Total Electric_11706	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Single Family_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PECO_Single Family_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
PECO_Single Family_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PECO_Single Family_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PECO_Single Family_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
PECO_Single Family_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
PECO_Single Family_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
PECO_Multifamily_Appliances_10101	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.026	0.026
PECO_Multifamily_Appliances_10102	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.026	0.026
PECO_Multifamily_Appliances_10103	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.405	0.405
PECO_Multifamily_Appliances_10105	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily_Appliances_10107	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily_Appliances_10108	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily_Appliances_10109	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily_Appliances_10111	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily_Cooling_10301	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Cooling_10303	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Cooling_10305	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Cooling_10306	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Cooling_10309	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Cooling_10311	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Cooling_10313	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Cooling_10314	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.000	0.000
PECO_Multifamily_Cooling_10315	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.000	0.000
PECO_Multifamily_Cooling_10318	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Cooling_10319	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
PECO_Multifamily_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PECO_Multifamily_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PECO_Multifamily_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
PECO_Multifamily_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PECO_Multifamily_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PECO_Multifamily_Other_10601	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.106	0.106
PECO_Multifamily_Other_10602	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.000	0.000
PECO_Multifamily_Other_10603	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.625	0.625
PECO_Multifamily_Other_10604	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.424	0.424
PECO_Multifamily_Other_10605	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.310	0.310
PECO_Multifamily_Plug Loads_10701	21.3%	20.6%	12.7%	11.9%	17.0%	16.4%	0.410	0.410
PECO_Multifamily_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PECO_Multifamily_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PECO_Multifamily_Space Heating_10910	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Multifamily_Space Heating_10911	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily_Space Heating_10914	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily_Space Heating_10915	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily_Space Heating_10916	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily_Space Heating_10918	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily_Space Heating_10920	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily_Space Heating_10921	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily_Space Heating_10922	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PECO_Multifamily_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
PECO_Multifamily_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PECO_Multifamily_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PECO_Multifamily_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
PECO_Multifamily_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PECO_Multifamily_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PECO_Multifamily_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PECO_Multifamily_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PECO_Single Family LI_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
PECO_Single Family LI_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
PECO_Single Family LI_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
PECO_Single Family LI_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PECO_Single Family LI_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PECO_Single Family LI_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PECO_Single Family LI_Cooling_10301	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10303	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10305	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10306	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10309	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10311	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10313	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10314	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.000	0.000
PECO_Single Family LI_Cooling_10315	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.000	0.000
PECO_Single Family LI_Cooling_10316	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10318	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Cooling_10319	55.8%	43.5%	0.0%	0.0%	0.2%	0.5%	0.424	0.424
PECO_Single Family LI_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
PECO_Single Family LI_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PECO_Single Family LI_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PECO_Single Family LI_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Single Family LI_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PECO_Single Family LI_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
PECO_Single Family LI_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.424	0.424
PECO_Single Family LI_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
PECO_Single Family LI_Plug Loads_10701	21.6%	20.3%	12.9%	11.8%	17.2%	16.2%	0.410	0.410
PECO_Single Family LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PECO_Single Family LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PECO_Single Family LI_Space Heating_10910	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Space Heating_10911	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Space Heating_10914	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Space Heating_10915	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Space Heating_10918	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Space Heating_10919	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Space Heating_10920	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Space Heating_10921	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Space Heating_10922	0.8%	1.2%	30.3%	36.0%	13.6%	18.2%	0.000	0.000
PECO_Single Family LI_Total Electric_11702	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family LI_Total Electric_11703	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family LI_Total Electric_11704	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family LI_Total Electric_11705	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family LI_Total Electric_11706	24.4%	22.9%	11.8%	10.8%	15.3%	14.7%	0.535	0.535
PECO_Single Family LI_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family LI_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family LI_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family LI_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family LI_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family LI_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PECO_Single Family LI_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PECO_Single Family LI_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
PECO_Single Family LI_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PECO_Single Family LI_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PECO_Single Family LI_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
PECO_Single Family LI_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
PECO_Single Family LI_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
PECO_Multifamily LI_Appliances_10101	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.026	0.026
PECO_Multifamily LI_Appliances_10102	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.026	0.026
PECO_Multifamily LI_Appliances_10103	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.405	0.405
PECO_Multifamily LI_Appliances_10105	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily LI_Appliances_10107	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily LI_Appliances_10108	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily LI_Appliances_10109	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily LI_Appliances_10111	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.029	0.029
PECO_Multifamily LI_Cooling_10301	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily LI_Cooling_10303	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily LI_Cooling_10305	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Multifamily LI_Cooling_10306	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily LI_Cooling_10309	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily LI_Cooling_10311	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily LI_Cooling_10313	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily LI_Cooling_10314	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.000	0.000
PECO_Multifamily LI_Cooling_10315	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.000	0.000
PECO_Multifamily LI_Cooling_10318	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily LI_Cooling_10319	55.1%	44.1%	0.0%	0.0%	0.3%	0.5%	0.424	0.424
PECO_Multifamily LI_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
PECO_Multifamily LI_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PECO_Multifamily LI_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PECO_Multifamily LI_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
PECO_Multifamily LI_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PECO_Multifamily LI_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PECO_Multifamily LI_Other_10601	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.106	0.106
PECO_Multifamily LI_Other_10602	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.000	0.000
PECO_Multifamily LI_Other_10603	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.625	0.625
PECO_Multifamily LI_Other_10604	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.424	0.424
PECO_Multifamily LI_Other_10605	20.1%	21.8%	12.0%	12.6%	16.1%	17.4%	0.310	0.310
PECO_Multifamily LI_Plug Loads_10701	21.3%	20.6%	12.7%	11.9%	17.0%	16.4%	0.410	0.410
PECO_Multifamily LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PECO_Multifamily LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PECO_Multifamily LI_Space Heating_10910	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Space Heating_10911	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Space Heating_10914	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Space Heating_10915	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Space Heating_10916	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Space Heating_10918	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Space Heating_10920	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Space Heating_10921	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Space Heating_10922	1.3%	1.5%	30.1%	31.7%	16.3%	19.0%	0.000	0.000
PECO_Multifamily LI_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily LI_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily LI_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily LI_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily LI_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily LI_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PECO_Multifamily LI_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.286	0.286
PECO_Multifamily LI_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
PECO_Multifamily LI_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PECO_Multifamily LI_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PECO_Multifamily LI_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
PECO_Multifamily LI_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PECO_Multifamily LI_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PECO_Multifamily LI_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Multifamily LI_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PECO_Small Education - College/University_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - College/University_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - College/University_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - College/University_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - College/University_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - College/University_Cooling_20301	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20302	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20303	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20304	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20308	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20309	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20311	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20312	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20313	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	1.000	1.000
PECO_Small Education - College/University_Cooling_20314	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20315	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20316	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20317	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20318	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20319	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20320	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20321	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20322	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20323	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20326	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20327	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20328	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20329	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20330	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20331	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20333	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20334	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20335	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20336	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20338	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Cooling_20339	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.510	0.510
PECO_Small Education - College/University_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Education - College/University_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Education - College/University_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Education - College/University_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Education - College/University_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Education - College/University_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
PECO_Small Education - College/University_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
PECO_Small Education - College/University_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
PECO_Small Education - College/University_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
PECO_Small Education - College/University_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - College/University_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - College/University_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - College/University_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - College/University_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - College/University_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - College/University_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - College/University_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - College/University_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - College/University_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - College/University_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - College/University_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - College/University_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - College/University_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
PECO_Small Education - College/University_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - College/University_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - College/University_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
PECO_Small Education - College/University_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - College/University_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - College/University_Space Heating_20910	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20911	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20913	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20914	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20915	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20916	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20917	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20919	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20923	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20925	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20927	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20929	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20932	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20934	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - College/University_Space Heating_20936	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Education - College/University_Total Electric_21701	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21702	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21703	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21704	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21705	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21706	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21707	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21708	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21709	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21710	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21711	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	1.000	1.000
PECO_Small Education - College/University_Total Electric_21712	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	1.000	1.000
PECO_Small Education - College/University_Total Electric_21713	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Total Electric_21714	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - College/University_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.470	0.470
PECO_Small Education - College/University_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.470	0.470
PECO_Small Education - College/University_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.470	0.470
PECO_Small Education - College/University_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.470	0.470
PECO_Small Education - College/University_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.470	0.470
PECO_Small Education - College/University_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PECO_Small Education - College/University_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PECO_Small Education - College/University_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PECO_Small Education - College/University_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PECO_Small Education - College/University_Water Heating_21103	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - College/University_Water Heating_21107	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - College/University_Water Heating_21109	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - College/University_Water Heating_21114	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - College/University_Water Heating_21115	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - College/University_Water Heating_21116	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - College/University_Water Heating_21118	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.900	0.900
PECO_Small Education - Other_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - Other_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - Other_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - Other_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - Other_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PECO_Small Education - Other_Cooling_20301	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20302	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20303	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20304	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20308	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20309	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20311	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20312	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20313	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	1.000	1.000
PECO_Small Education - Other_Cooling_20314	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Education - Other_Cooling_20315	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20316	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20317	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20318	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20319	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20320	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20321	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20322	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20323	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20326	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20327	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20328	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20329	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20330	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20331	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20333	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20334	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20335	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20336	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20338	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Cooling_20339	85.5%	7.0%	0.0%	0.0%	7.4%	0.1%	0.190	0.190
PECO_Small Education - Other_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Education - Other_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Education - Other_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Education - Other_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Education - Other_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
PECO_Small Education - Other_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
PECO_Small Education - Other_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
PECO_Small Education - Other_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
PECO_Small Education - Other_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PECO_Small Education - Other_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - Other_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - Other_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - Other_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Education - Other_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - Other_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - Other_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - Other_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PECO_Small Education - Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - Other_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - Other_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - Other_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
PECO_Small Education - Other_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - Other_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - Other_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
PECO_Small Education - Other_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - Other_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Education - Other_Space Heating_20910	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20911	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20913	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20914	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20915	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20916	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20917	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20919	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20923	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20925	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20927	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20929	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20932	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20934	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Space Heating_20936	0.0%	0.0%	39.7%	32.4%	16.9%	11.0%	0.000	0.000
PECO_Small Education - Other_Total Electric_21701	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21702	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21703	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21704	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21705	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21706	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21707	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21708	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21709	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21710	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21711	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	1.000	1.000
PECO_Small Education - Other_Total Electric_21712	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	1.000	1.000
PECO_Small Education - Other_Total Electric_21713	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Total Electric_21714	30.2%	8.9%	15.2%	10.6%	22.0%	13.1%	0.267	0.267
PECO_Small Education - Other_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180
PECO_Small Education - Other_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Education - Other_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180
PECO_Small Education - Other_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180
PECO_Small Education - Other_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.180	0.180
PECO_Small Education - Other_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PECO_Small Education - Other_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PECO_Small Education - Other_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PECO_Small Education - Other_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PECO_Small Education - Other_Water Heating_21103	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - Other_Water Heating_21107	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - Other_Water Heating_21109	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - Other_Water Heating_21114	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - Other_Water Heating_21115	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - Other_Water Heating_21116	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.461	0.461
PECO_Small Education - Other_Water Heating_21118	30.8%	7.8%	21.2%	5.6%	27.5%	7.0%	0.900	0.900
PECO_Small Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PECO_Small Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PECO_Small Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PECO_Small Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PECO_Small Grocery_Cooling_20301	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20302	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20303	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20304	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20308	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20309	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20311	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20312	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20313	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	1.000	1.000
PECO_Small Grocery_Cooling_20317	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20318	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20319	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20320	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20321	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20322	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20326	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20327	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20328	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20329	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20330	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20331	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20333	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20334	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20335	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20336	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20338	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260
PECO_Small Grocery_Cooling_20339	34.7%	34.0%	4.0%	2.0%	14.6%	10.7%	0.260	0.260

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Grocery_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Grocery_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Grocery_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Grocery_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
PECO_Small Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
PECO_Small Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
PECO_Small Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
PECO_Small Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Small Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Grocery_Refrigeration_20803	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PECO_Small Grocery_Refrigeration_20805	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PECO_Small Grocery_Refrigeration_20806	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PECO_Small Grocery_Refrigeration_20807	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.094	0.094
PECO_Small Grocery_Refrigeration_20808	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PECO_Small Grocery_Refrigeration_20811	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.403	0.403
PECO_Small Grocery_Refrigeration_20818	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PECO_Small Grocery_Space Heating_20910	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20911	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20913	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20915	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20916	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20917	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20919	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20923	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20925	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20927	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Grocery_Space Heating_20929	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20932	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20934	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Space Heating_20936	0.0%	0.0%	4.9%	90.0%	0.1%	5.0%	0.000	0.000
PECO_Small Grocery_Total Electric_21701	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21702	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21703	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21704	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21705	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21706	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21707	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21708	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21709	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21710	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21711	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	1.000	1.000
PECO_Small Grocery_Total Electric_21712	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	1.000	1.000
PECO_Small Grocery_Total Electric_21713	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Total Electric_21714	23.7%	23.3%	11.0%	10.2%	16.4%	15.4%	0.944	0.944
PECO_Small Grocery_Ventilation_21001	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.260	0.260
PECO_Small Grocery_Ventilation_21002	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.260	0.260
PECO_Small Grocery_Ventilation_21003	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.260	0.260
PECO_Small Grocery_Ventilation_21005	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.260	0.260
PECO_Small Grocery_Ventilation_21006	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.260	0.260
PECO_Small Grocery_Ventilation_21007	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.883	0.883
PECO_Small Grocery_Ventilation_21008	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.883	0.883
PECO_Small Grocery_Ventilation_21009	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.883	0.883
PECO_Small Grocery_Ventilation_21010	19.7%	21.8%	12.0%	13.4%	15.7%	17.5%	0.883	0.883
PECO_Small Grocery_Water Heating_21103	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Small Grocery_Water Heating_21107	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Small Grocery_Water Heating_21109	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Small Grocery_Water Heating_21114	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Small Grocery_Water Heating_21115	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Small Grocery_Water Heating_21118	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
PECO_Small Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Small Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Small Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Small Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Small Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Small Health - Hospital_Cooling_20301	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20302	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20303	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20304	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20308	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20309	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20311	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Health - Hospital_Cooling_20312	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20313	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	1.000	1.000
PECO_Small Health - Hospital_Cooling_20314	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20315	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20316	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20317	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20318	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20319	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20320	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20321	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20322	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20323	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20326	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20327	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20328	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20329	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20330	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20331	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20333	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20334	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20335	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20336	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20338	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Cooling_20339	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Small Health - Hospital_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Health - Hospital_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Health - Hospital_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Health - Hospital_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
PECO_Small Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
PECO_Small Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
PECO_Small Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
PECO_Small Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Small Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
PECO_Small Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
PECO_Small Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Small Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Small Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Small Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Small Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Small Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Small Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Small Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Small Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Small Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Small Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Small Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Small Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Small Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Small Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Small Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Small Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Small Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Small Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Small Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Small Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
PECO_Small Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Small Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Small Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
PECO_Small Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Small Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Small Health - Hospital_Space Heating_20910	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20911	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20913	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20914	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20915	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20916	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20917	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20919	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20923	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20925	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20927	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20929	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20932	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20934	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Space Heating_20936	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Small Health - Hospital_Total Electric_21701	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21702	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Health - Hospital_Total Electric_21703	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21704	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21705	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21706	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21707	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21708	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21709	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21710	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21711	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	1.000	1.000
PECO_Small Health - Hospital_Total Electric_21712	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	1.000	1.000
PECO_Small Health - Hospital_Total Electric_21713	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Total Electric_21714	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Small Health - Hospital_Ventilation_21001	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Small Health - Hospital_Ventilation_21002	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Small Health - Hospital_Ventilation_21003	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Small Health - Hospital_Ventilation_21005	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Small Health - Hospital_Ventilation_21006	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Small Health - Hospital_Ventilation_21007	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.773	0.773
PECO_Small Health - Hospital_Ventilation_21008	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.773	0.773
PECO_Small Health - Hospital_Ventilation_21009	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.773	0.773
PECO_Small Health - Hospital_Ventilation_21010	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.773	0.773
PECO_Small Health - Hospital_Water Heating_21103	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Small Health - Hospital_Water Heating_21107	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Small Health - Hospital_Water Heating_21114	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Small Health - Hospital_Water Heating_21115	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Small Health - Hospital_Water Heating_21116	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Small Health - Hospital_Water Heating_21118	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.900	0.900
PECO_Small Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Small Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Small Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Small Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Small Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Small Health - Other_Cooling_20301	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20302	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20303	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20304	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20308	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20309	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20311	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20312	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20313	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	1.000	1.000
PECO_Small Health - Other_Cooling_20314	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20315	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20316	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20317	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Health - Other_Cooling_20318	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20319	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20320	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20321	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20322	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20323	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20326	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20327	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20328	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20329	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20330	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20331	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20333	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20334	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20335	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20336	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20338	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Cooling_20339	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Small Health - Other_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Health - Other_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Health - Other_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Health - Other_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PECO_Small Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PECO_Small Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PECO_Small Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PECO_Small Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Small Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PECO_Small Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PECO_Small Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
PECO_Small Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Health - Other_Space Heating_20910	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20911	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20913	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20914	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20915	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20916	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20917	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20919	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20923	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20925	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20927	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20929	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20932	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20934	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Space Heating_20936	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Health - Other_Total Electric_21701	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21702	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21703	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21704	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21705	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21706	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21707	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21708	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21709	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21710	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21711	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
PECO_Small Health - Other_Total Electric_21712	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
PECO_Small Health - Other_Total Electric_21713	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Total Electric_21714	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Health - Other_Ventilation_21001	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Small Health - Other_Ventilation_21002	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Small Health - Other_Ventilation_21003	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Health - Other_Ventilation_21005	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Small Health - Other_Ventilation_21006	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Small Health - Other_Ventilation_21007	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Small Health - Other_Ventilation_21008	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Small Health - Other_Ventilation_21009	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Small Health - Other_Ventilation_21010	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Small Health - Other_Water Heating_21103	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Health - Other_Water Heating_21107	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Health - Other_Water Heating_21114	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Health - Other_Water Heating_21115	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Health - Other_Water Heating_21116	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Health - Other_Water Heating_21118	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.900	0.900
PECO_Small Industrial Manufacturing_ Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Industrial Manufacturing_ Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Industrial Manufacturing_ Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Industrial Manufacturing_ Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Industrial Manufacturing_ Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PECO_Small Industrial Manufacturing_ Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PECO_Small Industrial Manufacturing_ Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Small Industrial Manufacturing_ Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Small Institutional/Public Service_Cooling_20301	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20302	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20303	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20304	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20308	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20309	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20311	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20312	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20313	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	1.000	1.000
PECO_Small Institutional/Public Service_Cooling_20315	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20316	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20317	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20318	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Institutional/Public Service_Cooling_20319	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20320	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20321	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20322	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20323	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20326	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20327	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20328	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20329	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20330	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20331	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20333	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20334	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20335	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20336	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20338	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Cooling_20339	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Small Institutional/Public Service_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Institutional/Public Service_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Institutional/Public Service_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Institutional/Public Service_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PECO_Small Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PECO_Small Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PECO_Small Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PECO_Small Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Small Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PECO_Small Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PECO_Small Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
PECO_Small Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Small Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Small Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PECO_Small Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PECO_Small Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Institutional/Public Service_Space Heating_20910	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20911	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20913	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20915	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20916	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20917	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20919	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20923	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20925	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20927	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20929	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20932	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20934	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Space Heating_20936	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Small Institutional/Public Service_Total Electric_21701	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21702	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21703	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21704	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21705	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21706	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21707	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21708	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21709	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21710	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Institutional/Public Service_Total Electric_21711	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
PECO_Small Institutional/Public Service_Total Electric_21712	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
PECO_Small Institutional/Public Service_Total Electric_21713	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Total Electric_21714	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Small Institutional/Public Service_Ventilation_21001	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Small Institutional/Public Service_Ventilation_21002	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Small Institutional/Public Service_Ventilation_21003	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Small Institutional/Public Service_Ventilation_21005	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Small Institutional/Public Service_Ventilation_21006	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Small Institutional/Public Service_Ventilation_21007	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Small Institutional/Public Service_Ventilation_21008	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Small Institutional/Public Service_Ventilation_21009	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Small Institutional/Public Service_Ventilation_21010	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Small Institutional/Public Service_Water Heating_21103	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Institutional/Public Service_Water Heating_21107	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Institutional/Public Service_Water Heating_21109	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Institutional/Public Service_Water Heating_21114	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Institutional/Public Service_Water Heating_21115	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Institutional/Public Service_Water Heating_21118	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.900	0.900
PECO_Small Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Small Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Small Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Small Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Small Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Small Lodging_Cooling_20301	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20302	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20303	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20304	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20308	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20309	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20311	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20312	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20313	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	1.000	1.000
PECO_Small Lodging_Cooling_20315	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20316	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20317	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20318	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20319	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20320	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20321	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20322	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20323	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20324	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20325	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20326	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Lodging_Cooling_20327	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20328	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20329	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20330	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20331	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20333	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20334	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20335	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20336	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20338	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Cooling_20339	57.3%	42.6%	0.0%	0.0%	0.1%	0.1%	0.830	0.830
PECO_Small Lodging_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Lodging_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Lodging_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Lodging_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
PECO_Small Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
PECO_Small Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
PECO_Small Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
PECO_Small Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Small Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
PECO_Small Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
PECO_Small Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
PECO_Small Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Small Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Small Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Small Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Small Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Small Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Small Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Small Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Small Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Small Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Small Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Small Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Small Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Small Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Small Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Small Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Small Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Small Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Small Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Small Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PECO_Small Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Small Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Small Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PECO_Small Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Small Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Small Lodging_Space Heating_20910	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20911	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20913	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20914	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20915	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20916	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20917	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20919	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20921	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20923	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20925	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20927	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20929	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20932	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20934	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Space Heating_20936	0.0%	0.1%	30.8%	44.8%	7.8%	16.4%	0.000	0.000
PECO_Small Lodging_Total Electric_21701	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21702	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21703	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21704	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21705	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21706	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21707	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21708	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21709	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21710	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21711	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	1.000	1.000
PECO_Small Lodging_Total Electric_21712	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	1.000	1.000
PECO_Small Lodging_Total Electric_21713	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723
PECO_Small Lodging_Total Electric_21714	29.8%	26.5%	9.4%	9.3%	12.4%	12.6%	0.723	0.723

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Lodging_Ventilation_21001	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.710	0.710
PECO_Small Lodging_Ventilation_21002	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.710	0.710
PECO_Small Lodging_Ventilation_21003	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.710	0.710
PECO_Small Lodging_Ventilation_21005	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.710	0.710
PECO_Small Lodging_Ventilation_21006	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.710	0.710
PECO_Small Lodging_Ventilation_21007	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.991	0.991
PECO_Small Lodging_Ventilation_21008	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.991	0.991
PECO_Small Lodging_Ventilation_21009	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.991	0.991
PECO_Small Lodging_Ventilation_21010	19.8%	21.9%	11.9%	12.9%	15.9%	17.6%	0.991	0.991
PECO_Small Lodging_Water Heating_21103	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Small Lodging_Water Heating_21107	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Small Lodging_Water Heating_21109	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Small Lodging_Water Heating_21114	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Small Lodging_Water Heating_21115	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Small Lodging_Water Heating_21116	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Small Lodging_Water Heating_21118	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.900	0.900
PECO_Small Miscellaneous/Other_Cooling_20301	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20302	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20303	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20304	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20308	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20309	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20311	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20312	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20313	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	1.000	1.000
PECO_Small Miscellaneous/Other_Cooling_20317	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20318	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20319	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20320	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20321	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20322	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20326	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20327	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20328	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20329	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20330	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20331	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20333	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20334	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20335	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20336	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20338	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Cooling_20339	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.480	0.480
PECO_Small Miscellaneous/Other_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Miscellaneous/Other_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Miscellaneous/Other_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Miscellaneous/Other_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Miscellaneous/Other_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
PECO_Small Miscellaneous/Other_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
PECO_Small Miscellaneous/Other_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
PECO_Small Miscellaneous/Other_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
PECO_Small Miscellaneous/Other_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PECO_Small Miscellaneous/Other_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
PECO_Small Miscellaneous/Other_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
PECO_Small Miscellaneous/Other_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
PECO_Small Miscellaneous/Other_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Miscellaneous/Other_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Miscellaneous/Other_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Miscellaneous/Other_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Miscellaneous/Other_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Miscellaneous/Other_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Miscellaneous/Other_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Miscellaneous/Other_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Miscellaneous/Other_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Miscellaneous/Other_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Miscellaneous/Other_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Miscellaneous/Other_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Miscellaneous/Other_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Miscellaneous/Other_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Miscellaneous/Other_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Miscellaneous/Other_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Miscellaneous/Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Miscellaneous/Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20925	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20927	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Miscellaneous/Other_Total Electric_21701	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21702	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21703	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21704	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21705	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21706	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21707	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21708	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21709	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21710	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21711	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	1.000	1.000
PECO_Small Miscellaneous/Other_Total Electric_21712	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	1.000	1.000
PECO_Small Miscellaneous/Other_Total Electric_21713	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Total Electric_21714	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Miscellaneous/Other_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.457	0.457
PECO_Small Miscellaneous/Other_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.457	0.457
PECO_Small Miscellaneous/Other_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.457	0.457
PECO_Small Miscellaneous/Other_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.457	0.457
PECO_Small Miscellaneous/Other_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.457	0.457
PECO_Small Miscellaneous/Other_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PECO_Small Miscellaneous/Other_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PECO_Small Miscellaneous/Other_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PECO_Small Miscellaneous/Other_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PECO_Small Miscellaneous/Other_Water Heating_21103	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Miscellaneous/Other_Water Heating_21107	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Miscellaneous/Other_Water Heating_21109	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Miscellaneous/Other_Water Heating_21114	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Miscellaneous/Other_Water Heating_21115	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Miscellaneous/Other_Water Heating_21118	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.900	0.900
PECO_Small Office_Cooking_20201	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
PECO_Small Office_Cooking_20202	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
PECO_Small Office_Cooking_20206	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
PECO_Small Office_Cooling_20301	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20302	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20303	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20304	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20308	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Office_Cooling_20309	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20311	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20312	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20313	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	1.000	1.000
PECO_Small Office_Cooling_20314	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20315	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20316	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20317	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20318	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20319	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20320	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20321	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20322	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20323	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20326	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20327	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20328	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20329	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20330	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20331	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20333	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20334	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20335	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20336	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20338	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Cooling_20339	69.1%	19.8%	0.2%	0.0%	10.6%	0.3%	0.270	0.270
PECO_Small Office_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Office_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Office_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Office_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Office_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
PECO_Small Office_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
PECO_Small Office_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
PECO_Small Office_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
PECO_Small Office_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Office_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PECO_Small Office_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
PECO_Small Office_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
PECO_Small Office_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
PECO_Small Office_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Office_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Office_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Office_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Office_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Office_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Office_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Office_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PECO_Small Office_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Office_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Office_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Office_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Office_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Office_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Office_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Office_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PECO_Small Office_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Small Office_Space Heating_20910	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20911	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20913	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20914	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20915	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20916	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20917	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20919	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20923	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20925	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20927	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20929	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20932	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20934	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Space Heating_20936	0.0%	0.0%	26.5%	45.1%	6.9%	21.4%	0.000	0.000
PECO_Small Office_Total Electric_21701	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21702	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21703	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21704	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21705	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21706	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21707	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21708	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21709	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Office_Total Electric_21710	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21711	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	1.000	1.000
PECO_Small Office_Total Electric_21712	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	1.000	1.000
PECO_Small Office_Total Electric_21713	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Total Electric_21714	35.5%	15.9%	12.6%	7.0%	19.3%	9.6%	0.772	0.772
PECO_Small Office_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.390	0.390
PECO_Small Office_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.390	0.390
PECO_Small Office_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.390	0.390
PECO_Small Office_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.390	0.390
PECO_Small Office_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.390	0.390
PECO_Small Office_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PECO_Small Office_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PECO_Small Office_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PECO_Small Office_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PECO_Small Office_Water Heating_21103	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Office_Water Heating_21107	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Office_Water Heating_21109	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Office_Water Heating_21114	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Office_Water Heating_21115	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.722	0.722
PECO_Small Office_Water Heating_21118	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.900	0.900
PECO_Small Restaurant_Cooking_20201	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PECO_Small Restaurant_Cooking_20202	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PECO_Small Restaurant_Cooking_20204	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PECO_Small Restaurant_Cooking_20206	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PECO_Small Restaurant_Cooking_20208	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PECO_Small Restaurant_Cooling_20301	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20302	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20303	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20304	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20308	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20309	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20311	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20312	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20313	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	1.000	1.000
PECO_Small Restaurant_Cooling_20317	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20318	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20319	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20320	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20321	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20322	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20326	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20327	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20328	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20329	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20330	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Restaurant_Cooling_20331	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20333	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20334	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20335	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20336	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20338	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Cooling_20339	43.1%	38.2%	0.9%	0.2%	11.7%	6.0%	0.500	0.500
PECO_Small Restaurant_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Restaurant_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Restaurant_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Restaurant_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Restaurant_Interior Lighting_20508	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20509	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20511	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20512	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20514	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20515	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20517	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
PECO_Small Restaurant_Interior Lighting_20518	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
PECO_Small Restaurant_Interior Lighting_20520	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20521	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20522	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
PECO_Small Restaurant_Interior Lighting_20524	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20525	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20529	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
PECO_Small Restaurant_Interior Lighting_20531	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Interior Lighting_20532	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PECO_Small Restaurant_Other_20601	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
PECO_Small Restaurant_Other_20602	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
PECO_Small Restaurant_Other_20603	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.405	0.405
PECO_Small Restaurant_Other_20604	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PECO_Small Restaurant_Other_20606	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PECO_Small Restaurant_Other_20607	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PECO_Small Restaurant_Other_20610	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PECO_Small Restaurant_Other_20611	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PECO_Small Restaurant_Other_20613	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PECO_Small Restaurant_Other_20614	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PECO_Small Restaurant_Other_20615	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PECO_Small Restaurant_Plug Loads_20701	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Restaurant_Plug Loads_20702	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Restaurant_Plug Loads_20703	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Restaurant_Plug Loads_20704	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Restaurant_Plug Loads_20705	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Restaurant_Plug Loads_20706	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Restaurant_Plug Loads_20707	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Restaurant_Plug Loads_20708	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Small Restaurant_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PECO_Small Restaurant_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PECO_Small Restaurant_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PECO_Small Restaurant_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PECO_Small Restaurant_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
PECO_Small Restaurant_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PECO_Small Restaurant_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PECO_Small Restaurant_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
PECO_Small Restaurant_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PECO_Small Restaurant_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PECO_Small Restaurant_Space Heating_20910	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20911	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20913	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20914	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20915	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20916	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20917	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20923	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20925	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20927	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20929	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20932	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20934	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Space Heating_20936	0.0%	0.0%	25.9%	57.3%	2.5%	14.2%	0.000	0.000
PECO_Small Restaurant_Total Electric_21701	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21702	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21703	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21704	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21705	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21706	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21707	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21708	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21709	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21710	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21711	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	1.000	1.000
PECO_Small Restaurant_Total Electric_21712	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	1.000	1.000
PECO_Small Restaurant_Total Electric_21713	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Total Electric_21714	25.7%	23.7%	10.6%	9.6%	16.1%	14.2%	0.942	0.942
PECO_Small Restaurant_Ventilation_21001	19.2%	21.2%	12.6%	13.7%	15.6%	17.7%	0.500	0.500
PECO_Small Restaurant_Ventilation_21002	19.2%	21.2%	12.6%	13.7%	15.6%	17.7%	0.500	0.500
PECO_Small Restaurant_Ventilation_21003	19.2%	21.2%	12.6%	13.7%	15.6%	17.7%	0.500	0.500
PECO_Small Restaurant_Ventilation_21007	19.2%	21.2%	12.6%	13.7%	15.6%	17.7%	0.892	0.892
PECO_Small Restaurant_Ventilation_21008	19.2%	21.2%	12.6%	13.7%	15.6%	17.7%	0.892	0.892
PECO_Small Restaurant_Ventilation_21009	19.2%	21.2%	12.6%	13.7%	15.6%	17.7%	0.892	0.892

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Restaurant_Ventilation_21010	19.2%	21.2%	12.6%	13.7%	15.6%	17.7%	0.892	0.892
PECO_Small Restaurant_Water Heating_21103	22.9%	15.0%	17.2%	11.0%	20.4%	13.5%	0.682	0.682
PECO_Small Restaurant_Water Heating_21107	22.9%	15.0%	17.2%	11.0%	20.4%	13.5%	0.682	0.682
PECO_Small Restaurant_Water Heating_21109	22.9%	15.0%	17.2%	11.0%	20.4%	13.5%	0.682	0.682
PECO_Small Restaurant_Water Heating_21114	22.9%	15.0%	17.2%	11.0%	20.4%	13.5%	0.682	0.682
PECO_Small Restaurant_Water Heating_21115	22.9%	15.0%	17.2%	11.0%	20.4%	13.5%	0.682	0.682
PECO_Small Restaurant_Water Heating_21118	22.9%	15.0%	17.2%	11.0%	20.4%	13.5%	0.900	0.900
PECO_Small Retail_Cooking_20201	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PECO_Small Retail_Cooking_20202	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PECO_Small Retail_Cooking_20204	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PECO_Small Retail_Cooking_20206	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PECO_Small Retail_Cooking_20208	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PECO_Small Retail_Cooling_20301	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20302	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20303	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20304	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20308	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20309	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20311	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20312	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20313	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	1.000	1.000
PECO_Small Retail_Cooling_20317	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20318	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20319	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20320	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20321	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20322	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20326	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20327	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20328	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20329	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20330	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20331	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20333	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20334	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20335	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20336	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20338	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Cooling_20339	67.1%	17.9%	0.6%	0.1%	12.5%	1.8%	0.570	0.570
PECO_Small Retail_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Retail_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Retail_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Retail_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Retail_Interior Lighting_20508	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20509	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Retail_Interior Lighting_20511	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20512	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20514	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20515	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20517	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
PECO_Small Retail_Interior Lighting_20518	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
PECO_Small Retail_Interior Lighting_20520	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20521	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20522	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
PECO_Small Retail_Interior Lighting_20524	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20525	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20529	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
PECO_Small Retail_Interior Lighting_20531	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Interior Lighting_20532	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PECO_Small Retail_Other_20601	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
PECO_Small Retail_Other_20602	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
PECO_Small Retail_Other_20603	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.405	0.405
PECO_Small Retail_Other_20604	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PECO_Small Retail_Other_20606	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PECO_Small Retail_Other_20607	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PECO_Small Retail_Other_20610	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PECO_Small Retail_Other_20611	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PECO_Small Retail_Other_20613	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PECO_Small Retail_Other_20614	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PECO_Small Retail_Other_20615	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PECO_Small Retail_Plug Loads_20701	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PECO_Small Retail_Plug Loads_20702	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PECO_Small Retail_Plug Loads_20703	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PECO_Small Retail_Plug Loads_20704	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PECO_Small Retail_Plug Loads_20705	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PECO_Small Retail_Plug Loads_20706	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PECO_Small Retail_Plug Loads_20707	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PECO_Small Retail_Plug Loads_20708	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PECO_Small Retail_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Retail_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Retail_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Retail_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PECO_Small Retail_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Retail_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Retail_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PECO_Small Retail_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Retail_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Small Retail_Space Heating_20910	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20911	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20913	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Retail_Space Heating_20915	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20916	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20917	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20919	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20923	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20925	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20927	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20929	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20932	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20934	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Space Heating_20936	0.0%	0.0%	23.4%	49.3%	5.6%	21.7%	0.000	0.000
PECO_Small Retail_Total Electric_21701	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21702	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21703	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21704	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21705	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21706	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21707	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21708	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21709	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21710	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21711	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	1.000	1.000
PECO_Small Retail_Total Electric_21712	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	1.000	1.000
PECO_Small Retail_Total Electric_21713	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Total Electric_21714	34.4%	15.8%	12.8%	7.4%	19.3%	10.4%	0.927	0.927
PECO_Small Retail_Ventilation_21001	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.560	0.560
PECO_Small Retail_Ventilation_21002	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.560	0.560
PECO_Small Retail_Ventilation_21003	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.560	0.560
PECO_Small Retail_Ventilation_21005	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.560	0.560
PECO_Small Retail_Ventilation_21006	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.560	0.560
PECO_Small Retail_Ventilation_21007	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.952	0.952
PECO_Small Retail_Ventilation_21008	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.952	0.952
PECO_Small Retail_Ventilation_21009	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.952	0.952
PECO_Small Retail_Ventilation_21010	17.2%	20.5%	13.2%	14.2%	16.3%	18.6%	0.952	0.952
PECO_Small Retail_Water Heating_21103	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Retail_Water Heating_21107	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Retail_Water Heating_21109	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Retail_Water Heating_21114	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Retail_Water Heating_21115	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Small Retail_Water Heating_21118	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.900	0.900
PECO_Small Warehouse_Cooling_20301	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20302	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20303	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20304	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20308	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Warehouse_Cooling_20309	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20311	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20312	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20313	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
PECO_Small Warehouse_Cooling_20314	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20315	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20316	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20317	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20318	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20319	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20320	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20321	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20322	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20323	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20326	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20327	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20328	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20329	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20330	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20331	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20333	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20334	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20335	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20336	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20337	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20338	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Cooling_20339	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Small Warehouse_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Warehouse_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Small Warehouse_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Warehouse_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Small Warehouse_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PECO_Small Warehouse_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PECO_Small Warehouse_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Small Warehouse_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Warehouse_Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
PECO_Small Warehouse_Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
PECO_Small Warehouse_Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
PECO_Small Warehouse_Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Warehouse_Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Warehouse_Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Warehouse_Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Warehouse_Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Warehouse_Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Warehouse_Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Warehouse_Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Small Warehouse_Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Small Warehouse_Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Small Warehouse_Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Small Warehouse_Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Small Warehouse_Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Small Warehouse_Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Small Warehouse_Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Small Warehouse_Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Small Warehouse_Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Small Warehouse_Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Small Warehouse_Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Small Warehouse_Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
PECO_Small Warehouse_Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Small Warehouse_Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
PECO_Small Warehouse_Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Small Warehouse_Space Heating_20910	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20911	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20913	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20914	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20915	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20916	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20917	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20919	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20923	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20925	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20927	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20929	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20932	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20934	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Space Heating_20936	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Small Warehouse_Total Electric_21701	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21702	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21703	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21704	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Small Warehouse_Total Electric_21705	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21706	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21707	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21708	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21709	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21710	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21711	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	1.000	1.000
PECO_Small Warehouse_Total Electric_21712	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	1.000	1.000
PECO_Small Warehouse_Total Electric_21713	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Total Electric_21714	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Small Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Small Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Small Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Small Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Small Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Small Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PECO_Small Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PECO_Small Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PECO_Small Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PECO_Small Warehouse_Water Heating_21103	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Small Warehouse_Water Heating_21107	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Small Warehouse_Water Heating_21109	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Small Warehouse_Water Heating_21114	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Small Warehouse_Water Heating_21115	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Small Warehouse_Water Heating_21118	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.900	0.900
PECO_Large Education - College/University_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - College/University_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - College/University_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - College/University_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - College/University_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - College/University_Cooling_20301	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20302	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20303	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20304	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20308	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20309	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20311	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20312	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20313	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	1.000	1.000
PECO_Large Education - College/University_Cooling_20314	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20315	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20316	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20317	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20318	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20319	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Education - College/University_Cooling_20320	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20321	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20322	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20323	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20330	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20331	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20333	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20334	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20335	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20336	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20338	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Cooling_20339	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.510	0.510
PECO_Large Education - College/University_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Education - College/University_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Education - College/University_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Education - College/University_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Education - College/University_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
PECO_Large Education - College/University_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
PECO_Large Education - College/University_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
PECO_Large Education - College/University_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
PECO_Large Education - College/University_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - College/University_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - College/University_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - College/University_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - College/University_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - College/University_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - College/University_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - College/University_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - College/University_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - College/University_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - College/University_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - College/University_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - College/University_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - College/University_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Education - College/University_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - College/University_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - College/University_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
PECO_Large Education - College/University_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - College/University_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - College/University_Space Heating_20910	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20911	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20913	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20914	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20915	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20916	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20917	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20919	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20923	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20929	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20932	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20934	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Space Heating_20936	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - College/University_Total Electric_21701	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21702	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21703	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21704	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21705	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21706	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21707	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21708	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21709	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21710	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21711	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	1.000	1.000
PECO_Large Education - College/University_Total Electric_21712	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	1.000	1.000
PECO_Large Education - College/University_Total Electric_21713	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Total Electric_21714	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - College/University_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.470	0.470
PECO_Large Education - College/University_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.470	0.470
PECO_Large Education - College/University_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.470	0.470
PECO_Large Education - College/University_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.470	0.470
PECO_Large Education - College/University_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.470	0.470
PECO_Large Education - College/University_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PECO_Large Education - College/University_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PECO_Large Education - College/University_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PECO_Large Education - College/University_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PECO_Large Education - College/University_Water Heating_21103	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - College/University_Water Heating_21107	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - College/University_Water Heating_21109	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - College/University_Water Heating_21114	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Education - College/University_Water Heating_21115	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - College/University_Water Heating_21116	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - College/University_Water Heating_21118	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
PECO_Large Education - Other_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - Other_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - Other_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - Other_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - Other_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PECO_Large Education - Other_Cooling_20301	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20302	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20303	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20304	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20308	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20309	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20311	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20312	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20313	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	1.000	1.000
PECO_Large Education - Other_Cooling_20314	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20315	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20316	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20317	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20318	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20319	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20320	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20321	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20322	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20323	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20330	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20331	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20333	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20334	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20335	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20336	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20338	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Cooling_20339	83.3%	8.3%	0.0%	0.0%	8.3%	0.1%	0.190	0.190
PECO_Large Education - Other_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Education - Other_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Education - Other_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Education - Other_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Education - Other_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Education - Other_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
PECO_Large Education - Other_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
PECO_Large Education - Other_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
PECO_Large Education - Other_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
PECO_Large Education - Other_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PECO_Large Education - Other_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - Other_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - Other_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - Other_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - Other_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - Other_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - Other_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - Other_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PECO_Large Education - Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - Other_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - Other_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - Other_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
PECO_Large Education - Other_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - Other_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - Other_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
PECO_Large Education - Other_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - Other_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Education - Other_Space Heating_20910	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20911	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20913	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20914	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20915	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20916	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20917	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20919	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20923	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20929	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20932	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20934	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Space Heating_20936	0.0%	0.1%	40.4%	36.5%	12.2%	10.8%	0.000	0.000
PECO_Large Education - Other_Total Electric_21701	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21702	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21703	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21704	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Education - Other_Total Electric_21705	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21706	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21707	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21708	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21709	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21710	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21711	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	1.000	1.000
PECO_Large Education - Other_Total Electric_21712	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	1.000	1.000
PECO_Large Education - Other_Total Electric_21713	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Total Electric_21714	28.7%	14.1%	13.4%	10.2%	19.6%	14.0%	0.546	0.546
PECO_Large Education - Other_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
PECO_Large Education - Other_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
PECO_Large Education - Other_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
PECO_Large Education - Other_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
PECO_Large Education - Other_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.180	0.180
PECO_Large Education - Other_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PECO_Large Education - Other_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PECO_Large Education - Other_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PECO_Large Education - Other_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PECO_Large Education - Other_Water Heating_21103	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - Other_Water Heating_21107	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - Other_Water Heating_21109	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - Other_Water Heating_21114	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - Other_Water Heating_21115	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - Other_Water Heating_21116	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.576	0.576
PECO_Large Education - Other_Water Heating_21118	30.2%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
PECO_Large Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PECO_Large Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PECO_Large Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PECO_Large Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PECO_Large Grocery_Cooling_20301	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20302	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20303	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20304	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20308	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20309	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20311	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20312	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20313	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	1.000	1.000
PECO_Large Grocery_Cooling_20317	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20318	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20319	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20320	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20321	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20322	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Grocery_Cooling_20330	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20331	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20333	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20334	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20335	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20336	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20338	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Cooling_20339	50.6%	39.9%	0.1%	0.0%	6.8%	2.6%	0.260	0.260
PECO_Large Grocery_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Grocery_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Grocery_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Grocery_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
PECO_Large Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
PECO_Large Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
PECO_Large Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
PECO_Large Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PECO_Large Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Large Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Large Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Large Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Large Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Large Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Large Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Large Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PECO_Large Grocery_Refrigeration_20803	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PECO_Large Grocery_Refrigeration_20805	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PECO_Large Grocery_Refrigeration_20806	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PECO_Large Grocery_Refrigeration_20807	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.094	0.094
PECO_Large Grocery_Refrigeration_20808	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PECO_Large Grocery_Refrigeration_20811	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.403	0.403
PECO_Large Grocery_Refrigeration_20818	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PECO_Large Grocery_Space Heating_20910	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20911	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Grocery_Space Heating_20913	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20915	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20916	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20917	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20919	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20923	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20929	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20932	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20934	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Space Heating_20936	0.0%	0.1%	27.1%	47.5%	5.6%	19.6%	0.000	0.000
PECO_Large Grocery_Total Electric_21701	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21702	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21703	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21704	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21705	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21706	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21707	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21708	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21709	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21710	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21711	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	1.000	1.000
PECO_Large Grocery_Total Electric_21712	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	1.000	1.000
PECO_Large Grocery_Total Electric_21713	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Total Electric_21714	24.8%	23.3%	10.9%	10.6%	15.5%	14.9%	0.908	0.908
PECO_Large Grocery_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.260	0.260
PECO_Large Grocery_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.260	0.260
PECO_Large Grocery_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.260	0.260
PECO_Large Grocery_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.260	0.260
PECO_Large Grocery_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.260	0.260
PECO_Large Grocery_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
PECO_Large Grocery_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
PECO_Large Grocery_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
PECO_Large Grocery_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
PECO_Large Grocery_Water Heating_21103	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Large Grocery_Water Heating_21107	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Large Grocery_Water Heating_21109	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Large Grocery_Water Heating_21114	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Large Grocery_Water Heating_21115	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.698	0.698
PECO_Large Grocery_Water Heating_21118	23.1%	14.8%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
PECO_Large Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Large Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Large Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Large Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Large Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PECO_Large Health - Hospital_Cooling_20301	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Health - Hospital_Cooling_20302	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20303	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20304	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20308	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20309	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20311	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20312	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20313	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	1.000	1.000
PECO_Large Health - Hospital_Cooling_20314	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20315	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20316	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20317	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20318	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20319	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20320	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20321	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20322	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20323	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20330	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20331	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20333	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20334	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20335	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20336	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20338	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Cooling_20339	45.0%	38.8%	2.6%	2.4%	6.9%	4.4%	0.440	0.440
PECO_Large Health - Hospital_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Health - Hospital_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Health - Hospital_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Health - Hospital_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
PECO_Large Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
PECO_Large Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
PECO_Large Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
PECO_Large Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PECO_Large Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
PECO_Large Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
PECO_Large Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
PECO_Large Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Large Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Large Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Large Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Large Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Large Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Large Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Large Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PECO_Large Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Large Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Large Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Large Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Large Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Large Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Large Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Large Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PECO_Large Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Large Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Large Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Large Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Large Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
PECO_Large Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Large Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Large Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
PECO_Large Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Large Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PECO_Large Health - Hospital_Space Heating_20910	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20911	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20913	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20914	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20915	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20916	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20917	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20919	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20923	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20929	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20932	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20934	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Space Heating_20936	3.3%	4.1%	27.0%	40.8%	7.4%	17.4%	0.103	0.103
PECO_Large Health - Hospital_Total Electric_21701	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21702	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Health - Hospital_Total Electric_21703	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21704	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21705	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21706	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21707	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21708	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21709	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21710	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21711	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	1.000	1.000
PECO_Large Health - Hospital_Total Electric_21712	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	1.000	1.000
PECO_Large Health - Hospital_Total Electric_21713	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Total Electric_21714	28.4%	25.7%	9.9%	9.1%	14.1%	12.8%	0.801	0.801
PECO_Large Health - Hospital_Ventilation_21001	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Large Health - Hospital_Ventilation_21002	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Large Health - Hospital_Ventilation_21003	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Large Health - Hospital_Ventilation_21005	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Large Health - Hospital_Ventilation_21006	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.510	0.510
PECO_Large Health - Hospital_Ventilation_21007	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.773	0.773
PECO_Large Health - Hospital_Ventilation_21008	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.773	0.773
PECO_Large Health - Hospital_Ventilation_21009	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.773	0.773
PECO_Large Health - Hospital_Ventilation_21010	19.9%	22.1%	11.8%	12.7%	16.0%	17.6%	0.773	0.773
PECO_Large Health - Hospital_Water Heating_21103	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Large Health - Hospital_Water Heating_21107	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Large Health - Hospital_Water Heating_21114	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Large Health - Hospital_Water Heating_21115	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Large Health - Hospital_Water Heating_21116	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.616	0.616
PECO_Large Health - Hospital_Water Heating_21118	21.0%	16.7%	16.0%	12.4%	18.9%	15.0%	0.900	0.900
PECO_Large Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Large Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Large Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Large Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Large Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Large Health - Other_Cooling_20301	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20302	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20303	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20304	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20308	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20309	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20311	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20312	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20313	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	1.000	1.000
PECO_Large Health - Other_Cooling_20314	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20315	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20316	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20317	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Health - Other_Cooling_20318	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20319	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20320	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20321	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20322	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20323	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20330	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20331	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20333	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20334	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20335	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20336	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20338	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Cooling_20339	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.340	0.340
PECO_Large Health - Other_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Health - Other_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Health - Other_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Health - Other_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PECO_Large Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PECO_Large Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PECO_Large Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PECO_Large Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PECO_Large Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PECO_Large Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PECO_Large Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
PECO_Large Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Health - Other_Space Heating_20910	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20911	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20913	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20914	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20915	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20916	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20917	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20919	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20923	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20929	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20932	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20934	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Space Heating_20936	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Health - Other_Total Electric_21701	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21702	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21703	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21704	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21705	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21706	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21707	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21708	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21709	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21710	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21711	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
PECO_Large Health - Other_Total Electric_21712	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
PECO_Large Health - Other_Total Electric_21713	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Total Electric_21714	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Health - Other_Ventilation_21001	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Large Health - Other_Ventilation_21002	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Large Health - Other_Ventilation_21003	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Large Health - Other_Ventilation_21005	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Large Health - Other_Ventilation_21006	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.310	0.310
PECO_Large Health - Other_Ventilation_21007	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Large Health - Other_Ventilation_21008	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Large Health - Other_Ventilation_21009	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Large Health - Other_Ventilation_21010	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Health - Other_Water Heating_21103	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Health - Other_Water Heating_21107	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Health - Other_Water Heating_21114	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Health - Other_Water Heating_21115	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Health - Other_Water Heating_21116	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Health - Other_Water Heating_21118	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.900	0.900
PECO_Large Industrial Manufacturing_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Industrial Manufacturing_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Industrial Manufacturing_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Industrial Manufacturing_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PECO_Large Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PECO_Large Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PECO_Large Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PECO_Large Institutional/Public Service_Cooling_20301	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20302	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20303	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20304	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20308	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20309	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20311	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20312	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20313	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	1.000	1.000
PECO_Large Institutional/Public Service_Cooling_20315	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20316	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20317	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20318	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20319	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20320	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20321	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20322	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20323	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20330	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Institutional/Public Service_Cooling_20331	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20333	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20334	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20335	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20336	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20338	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Cooling_20339	86.5%	12.2%	0.0%	0.0%	1.2%	0.1%	0.720	0.720
PECO_Large Institutional/Public Service_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Institutional/Public Service_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Institutional/Public Service_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Institutional/Public Service_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PECO_Large Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PECO_Large Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PECO_Large Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PECO_Large Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PECO_Large Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PECO_Large Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PECO_Large Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
PECO_Large Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PECO_Large Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PECO_Large Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PECO_Large Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PECO_Large Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PECO_Large Institutional/Public Service_Space Heating_20910	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20911	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20913	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20915	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20916	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20917	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20919	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20923	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20929	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20932	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20934	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Space Heating_20936	0.0%	0.0%	33.7%	37.2%	13.8%	15.3%	0.000	0.000
PECO_Large Institutional/Public Service_Total Electric_21701	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21702	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21703	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21704	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21705	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21706	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21707	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21708	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21709	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21710	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21711	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
PECO_Large Institutional/Public Service_Total Electric_21712	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	1.000	1.000
PECO_Large Institutional/Public Service_Total Electric_21713	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Total Electric_21714	30.8%	13.3%	14.5%	9.8%	19.0%	12.6%	0.760	0.760
PECO_Large Institutional/Public Service_Ventilation_21001	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Large Institutional/Public Service_Ventilation_21002	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Large Institutional/Public Service_Ventilation_21003	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Large Institutional/Public Service_Ventilation_21005	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Large Institutional/Public Service_Ventilation_21006	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.720	0.720
PECO_Large Institutional/Public Service_Ventilation_21007	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Large Institutional/Public Service_Ventilation_21008	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Large Institutional/Public Service_Ventilation_21009	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Institutional/Public Service_Ventilation_21010	18.3%	2.6%	18.0%	19.4%	21.4%	20.4%	0.886	0.886
PECO_Large Institutional/Public Service_Water Heating_21103	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Institutional/Public Service_Water Heating_21107	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Institutional/Public Service_Water Heating_21109	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Institutional/Public Service_Water Heating_21114	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Institutional/Public Service_Water Heating_21115	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.726	0.726
PECO_Large Institutional/Public Service_Water Heating_21118	23.7%	14.1%	17.9%	10.4%	21.1%	12.8%	0.900	0.900
PECO_Large Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Large Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Large Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Large Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Large Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PECO_Large Lodging_Cooling_20301	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20302	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20303	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20304	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20308	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20309	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20311	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20312	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20313	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	1.000	1.000
PECO_Large Lodging_Cooling_20315	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20316	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20317	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20318	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20319	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20320	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20321	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20322	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20323	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20324	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20325	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20330	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20331	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20333	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20334	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20335	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20336	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20338	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Cooling_20339	59.5%	37.9%	0.0%	0.0%	2.0%	0.6%	0.830	0.830
PECO_Large Lodging_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Lodging_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Lodging_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Lodging_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
PECO_Large Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
PECO_Large Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
PECO_Large Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
PECO_Large Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PECO_Large Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
PECO_Large Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
PECO_Large Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
PECO_Large Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Large Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Large Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Large Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Large Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Large Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Large Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Large Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PECO_Large Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Large Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Large Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Large Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Large Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Large Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Large Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Large Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PECO_Large Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Large Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Large Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Large Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Large Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PECO_Large Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Large Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Large Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PECO_Large Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Large Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PECO_Large Lodging_Space Heating_20910	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Lodging_Space Heating_20911	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20913	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20914	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20915	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20916	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20917	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20919	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20921	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20923	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20929	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20932	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20934	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Space Heating_20936	0.0%	0.1%	28.8%	50.5%	5.5%	15.0%	0.000	0.000
PECO_Large Lodging_Total Electric_21701	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21702	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21703	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21704	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21705	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21706	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21707	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21708	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21709	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21710	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21711	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	1.000	1.000
PECO_Large Lodging_Total Electric_21712	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	1.000	1.000
PECO_Large Lodging_Total Electric_21713	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Total Electric_21714	31.0%	25.3%	9.3%	9.0%	12.9%	12.4%	0.705	0.705
PECO_Large Lodging_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.710	0.710
PECO_Large Lodging_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.710	0.710
PECO_Large Lodging_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.710	0.710
PECO_Large Lodging_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.710	0.710
PECO_Large Lodging_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.710	0.710
PECO_Large Lodging_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
PECO_Large Lodging_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
PECO_Large Lodging_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
PECO_Large Lodging_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
PECO_Large Lodging_Water Heating_21103	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Large Lodging_Water Heating_21107	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Large Lodging_Water Heating_21109	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Large Lodging_Water Heating_21114	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Large Lodging_Water Heating_21115	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Large Lodging_Water Heating_21116	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.726	0.726
PECO_Large Lodging_Water Heating_21118	21.2%	16.5%	16.2%	12.2%	19.0%	14.9%	0.900	0.900
PECO_Large Miscellaneous/Other_Cooling_20301	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20302	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Miscellaneous/Other_Cooling_20303	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20304	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20308	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20309	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20311	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20312	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20313	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	1.000	1.000
PECO_Large Miscellaneous/Other_Cooling_20317	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20318	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20319	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20320	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20321	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20322	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20330	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20331	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20333	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20334	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20335	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20336	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20338	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Cooling_20339	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.480	0.480
PECO_Large Miscellaneous/Other_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Miscellaneous/Other_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Miscellaneous/Other_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Miscellaneous/Other_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Miscellaneous/Other_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
PECO_Large Miscellaneous/Other_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
PECO_Large Miscellaneous/Other_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
PECO_Large Miscellaneous/Other_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
PECO_Large Miscellaneous/Other_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PECO_Large Miscellaneous/Other_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
PECO_Large Miscellaneous/Other_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
PECO_Large Miscellaneous/Other_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
PECO_Large Miscellaneous/Other_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Miscellaneous/Other_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Miscellaneous/Other_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Miscellaneous/Other_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Miscellaneous/Other_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Miscellaneous/Other_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Miscellaneous/Other_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Miscellaneous/Other_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Miscellaneous/Other_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Miscellaneous/Other_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Miscellaneous/Other_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Miscellaneous/Other_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Miscellaneous/Other_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Miscellaneous/Other_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Miscellaneous/Other_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Miscellaneous/Other_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Miscellaneous/Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Miscellaneous/Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Miscellaneous/Other_Total Electric_21701	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21702	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21703	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21704	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21705	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21706	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21707	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21708	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21709	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21710	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21711	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	1.000	1.000
PECO_Large Miscellaneous/Other_Total Electric_21712	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	1.000	1.000
PECO_Large Miscellaneous/Other_Total Electric_21713	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Total Electric_21714	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Miscellaneous/Other_Ventilation_21001	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.457	0.457
PECO_Large Miscellaneous/Other_Ventilation_21002	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.457	0.457

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Miscellaneous/Other_Ventilation_21003	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.457	0.457
PECO_Large Miscellaneous/Other_Ventilation_21005	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.457	0.457
PECO_Large Miscellaneous/Other_Ventilation_21006	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.457	0.457
PECO_Large Miscellaneous/Other_Ventilation_21007	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.764	0.764
PECO_Large Miscellaneous/Other_Ventilation_21008	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.764	0.764
PECO_Large Miscellaneous/Other_Ventilation_21009	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.764	0.764
PECO_Large Miscellaneous/Other_Ventilation_21010	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.764	0.764
PECO_Large Miscellaneous/Other_Water Heating_21103	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Miscellaneous/Other_Water Heating_21107	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Miscellaneous/Other_Water Heating_21109	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Miscellaneous/Other_Water Heating_21114	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Miscellaneous/Other_Water Heating_21115	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Miscellaneous/Other_Water Heating_21118	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.900	0.900
PECO_Large Office_Cooking_20201	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
PECO_Large Office_Cooking_20202	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
PECO_Large Office_Cooking_20206	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
PECO_Large Office_Cooling_20301	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20302	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20303	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20304	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20308	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20309	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20311	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20312	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20313	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	1.000	1.000
PECO_Large Office_Cooling_20314	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20315	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20316	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20317	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20318	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20319	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20320	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20321	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20322	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20323	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20330	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20331	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20333	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20334	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20335	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20336	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20338	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Cooling_20339	64.5%	12.4%	4.8%	2.2%	13.4%	2.8%	0.270	0.270
PECO_Large Office_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Office_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Office_ Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Office_ Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Office_ Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
PECO_Large Office_ Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
PECO_Large Office_ Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
PECO_Large Office_ Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
PECO_Large Office_ Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PECO_Large Office_ Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
PECO_Large Office_ Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
PECO_Large Office_ Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
PECO_Large Office_ Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Office_ Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Office_ Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Office_ Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Office_ Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Office_ Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Office_ Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Office_ Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PECO_Large Office_ Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Office_ Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Office_ Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Office_ Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Office_ Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Office_ Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Office_ Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Office_ Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PECO_Large Office_ Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PECO_Large Office_ Space Heating_20910	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_ Space Heating_20911	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_ Space Heating_20913	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_ Space Heating_20914	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_ Space Heating_20915	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_ Space Heating_20916	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_ Space Heating_20917	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Office_Space Heating_20919	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_Space Heating_20923	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_Space Heating_20929	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_Space Heating_20932	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_Space Heating_20934	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_Space Heating_20936	0.0%	0.0%	45.8%	30.9%	12.5%	10.8%	0.000	0.000
PECO_Large Office_Total Electric_21701	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21702	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21703	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21704	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21705	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21706	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21707	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21708	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21709	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21710	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21711	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	1.000	1.000
PECO_Large Office_Total Electric_21712	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	1.000	1.000
PECO_Large Office_Total Electric_21713	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Total Electric_21714	32.9%	14.4%	13.0%	9.2%	18.7%	11.9%	0.797	0.797
PECO_Large Office_Ventilation_21001	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.390	0.390
PECO_Large Office_Ventilation_21002	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.390	0.390
PECO_Large Office_Ventilation_21003	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.390	0.390
PECO_Large Office_Ventilation_21005	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.390	0.390
PECO_Large Office_Ventilation_21006	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.390	0.390
PECO_Large Office_Ventilation_21007	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.764	0.764
PECO_Large Office_Ventilation_21008	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.764	0.764
PECO_Large Office_Ventilation_21009	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.764	0.764
PECO_Large Office_Ventilation_21010	20.5%	4.8%	15.8%	17.9%	20.4%	20.6%	0.764	0.764
PECO_Large Office_Water Heating_21103	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Office_Water Heating_21107	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Office_Water Heating_21109	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Office_Water Heating_21114	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Office_Water Heating_21115	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.721	0.721
PECO_Large Office_Water Heating_21118	19.1%	18.6%	14.5%	13.8%	17.2%	16.7%	0.900	0.900
PECO_Large Retail_Cooking_20201	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PECO_Large Retail_Cooking_20202	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PECO_Large Retail_Cooking_20204	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PECO_Large Retail_Cooking_20206	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PECO_Large Retail_Cooking_20208	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PECO_Large Retail_Cooling_20301	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20302	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20303	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20304	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20308	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Retail_Cooling_20309	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20311	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20312	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20313	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	1.000	1.000
PECO_Large Retail_Cooling_20317	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20318	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20319	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20320	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20321	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20322	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20330	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20331	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20333	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20334	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20335	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20336	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20338	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Cooling_20339	68.6%	31.2%	0.0%	0.0%	0.2%	0.1%	0.570	0.570
PECO_Large Retail_Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Retail_Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Retail_Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Retail_Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Retail_Interior Lighting_20508	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20509	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20511	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20512	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20514	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20515	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20517	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
PECO_Large Retail_Interior Lighting_20518	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
PECO_Large Retail_Interior Lighting_20520	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20521	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20522	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
PECO_Large Retail_Interior Lighting_20524	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20525	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20529	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
PECO_Large Retail_Interior Lighting_20531	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Interior Lighting_20532	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PECO_Large Retail_Other_20601	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
PECO_Large Retail_Other_20602	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
PECO_Large Retail_Other_20603	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.405	0.405
PECO_Large Retail_Other_20604	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PECO_Large Retail_Other_20606	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PECO_Large Retail_Other_20607	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PECO_Large Retail_Other_20610	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Retail_Other_20611	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PECO_Large Retail_Other_20613	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PECO_Large Retail_Other_20614	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PECO_Large Retail_Other_20615	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PECO_Large Retail_Plug Loads_20701	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PECO_Large Retail_Plug Loads_20702	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PECO_Large Retail_Plug Loads_20703	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PECO_Large Retail_Plug Loads_20704	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PECO_Large Retail_Plug Loads_20705	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PECO_Large Retail_Plug Loads_20706	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PECO_Large Retail_Plug Loads_20707	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PECO_Large Retail_Plug Loads_20708	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PECO_Large Retail_Refrigeration_20801	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PECO_Large Retail_Refrigeration_20805	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PECO_Large Retail_Refrigeration_20806	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PECO_Large Retail_Refrigeration_20807	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.094	0.094
PECO_Large Retail_Refrigeration_20808	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PECO_Large Retail_Refrigeration_20809	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PECO_Large Retail_Refrigeration_20811	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.403	0.403
PECO_Large Retail_Refrigeration_20818	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PECO_Large Retail_Refrigeration_20821	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PECO_Large Retail_Space Heating_20910	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20911	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20913	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20915	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20916	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20917	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20919	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20923	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20929	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20932	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20934	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Space Heating_20936	0.0%	0.0%	45.2%	28.1%	16.1%	10.6%	0.000	0.000
PECO_Large Retail_Total Electric_21701	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21702	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21703	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21704	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21705	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21706	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21707	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21708	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21709	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21710	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21711	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	1.000	1.000
PECO_Large Retail_Total Electric_21712	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	1.000	1.000



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Retail_Total Electric_21713	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Total Electric_21714	36.9%	20.0%	10.3%	8.4%	13.6%	10.8%	0.714	0.714
PECO_Large Retail_Ventilation_21001	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.560	0.560
PECO_Large Retail_Ventilation_21002	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.560	0.560
PECO_Large Retail_Ventilation_21003	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.560	0.560
PECO_Large Retail_Ventilation_21005	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.560	0.560
PECO_Large Retail_Ventilation_21006	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.560	0.560
PECO_Large Retail_Ventilation_21007	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
PECO_Large Retail_Ventilation_21008	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
PECO_Large Retail_Ventilation_21009	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
PECO_Large Retail_Ventilation_21010	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
PECO_Large Retail_Water Heating_21103	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.716	0.716
PECO_Large Retail_Water Heating_21107	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.716	0.716
PECO_Large Retail_Water Heating_21109	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.716	0.716
PECO_Large Retail_Water Heating_21114	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.716	0.716
PECO_Large Retail_Water Heating_21115	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.716	0.716
PECO_Large Retail_Water Heating_21118	23.8%	14.1%	17.9%	10.3%	21.2%	12.7%	0.900	0.900
PECO_Large Warehouse_Cooling_20301	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20302	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20303	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20304	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20308	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20309	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20311	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20312	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20313	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
PECO_Large Warehouse_Cooling_20314	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20315	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20316	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20317	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20318	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20319	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20320	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20321	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20322	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20323	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20330	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20331	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20333	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20334	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20335	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20336	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20337	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20338	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300
PECO_Large Warehouse_Cooling_20339	58.6%	41.4%	0.0%	0.0%	0.0%	0.0%	0.300	0.300

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Warehouse_ Exterior Lighting_20401	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Warehouse_ Exterior Lighting_20402	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.000	0.000
PECO_Large Warehouse_ Exterior Lighting_20403	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Warehouse_ Exterior Lighting_20404	9.5%	27.3%	9.6%	19.0%	10.4%	24.2%	0.110	0.110
PECO_Large Warehouse_ Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PECO_Large Warehouse_ Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PECO_Large Warehouse_ Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PECO_Large Warehouse_ Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
PECO_Large Warehouse_ Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
PECO_Large Warehouse_ Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
PECO_Large Warehouse_ Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Warehouse_ Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Warehouse_ Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Warehouse_ Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Warehouse_ Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Warehouse_ Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Warehouse_ Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Warehouse_ Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PECO_Large Warehouse_ Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Large Warehouse_ Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Large Warehouse_ Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Large Warehouse_ Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Large Warehouse_ Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Large Warehouse_ Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Large Warehouse_ Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Large Warehouse_ Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PECO_Large Warehouse_ Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Large Warehouse_ Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Large Warehouse_ Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Large Warehouse_ Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
PECO_Large Warehouse_ Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Large Warehouse_ Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
PECO_Large Warehouse_ Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PECO_Large Warehouse_ Space Heating_20910	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PECO_Large Warehouse_Space Heating_20911	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20913	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20914	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20915	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20916	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20917	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20919	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20923	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20929	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20932	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20934	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Space Heating_20936	0.0%	0.0%	29.3%	38.0%	11.7%	21.0%	0.000	0.000
PECO_Large Warehouse_Total Electric_21701	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21702	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21703	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21704	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21705	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21706	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21707	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21708	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21709	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21710	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21711	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	1.000	1.000
PECO_Large Warehouse_Total Electric_21712	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	1.000	1.000
PECO_Large Warehouse_Total Electric_21713	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Total Electric_21714	27.3%	17.7%	14.4%	9.1%	19.1%	12.4%	0.825	0.825
PECO_Large Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Large Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Large Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Large Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Large Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.300	0.300
PECO_Large Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PECO_Large Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PECO_Large Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PECO_Large Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PECO_Large Warehouse_Water Heating_21103	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Large Warehouse_Water Heating_21107	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Large Warehouse_Water Heating_21109	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Large Warehouse_Water Heating_21114	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Large Warehouse_Water Heating_21115	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.699	0.699
PECO_Large Warehouse_Water Heating_21118	26.6%	11.3%	20.0%	8.3%	23.7%	10.1%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Single Family_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
PPL_Single Family_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
PPL_Single Family_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
PPL_Single Family_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PPL_Single Family_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PPL_Single Family_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PPL_Single Family_Cooling_10301	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10303	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10305	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10306	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10309	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10311	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10313	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10314	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
PPL_Single Family_Cooling_10315	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
PPL_Single Family_Cooling_10316	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10318	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Cooling_10319	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
PPL_Single Family_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PPL_Single Family_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PPL_Single Family_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730
PPL_Single Family_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PPL_Single Family_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
PPL_Single Family_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.378	0.378
PPL_Single Family_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
PPL_Single Family_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
PPL_Single Family_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PPL_Single Family_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PPL_Single Family_Space Heating_10910	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Space Heating_10911	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Space Heating_10914	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Space Heating_10915	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Space Heating_10918	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Space Heating_10919	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Space Heating_10920	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Space Heating_10921	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Space Heating_10922	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family_Total Electric_11702	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family_Total Electric_11703	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family_Total Electric_11704	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family_Total Electric_11705	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family_Total Electric_11706	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Single Family_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PPL_Single Family_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
PPL_Single Family_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PPL_Single Family_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PPL_Single Family_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
PPL_Single Family_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
PPL_Single Family_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
PPL_Multifamily_Appliances_10101	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
PPL_Multifamily_Appliances_10102	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
PPL_Multifamily_Appliances_10103	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.405	0.405
PPL_Multifamily_Appliances_10105	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily_Appliances_10107	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily_Appliances_10108	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily_Appliances_10109	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily_Appliances_10111	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily_Cooling_10301	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Cooling_10303	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Cooling_10305	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Cooling_10306	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Cooling_10309	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Cooling_10311	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Cooling_10313	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Cooling_10314	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
PPL_Multifamily_Cooling_10315	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
PPL_Multifamily_Cooling_10318	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Cooling_10319	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
PPL_Multifamily_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PPL_Multifamily_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PPL_Multifamily_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
PPL_Multifamily_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PPL_Multifamily_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PPL_Multifamily_Other_10601	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.106	0.106
PPL_Multifamily_Other_10602	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.000	0.000
PPL_Multifamily_Other_10603	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.625	0.625
PPL_Multifamily_Other_10604	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.378	0.378
PPL_Multifamily_Other_10605	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.310	0.310
PPL_Multifamily_Plug Loads_10701	21.4%	20.5%	12.8%	11.9%	17.1%	16.4%	0.410	0.410
PPL_Multifamily_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PPL_Multifamily_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PPL_Multifamily_Space Heating_10910	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Multifamily_Space Heating_10911	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily_Space Heating_10914	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily_Space Heating_10915	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily_Space Heating_10916	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily_Space Heating_10918	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily_Space Heating_10920	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily_Space Heating_10921	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily_Space Heating_10922	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PPL_Multifamily_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
PPL_Multifamily_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PPL_Multifamily_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PPL_Multifamily_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
PPL_Multifamily_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PPL_Multifamily_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PPL_Multifamily_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PPL_Multifamily_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PPL_Single Family LI_Appliances_10101	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
PPL_Single Family LI_Appliances_10102	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.026	0.026
PPL_Single Family LI_Appliances_10103	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.405	0.405
PPL_Single Family LI_Appliances_10105	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PPL_Single Family LI_Appliances_10107	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PPL_Single Family LI_Appliances_10108	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.029	0.029
PPL_Single Family LI_Cooling_10301	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10303	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10305	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10306	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10309	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10311	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10313	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10314	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
PPL_Single Family LI_Cooling_10315	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
PPL_Single Family LI_Cooling_10316	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10318	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Cooling_10319	56.8%	43.0%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Single Family LI_Exterior Lighting_10404	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.274	0.274
PPL_Single Family LI_Exterior Lighting_10405	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PPL_Single Family LI_Exterior Lighting_10406	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PPL_Single Family LI_Interior Lighting_10509	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.730	0.730

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Single Family LI_Interior Lighting_10510	18.3%	17.7%	16.0%	12.8%	18.8%	16.4%	0.000	0.000
PPL_Single Family LI_Other_10601	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.106	0.106
PPL_Single Family LI_Other_10604	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.378	0.378
PPL_Single Family LI_Other_10605	19.5%	22.4%	11.7%	13.0%	15.6%	17.8%	0.310	0.310
PPL_Single Family LI_Plug Loads_10701	21.6%	20.3%	12.9%	11.7%	17.3%	16.2%	0.410	0.410
PPL_Single Family LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PPL_Single Family LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PPL_Single Family LI_Space Heating_10910	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Space Heating_10911	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Space Heating_10914	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Space Heating_10915	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Space Heating_10918	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Space Heating_10919	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Space Heating_10920	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Space Heating_10921	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Space Heating_10922	1.2%	1.8%	29.0%	34.8%	13.9%	19.2%	0.000	0.000
PPL_Single Family LI_Total Electric_11702	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family LI_Total Electric_11703	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family LI_Total Electric_11704	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family LI_Total Electric_11705	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family LI_Total Electric_11706	25.0%	23.0%	11.7%	10.6%	15.2%	14.5%	0.439	0.439
PPL_Single Family LI_Water Heating_11103	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family LI_Water Heating_11104	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family LI_Water Heating_11105	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family LI_Water Heating_11106	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family LI_Water Heating_11109	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family LI_Water Heating_11112	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PPL_Single Family LI_Water Heating_11117	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.310	0.310
PPL_Single Family LI_Water Heating_11118	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	1.000	1.000
PPL_Single Family LI_Water Heating_11121	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PPL_Single Family LI_Water Heating_11124	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.004	0.004
PPL_Single Family LI_Water Heating_11126	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.026	0.026
PPL_Single Family LI_Water Heating_11127	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
PPL_Single Family LI_Water Heating_11128	18.6%	17.6%	15.4%	14.0%	17.7%	16.8%	0.029	0.029
PPL_Multifamily LI_Appliances_10101	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
PPL_Multifamily LI_Appliances_10102	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.026	0.026
PPL_Multifamily LI_Appliances_10103	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.405	0.405
PPL_Multifamily LI_Appliances_10105	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily LI_Appliances_10107	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily LI_Appliances_10108	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily LI_Appliances_10109	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily LI_Appliances_10111	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.029	0.029
PPL_Multifamily LI_Cooling_10301	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily LI_Cooling_10303	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily LI_Cooling_10305	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Multifamily LI_Cooling_10306	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily LI_Cooling_10309	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily LI_Cooling_10311	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily LI_Cooling_10313	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily LI_Cooling_10314	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
PPL_Multifamily LI_Cooling_10315	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.000	0.000
PPL_Multifamily LI_Cooling_10318	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily LI_Cooling_10319	56.0%	43.7%	0.0%	0.0%	0.1%	0.1%	0.378	0.378
PPL_Multifamily LI_Exterior Lighting_10404	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.274	0.274
PPL_Multifamily LI_Exterior Lighting_10405	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PPL_Multifamily LI_Exterior Lighting_10406	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PPL_Multifamily LI_Interior Lighting_10509	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.730	0.730
PPL_Multifamily LI_Interior Lighting_10510	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PPL_Multifamily LI_Interior Lighting_10512	17.9%	18.4%	15.5%	13.1%	18.3%	16.9%	0.000	0.000
PPL_Multifamily LI_Other_10601	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.106	0.106
PPL_Multifamily LI_Other_10602	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.000	0.000
PPL_Multifamily LI_Other_10603	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.625	0.625
PPL_Multifamily LI_Other_10604	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.378	0.378
PPL_Multifamily LI_Other_10605	20.3%	21.7%	12.1%	12.6%	16.2%	17.2%	0.310	0.310
PPL_Multifamily LI_Plug Loads_10701	21.4%	20.5%	12.8%	11.9%	17.1%	16.4%	0.410	0.410
PPL_Multifamily LI_Refrigeration_10801	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PPL_Multifamily LI_Refrigeration_10802	21.5%	23.3%	11.1%	11.7%	15.5%	16.8%	1.000	1.000
PPL_Multifamily LI_Space Heating_10910	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Space Heating_10911	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Space Heating_10914	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Space Heating_10915	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Space Heating_10916	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Space Heating_10918	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Space Heating_10920	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Space Heating_10921	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Space Heating_10922	1.9%	2.3%	28.5%	30.4%	16.8%	20.1%	0.000	0.000
PPL_Multifamily LI_Water Heating_11103	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily LI_Water Heating_11104	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily LI_Water Heating_11105	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily LI_Water Heating_11106	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily LI_Water Heating_11109	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily LI_Water Heating_11112	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PPL_Multifamily LI_Water Heating_11117	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.290	0.290
PPL_Multifamily LI_Water Heating_11118	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	1.000	1.000
PPL_Multifamily LI_Water Heating_11121	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PPL_Multifamily LI_Water Heating_11124	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.004	0.004
PPL_Multifamily LI_Water Heating_11126	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.026	0.026
PPL_Multifamily LI_Water Heating_11127	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PPL_Multifamily LI_Water Heating_11128	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PPL_Multifamily LI_Water Heating_11130	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Multifamily LI_Water Heating_11131	18.9%	17.3%	15.6%	13.7%	18.0%	16.5%	0.029	0.029
PPL_Small Education - College/University_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - College/University_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - College/University_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - College/University_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - College/University_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - College/University_Cooling_20301	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20302	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20303	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20304	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20308	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20309	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20311	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20312	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20313	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	1.000	1.000
PPL_Small Education - College/University_Cooling_20314	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20315	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20316	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20317	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20318	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20319	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20320	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20321	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20322	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20323	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20326	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20327	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20328	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20329	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20330	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20331	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20333	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20334	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20335	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20336	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20338	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Cooling_20339	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.482	0.482
PPL_Small Education - College/University_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Education - College/University_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Education - College/University_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Education - College/University_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Education - College/University_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Education - College/University_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
PPL_Small Education - College/University_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
PPL_Small Education - College/University_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
PPL_Small Education - College/University_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
PPL_Small Education - College/University_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - College/University_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - College/University_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - College/University_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - College/University_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - College/University_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - College/University_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - College/University_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - College/University_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - College/University_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - College/University_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - College/University_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - College/University_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - College/University_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
PPL_Small Education - College/University_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - College/University_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - College/University_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
PPL_Small Education - College/University_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - College/University_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - College/University_Space Heating_20910	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20911	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20913	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20914	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20915	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20916	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20917	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20919	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20923	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20925	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20927	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20929	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20932	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20934	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - College/University_Space Heating_20936	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Education - College/University_Total Electric_21701	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21702	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21703	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21704	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21705	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21706	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21707	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21708	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21709	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21710	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21711	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
PPL_Small Education - College/University_Total Electric_21712	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
PPL_Small Education - College/University_Total Electric_21713	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Total Electric_21714	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - College/University_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.429	0.429
PPL_Small Education - College/University_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.429	0.429
PPL_Small Education - College/University_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.429	0.429
PPL_Small Education - College/University_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.429	0.429
PPL_Small Education - College/University_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.429	0.429
PPL_Small Education - College/University_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PPL_Small Education - College/University_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PPL_Small Education - College/University_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PPL_Small Education - College/University_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PPL_Small Education - College/University_Water Heating_21103	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - College/University_Water Heating_21107	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - College/University_Water Heating_21109	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - College/University_Water Heating_21114	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - College/University_Water Heating_21115	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - College/University_Water Heating_21116	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - College/University_Water Heating_21118	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.900	0.900
PPL_Small Education - Other_Cooking_20201	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - Other_Cooking_20202	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - Other_Cooking_20204	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - Other_Cooking_20206	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - Other_Cooking_20208	23.2%	8.2%	20.6%	6.9%	30.9%	10.2%	0.900	0.900
PPL_Small Education - Other_Cooling_20301	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20302	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20303	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20304	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20308	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20309	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20311	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20312	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20313	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	1.000	1.000
PPL_Small Education - Other_Cooling_20314	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Education - Other_Cooling_20315	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20316	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20317	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20318	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20319	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20320	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20321	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20322	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20323	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20326	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20327	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20328	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20329	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20330	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20331	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20333	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20334	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20335	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20336	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20338	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Cooling_20339	87.1%	7.2%	0.0%	0.0%	5.7%	0.1%	0.149	0.149
PPL_Small Education - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Education - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Education - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Education - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Education - Other_Interior Lighting_20508	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20509	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20511	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20512	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20514	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20515	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20517	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
PPL_Small Education - Other_Interior Lighting_20518	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	1.000	1.000
PPL_Small Education - Other_Interior Lighting_20520	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20521	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20522	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
PPL_Small Education - Other_Interior Lighting_20524	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20525	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20529	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.990	0.990
PPL_Small Education - Other_Interior Lighting_20531	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Interior Lighting_20532	20.8%	11.0%	19.1%	8.7%	28.0%	12.4%	0.450	0.450
PPL_Small Education - Other_Plug Loads_20701	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - Other_Plug Loads_20702	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - Other_Plug Loads_20703	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - Other_Plug Loads_20704	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Education - Other_Plug Loads_20705	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - Other_Plug Loads_20706	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - Other_Plug Loads_20707	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - Other_Plug Loads_20708	17.3%	15.0%	16.8%	11.3%	23.8%	15.7%	0.130	0.130
PPL_Small Education - Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - Other_Refrigeration_20805	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - Other_Refrigeration_20806	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - Other_Refrigeration_20807	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
PPL_Small Education - Other_Refrigeration_20808	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - Other_Refrigeration_20809	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - Other_Refrigeration_20811	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
PPL_Small Education - Other_Refrigeration_20818	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - Other_Refrigeration_20821	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Education - Other_Space Heating_20910	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20911	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20913	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20914	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20915	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20916	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20917	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20919	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20923	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20925	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20927	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20929	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20932	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20934	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Space Heating_20936	0.0%	0.0%	37.8%	33.0%	17.3%	11.9%	0.000	0.000
PPL_Small Education - Other_Total Electric_21701	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21702	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21703	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21704	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21705	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21706	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21707	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21708	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21709	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21710	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21711	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
PPL_Small Education - Other_Total Electric_21712	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	1.000	1.000
PPL_Small Education - Other_Total Electric_21713	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Total Electric_21714	29.4%	8.9%	15.5%	10.8%	22.0%	13.4%	0.274	0.274
PPL_Small Education - Other_Ventilation_21001	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.144	0.144
PPL_Small Education - Other_Ventilation_21002	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.144	0.144

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Education - Other_Ventilation_21003	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.144	0.144
PPL_Small Education - Other_Ventilation_21005	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.144	0.144
PPL_Small Education - Other_Ventilation_21006	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.144	0.144
PPL_Small Education - Other_Ventilation_21007	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PPL_Small Education - Other_Ventilation_21008	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PPL_Small Education - Other_Ventilation_21009	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PPL_Small Education - Other_Ventilation_21010	16.7%	1.9%	18.6%	20.0%	21.7%	21.1%	0.481	0.481
PPL_Small Education - Other_Water Heating_21103	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - Other_Water Heating_21107	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - Other_Water Heating_21109	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - Other_Water Heating_21114	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - Other_Water Heating_21115	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - Other_Water Heating_21116	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.463	0.463
PPL_Small Education - Other_Water Heating_21118	30.8%	7.8%	21.2%	5.6%	27.6%	7.0%	0.900	0.900
PPL_Small Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PPL_Small Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PPL_Small Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PPL_Small Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PPL_Small Grocery_Cooling_20301	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20302	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20303	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20304	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20308	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20309	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20311	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20312	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20313	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	1.000	1.000
PPL_Small Grocery_Cooling_20317	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20318	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20319	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20320	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20321	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20322	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20326	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20327	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20328	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20329	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20330	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20331	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20333	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20334	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20335	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20336	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20338	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259
PPL_Small Grocery_Cooling_20339	33.9%	33.7%	4.2%	1.8%	15.6%	10.7%	0.259	0.259

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Grocery_ Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Grocery_ Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Grocery_ Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Grocery_ Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Grocery_ Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
PPL_Small Grocery_ Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
PPL_Small Grocery_ Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
PPL_Small Grocery_ Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
PPL_Small Grocery_ Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Small Grocery_ Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Grocery_ Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Grocery_ Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Grocery_ Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Grocery_ Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Grocery_ Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Grocery_ Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Grocery_ Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Grocery_ Refrigeration_20803	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PPL_Small Grocery_ Refrigeration_20805	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PPL_Small Grocery_ Refrigeration_20806	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PPL_Small Grocery_ Refrigeration_20807	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.094	0.094
PPL_Small Grocery_ Refrigeration_20808	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PPL_Small Grocery_ Refrigeration_20811	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.403	0.403
PPL_Small Grocery_ Refrigeration_20818	20.9%	21.1%	12.4%	12.2%	16.6%	16.8%	0.995	0.995
PPL_Small Grocery_ Space Heating_20910	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20911	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20913	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20915	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20916	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20917	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20919	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20923	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20925	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_ Space Heating_20927	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Grocery_Space Heating_20929	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_Space Heating_20932	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_Space Heating_20934	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_Space Heating_20936	0.0%	0.0%	4.6%	89.7%	0.1%	5.6%	0.000	0.000
PPL_Small Grocery_Total Electric_21701	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21702	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21703	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21704	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21705	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21706	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21707	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21708	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21709	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21710	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21711	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	1.000	1.000
PPL_Small Grocery_Total Electric_21712	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	1.000	1.000
PPL_Small Grocery_Total Electric_21713	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Total Electric_21714	23.3%	23.0%	11.2%	10.3%	16.6%	15.6%	0.947	0.947
PPL_Small Grocery_Ventilation_21001	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.238	0.238
PPL_Small Grocery_Ventilation_21002	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.238	0.238
PPL_Small Grocery_Ventilation_21003	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.238	0.238
PPL_Small Grocery_Ventilation_21005	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.238	0.238
PPL_Small Grocery_Ventilation_21006	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.238	0.238
PPL_Small Grocery_Ventilation_21007	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
PPL_Small Grocery_Ventilation_21008	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
PPL_Small Grocery_Ventilation_21009	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
PPL_Small Grocery_Ventilation_21010	19.6%	21.7%	12.0%	13.5%	15.7%	17.5%	0.883	0.883
PPL_Small Grocery_Water Heating_21103	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Small Grocery_Water Heating_21107	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Small Grocery_Water Heating_21109	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Small Grocery_Water Heating_21114	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Small Grocery_Water Heating_21115	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Small Grocery_Water Heating_21118	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
PPL_Small Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Small Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Small Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Small Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Small Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Small Health - Hospital_Cooling_20301	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20302	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20303	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20304	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20308	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20309	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20311	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Health - Hospital_Cooling_20312	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20313	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	1.000	1.000
PPL_Small Health - Hospital_Cooling_20314	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20315	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20316	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20317	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20318	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20319	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20320	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20321	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20322	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20323	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20326	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20327	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20328	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20329	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20330	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20331	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20333	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20334	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20335	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20336	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20338	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Cooling_20339	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Small Health - Hospital_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Health - Hospital_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Health - Hospital_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Health - Hospital_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
PPL_Small Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
PPL_Small Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
PPL_Small Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
PPL_Small Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Small Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
PPL_Small Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
PPL_Small Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Small Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Small Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Small Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Small Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Small Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Small Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Small Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Small Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Small Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Small Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Small Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Small Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Small Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Small Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Small Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Small Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Small Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Small Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Small Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Small Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
PPL_Small Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Small Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Small Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
PPL_Small Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Small Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Small Health - Hospital_Space Heating_20910	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20911	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20913	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20914	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20915	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20916	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20917	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20919	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20923	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20925	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20927	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20929	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20932	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20934	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Space Heating_20936	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Small Health - Hospital_Total Electric_21701	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21702	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Health - Hospital_Total Electric_21703	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21704	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21705	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21706	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21707	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21708	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21709	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21710	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21711	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
PPL_Small Health - Hospital_Total Electric_21712	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
PPL_Small Health - Hospital_Total Electric_21713	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Total Electric_21714	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Small Health - Hospital_Ventilation_21001	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Small Health - Hospital_Ventilation_21002	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Small Health - Hospital_Ventilation_21003	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Small Health - Hospital_Ventilation_21005	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Small Health - Hospital_Ventilation_21006	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Small Health - Hospital_Ventilation_21007	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
PPL_Small Health - Hospital_Ventilation_21008	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
PPL_Small Health - Hospital_Ventilation_21009	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
PPL_Small Health - Hospital_Ventilation_21010	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
PPL_Small Health - Hospital_Water Heating_21103	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Small Health - Hospital_Water Heating_21107	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Small Health - Hospital_Water Heating_21114	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Small Health - Hospital_Water Heating_21115	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Small Health - Hospital_Water Heating_21116	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Small Health - Hospital_Water Heating_21118	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.900	0.900
PPL_Small Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Small Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Small Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Small Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Small Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Small Health - Other_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
PPL_Small Health - Other_Cooling_20314	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Health - Other_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20326	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20327	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20328	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20329	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Small Health - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Health - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Health - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Health - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PPL_Small Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PPL_Small Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PPL_Small Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PPL_Small Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Small Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PPL_Small Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PPL_Small Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
PPL_Small Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Health - Other_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20914	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20925	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20927	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Health - Other_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
PPL_Small Health - Other_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
PPL_Small Health - Other_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Health - Other_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Small Health - Other_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Small Health - Other_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Health - Other_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Small Health - Other_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Small Health - Other_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Small Health - Other_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Small Health - Other_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Small Health - Other_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Small Health - Other_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Health - Other_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Health - Other_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Health - Other_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Health - Other_Water Heating_21116	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Health - Other_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
PPL_Small Industrial Manufacturing_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Industrial Manufacturing_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Industrial Manufacturing_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Industrial Manufacturing_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PPL_Small Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PPL_Small Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Small Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Small Institutional/Public Service_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
PPL_Small Institutional/Public Service_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Institutional/Public Service_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20326	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20327	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20328	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20329	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Small Institutional/Public Service_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Institutional/Public Service_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Institutional/Public Service_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Institutional/Public Service_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PPL_Small Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PPL_Small Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PPL_Small Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PPL_Small Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Small Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PPL_Small Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PPL_Small Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
PPL_Small Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Small Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Small Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PPL_Small Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PPL_Small Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Institutional/Public Service_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20925	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20927	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Small Institutional/Public Service_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Institutional/Public Service_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
PPL_Small Institutional/Public Service_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
PPL_Small Institutional/Public Service_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Small Institutional/Public Service_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Small Institutional/Public Service_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Small Institutional/Public Service_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Small Institutional/Public Service_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Small Institutional/Public Service_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Small Institutional/Public Service_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Small Institutional/Public Service_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Small Institutional/Public Service_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Small Institutional/Public Service_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Small Institutional/Public Service_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Institutional/Public Service_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Institutional/Public Service_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Institutional/Public Service_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Institutional/Public Service_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Institutional/Public Service_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
PPL_Small Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Small Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Small Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Small Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Small Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Small Lodging_Cooling_20301	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20302	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20303	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20304	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20308	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20309	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20311	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20312	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20313	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
PPL_Small Lodging_Cooling_20315	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20316	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20317	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20318	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20319	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20320	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20321	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20322	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20323	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20324	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20325	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20326	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Lodging_Cooling_20327	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20328	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20329	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20330	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20331	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20333	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20334	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20335	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20336	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20338	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Cooling_20339	58.1%	41.9%	0.0%	0.0%	0.0%	0.0%	0.767	0.767
PPL_Small Lodging_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Lodging_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Lodging_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Lodging_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
PPL_Small Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
PPL_Small Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
PPL_Small Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
PPL_Small Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Small Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
PPL_Small Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
PPL_Small Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
PPL_Small Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Small Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Small Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Small Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Small Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Small Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Small Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Small Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Small Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Small Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Small Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Small Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Small Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Small Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Small Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Small Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Small Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Small Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Small Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Small Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PPL_Small Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Small Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Small Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PPL_Small Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Small Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Small Lodging_Space Heating_20910	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20911	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20913	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20914	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20915	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20916	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20917	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20919	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20921	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20923	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20925	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20927	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20929	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20932	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20934	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Space Heating_20936	0.0%	0.2%	29.4%	43.8%	7.9%	18.7%	0.000	0.000
PPL_Small Lodging_Total Electric_21701	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21702	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21703	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21704	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21705	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21706	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21707	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21708	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21709	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21710	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21711	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	1.000	1.000
PPL_Small Lodging_Total Electric_21712	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	1.000	1.000
PPL_Small Lodging_Total Electric_21713	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719
PPL_Small Lodging_Total Electric_21714	28.7%	25.6%	9.8%	9.7%	13.0%	13.2%	0.719	0.719

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Lodging_Ventilation_21001	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.680	0.680
PPL_Small Lodging_Ventilation_21002	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.680	0.680
PPL_Small Lodging_Ventilation_21003	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.680	0.680
PPL_Small Lodging_Ventilation_21005	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.680	0.680
PPL_Small Lodging_Ventilation_21006	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.680	0.680
PPL_Small Lodging_Ventilation_21007	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
PPL_Small Lodging_Ventilation_21008	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
PPL_Small Lodging_Ventilation_21009	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
PPL_Small Lodging_Ventilation_21010	19.8%	21.9%	11.9%	12.8%	15.9%	17.6%	0.991	0.991
PPL_Small Lodging_Water Heating_21103	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Small Lodging_Water Heating_21107	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Small Lodging_Water Heating_21109	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Small Lodging_Water Heating_21114	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Small Lodging_Water Heating_21115	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Small Lodging_Water Heating_21116	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Small Lodging_Water Heating_21118	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.900	0.900
PPL_Small Miscellaneous/Other_Cooling_20301	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20302	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20303	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20304	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20308	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20309	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20311	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20312	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20313	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	1.000	1.000
PPL_Small Miscellaneous/Other_Cooling_20317	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20318	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20319	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20320	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20321	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20322	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20326	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20327	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20328	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20329	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20330	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20331	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20333	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20334	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20335	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20336	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20338	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Cooling_20339	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.480	0.480
PPL_Small Miscellaneous/Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Miscellaneous/Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Miscellaneous/Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Miscellaneous/Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Miscellaneous/Other_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
PPL_Small Miscellaneous/Other_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
PPL_Small Miscellaneous/Other_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
PPL_Small Miscellaneous/Other_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
PPL_Small Miscellaneous/Other_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.580	0.580
PPL_Small Miscellaneous/Other_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
PPL_Small Miscellaneous/Other_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
PPL_Small Miscellaneous/Other_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
PPL_Small Miscellaneous/Other_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Miscellaneous/Other_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Miscellaneous/Other_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Miscellaneous/Other_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Miscellaneous/Other_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Miscellaneous/Other_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Miscellaneous/Other_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Miscellaneous/Other_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Miscellaneous/Other_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Miscellaneous/Other_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Miscellaneous/Other_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Miscellaneous/Other_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Miscellaneous/Other_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Miscellaneous/Other_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Miscellaneous/Other_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Miscellaneous/Other_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Miscellaneous/Other_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Miscellaneous/Other_Refrigeration_20802	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Miscellaneous/Other_Space Heating_20910	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20911	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20913	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20915	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20916	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20917	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Miscellaneous/Other_Space Heating_20919	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20923	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20925	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20927	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20929	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20932	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20934	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Space Heating_20936	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Miscellaneous/Other_Total Electric_21701	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21702	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21703	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21704	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21705	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21706	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21707	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21708	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21709	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21710	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21711	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
PPL_Small Miscellaneous/Other_Total Electric_21712	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
PPL_Small Miscellaneous/Other_Total Electric_21713	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Total Electric_21714	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Miscellaneous/Other_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.394	0.394
PPL_Small Miscellaneous/Other_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.394	0.394
PPL_Small Miscellaneous/Other_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.394	0.394
PPL_Small Miscellaneous/Other_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.394	0.394
PPL_Small Miscellaneous/Other_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.394	0.394
PPL_Small Miscellaneous/Other_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PPL_Small Miscellaneous/Other_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PPL_Small Miscellaneous/Other_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PPL_Small Miscellaneous/Other_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PPL_Small Miscellaneous/Other_Water Heating_21103	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Miscellaneous/Other_Water Heating_21107	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Miscellaneous/Other_Water Heating_21109	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Miscellaneous/Other_Water Heating_21114	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Miscellaneous/Other_Water Heating_21115	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Miscellaneous/Other_Water Heating_21118	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.900	0.900
PPL_Small Office_Cooking_20201	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
PPL_Small Office_Cooking_20202	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
PPL_Small Office_Cooking_20206	34.6%	7.3%	20.1%	4.2%	27.9%	5.9%	0.900	0.900
PPL_Small Office_Cooling_20301	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20302	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20303	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20304	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20308	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Office_Cooling_20309	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20311	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20312	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20313	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	1.000	1.000
PPL_Small Office_Cooling_20314	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20315	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20316	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20317	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20318	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20319	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20320	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20321	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20322	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20323	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20326	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20327	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20328	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20329	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20330	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20331	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20333	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20334	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20335	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20336	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20338	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Cooling_20339	70.9%	18.7%	0.1%	0.0%	10.0%	0.2%	0.332	0.332
PPL_Small Office_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Office_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Office_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Office_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Office_Interior Lighting_20508	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20509	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20511	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20512	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20514	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20515	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20517	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
PPL_Small Office_Interior Lighting_20518	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	1.000	1.000
PPL_Small Office_Interior Lighting_20520	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20521	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20522	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
PPL_Small Office_Interior Lighting_20524	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20525	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Interior Lighting_20529	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.990	0.990
PPL_Small Office_Interior Lighting_20531	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Office_Interior Lighting_20532	32.4%	9.5%	18.9%	5.5%	26.1%	7.6%	0.480	0.480
PPL_Small Office_Other_20601	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
PPL_Small Office_Other_20602	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.900	0.900
PPL_Small Office_Other_20603	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.405	0.405
PPL_Small Office_Other_20604	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Office_Other_20606	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Office_Other_20607	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Office_Other_20610	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Office_Other_20611	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Office_Other_20613	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Office_Other_20614	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Office_Other_20615	27.1%	14.8%	15.9%	8.6%	21.8%	11.8%	0.718	0.718
PPL_Small Office_Plug Loads_20701	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Office_Plug Loads_20702	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Office_Plug Loads_20703	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Office_Plug Loads_20704	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Office_Plug Loads_20705	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Office_Plug Loads_20706	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Office_Plug Loads_20707	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Office_Plug Loads_20708	23.5%	18.4%	13.9%	10.7%	18.9%	14.7%	0.834	0.834
PPL_Small Office_Refrigeration_20801	20.8%	21.1%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Small Office_Space Heating_20910	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20911	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20913	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20914	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20915	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20916	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20917	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20919	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20923	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20925	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20927	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20929	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20932	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20934	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Space Heating_20936	0.0%	0.1%	25.7%	44.2%	6.9%	23.1%	0.000	0.000
PPL_Small Office_Total Electric_21701	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21702	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21703	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21704	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21705	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21706	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21707	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21708	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21709	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Office_Total Electric_21710	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21711	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
PPL_Small Office_Total Electric_21712	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	1.000	1.000
PPL_Small Office_Total Electric_21713	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Total Electric_21714	35.4%	15.6%	12.8%	7.1%	19.4%	9.7%	0.760	0.760
PPL_Small Office_Ventilation_21001	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.339	0.339
PPL_Small Office_Ventilation_21002	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.339	0.339
PPL_Small Office_Ventilation_21003	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.339	0.339
PPL_Small Office_Ventilation_21005	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.339	0.339
PPL_Small Office_Ventilation_21006	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.339	0.339
PPL_Small Office_Ventilation_21007	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PPL_Small Office_Ventilation_21008	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PPL_Small Office_Ventilation_21009	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PPL_Small Office_Ventilation_21010	19.6%	21.7%	12.1%	13.1%	15.9%	17.7%	0.962	0.962
PPL_Small Office_Water Heating_21103	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Office_Water Heating_21107	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Office_Water Heating_21109	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Office_Water Heating_21114	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Office_Water Heating_21115	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.725	0.725
PPL_Small Office_Water Heating_21118	19.4%	18.3%	14.7%	13.6%	17.5%	16.5%	0.900	0.900
PPL_Small Restaurant_Cooking_20201	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PPL_Small Restaurant_Cooking_20202	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PPL_Small Restaurant_Cooking_20204	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PPL_Small Restaurant_Cooking_20206	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PPL_Small Restaurant_Cooking_20208	24.9%	17.2%	14.7%	9.9%	19.7%	13.7%	0.900	0.900
PPL_Small Restaurant_Cooling_20301	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20302	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20303	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20304	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20308	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20309	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20311	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20312	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20313	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	1.000	1.000
PPL_Small Restaurant_Cooling_20317	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20318	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20319	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20320	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20321	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20322	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20326	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20327	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20328	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20329	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20330	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Restaurant_Cooling_20331	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20333	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20334	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20335	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20336	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20338	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Cooling_20339	45.2%	37.9%	0.7%	0.1%	11.1%	5.1%	0.430	0.430
PPL_Small Restaurant_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Restaurant_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Restaurant_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Restaurant_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Restaurant_Interior Lighting_20508	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20509	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20511	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20512	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20514	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20515	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20517	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
PPL_Small Restaurant_Interior Lighting_20518	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	1.000	1.000
PPL_Small Restaurant_Interior Lighting_20520	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20521	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20522	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
PPL_Small Restaurant_Interior Lighting_20524	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20525	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20529	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.990	0.990
PPL_Small Restaurant_Interior Lighting_20531	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Interior Lighting_20532	23.0%	19.0%	13.6%	11.0%	18.2%	15.1%	0.770	0.770
PPL_Small Restaurant_Other_20601	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
PPL_Small Restaurant_Other_20602	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.900	0.900
PPL_Small Restaurant_Other_20603	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	0.405	0.405
PPL_Small Restaurant_Other_20604	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PPL_Small Restaurant_Other_20606	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PPL_Small Restaurant_Other_20607	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PPL_Small Restaurant_Other_20610	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PPL_Small Restaurant_Other_20611	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PPL_Small Restaurant_Other_20613	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PPL_Small Restaurant_Other_20614	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PPL_Small Restaurant_Other_20615	22.8%	19.2%	13.5%	11.1%	18.1%	15.3%	1.000	1.000
PPL_Small Restaurant_Plug Loads_20701	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Restaurant_Plug Loads_20702	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Restaurant_Plug Loads_20703	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Restaurant_Plug Loads_20704	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Restaurant_Plug Loads_20705	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Restaurant_Plug Loads_20706	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Restaurant_Plug Loads_20707	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Restaurant_Plug Loads_20708	21.6%	20.4%	12.8%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Small Restaurant_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PPL_Small Restaurant_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PPL_Small Restaurant_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PPL_Small Restaurant_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PPL_Small Restaurant_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
PPL_Small Restaurant_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PPL_Small Restaurant_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PPL_Small Restaurant_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
PPL_Small Restaurant_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PPL_Small Restaurant_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.5%	16.9%	0.987	0.987
PPL_Small Restaurant_Space Heating_20910	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20911	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20913	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20914	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20915	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20916	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20917	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20923	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20925	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20927	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20929	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20932	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20934	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Space Heating_20936	0.0%	0.0%	24.6%	56.9%	2.6%	15.9%	0.000	0.000
PPL_Small Restaurant_Total Electric_21701	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21702	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21703	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21704	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21705	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21706	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21707	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21708	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21709	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21710	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21711	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	1.000	1.000
PPL_Small Restaurant_Total Electric_21712	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	1.000	1.000
PPL_Small Restaurant_Total Electric_21713	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Total Electric_21714	26.1%	23.6%	10.6%	9.6%	16.0%	14.1%	0.933	0.933
PPL_Small Restaurant_Ventilation_21001	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.426	0.426
PPL_Small Restaurant_Ventilation_21002	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.426	0.426
PPL_Small Restaurant_Ventilation_21003	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.426	0.426
PPL_Small Restaurant_Ventilation_21007	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
PPL_Small Restaurant_Ventilation_21008	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
PPL_Small Restaurant_Ventilation_21009	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Restaurant_Ventilation_21010	19.1%	21.1%	12.6%	13.7%	15.6%	17.9%	0.892	0.892
PPL_Small Restaurant_Water Heating_21103	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
PPL_Small Restaurant_Water Heating_21107	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
PPL_Small Restaurant_Water Heating_21109	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
PPL_Small Restaurant_Water Heating_21114	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
PPL_Small Restaurant_Water Heating_21115	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.685	0.685
PPL_Small Restaurant_Water Heating_21118	22.8%	15.0%	17.2%	11.0%	20.4%	13.5%	0.900	0.900
PPL_Small Retail_Cooking_20201	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PPL_Small Retail_Cooking_20202	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PPL_Small Retail_Cooking_20204	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PPL_Small Retail_Cooking_20206	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PPL_Small Retail_Cooking_20208	34.5%	7.6%	20.3%	4.2%	27.2%	6.2%	0.900	0.900
PPL_Small Retail_Cooling_20301	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20302	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20303	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20304	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20308	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20309	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20311	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20312	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20313	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	1.000	1.000
PPL_Small Retail_Cooling_20317	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20318	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20319	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20320	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20321	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20322	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20326	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20327	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20328	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20329	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20330	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20331	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20333	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20334	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20335	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20336	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20338	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Cooling_20339	68.5%	17.3%	0.4%	0.0%	12.0%	1.8%	0.513	0.513
PPL_Small Retail_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Retail_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Retail_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Retail_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Retail_Interior Lighting_20508	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20509	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Retail_Interior Lighting_20511	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20512	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20514	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20515	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20517	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
PPL_Small Retail_Interior Lighting_20518	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	1.000	1.000
PPL_Small Retail_Interior Lighting_20520	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20521	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20522	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
PPL_Small Retail_Interior Lighting_20524	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20525	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20529	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.990	0.990
PPL_Small Retail_Interior Lighting_20531	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Interior Lighting_20532	30.3%	11.7%	17.9%	6.7%	24.0%	9.4%	0.660	0.660
PPL_Small Retail_Other_20601	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
PPL_Small Retail_Other_20602	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.900	0.900
PPL_Small Retail_Other_20603	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.405	0.405
PPL_Small Retail_Other_20604	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PPL_Small Retail_Other_20606	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PPL_Small Retail_Other_20607	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PPL_Small Retail_Other_20610	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PPL_Small Retail_Other_20611	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PPL_Small Retail_Other_20613	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PPL_Small Retail_Other_20614	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PPL_Small Retail_Other_20615	27.2%	14.9%	16.0%	8.5%	21.5%	11.9%	0.987	0.987
PPL_Small Retail_Plug Loads_20701	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PPL_Small Retail_Plug Loads_20702	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PPL_Small Retail_Plug Loads_20703	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PPL_Small Retail_Plug Loads_20704	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PPL_Small Retail_Plug Loads_20705	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PPL_Small Retail_Plug Loads_20706	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PPL_Small Retail_Plug Loads_20707	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PPL_Small Retail_Plug Loads_20708	23.8%	18.1%	14.1%	10.5%	18.9%	14.5%	0.985	0.985
PPL_Small Retail_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Retail_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Retail_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Retail_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PPL_Small Retail_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Retail_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Retail_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PPL_Small Retail_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Retail_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Small Retail_Space Heating_20910	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20911	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20913	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Retail_Space Heating_20915	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20916	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20917	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20919	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20923	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20925	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20927	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20929	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20932	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20934	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Space Heating_20936	0.0%	0.0%	22.7%	48.1%	5.7%	23.5%	0.000	0.000
PPL_Small Retail_Total Electric_21701	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21702	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21703	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21704	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21705	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21706	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21707	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21708	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21709	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21710	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21711	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	1.000	1.000
PPL_Small Retail_Total Electric_21712	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	1.000	1.000
PPL_Small Retail_Total Electric_21713	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Total Electric_21714	34.3%	15.6%	12.9%	7.5%	19.3%	10.5%	0.916	0.916
PPL_Small Retail_Ventilation_21001	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.501	0.501
PPL_Small Retail_Ventilation_21002	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.501	0.501
PPL_Small Retail_Ventilation_21003	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.501	0.501
PPL_Small Retail_Ventilation_21005	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.501	0.501
PPL_Small Retail_Ventilation_21006	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.501	0.501
PPL_Small Retail_Ventilation_21007	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
PPL_Small Retail_Ventilation_21008	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
PPL_Small Retail_Ventilation_21009	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
PPL_Small Retail_Ventilation_21010	17.2%	20.5%	13.2%	14.2%	16.3%	18.7%	0.952	0.952
PPL_Small Retail_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Retail_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Retail_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Retail_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Retail_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Small Retail_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
PPL_Small Warehouse_Cooling_20301	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20302	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20303	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20304	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20308	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Warehouse_Cooling_20309	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20311	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20312	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20313	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
PPL_Small Warehouse_Cooling_20314	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20315	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20316	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20317	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20318	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20319	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20320	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20321	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20322	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20323	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20326	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20327	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20328	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20329	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20330	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20331	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20333	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20334	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20335	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20336	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20337	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20338	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Cooling_20339	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Small Warehouse_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Warehouse_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Small Warehouse_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Warehouse_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Small Warehouse_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PPL_Small Warehouse_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PPL_Small Warehouse_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Small Warehouse_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Warehouse_Other_20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
PPL_Small Warehouse_Other_20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
PPL_Small Warehouse_Other_20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
PPL_Small Warehouse_Other_20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Warehouse_Other_20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Warehouse_Other_20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Warehouse_Other_20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Warehouse_Other_20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Warehouse_Other_20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Warehouse_Other_20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Warehouse_Other_20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Small Warehouse_Plug Loads_20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Small Warehouse_Plug Loads_20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Small Warehouse_Plug Loads_20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Small Warehouse_Plug Loads_20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Small Warehouse_Plug Loads_20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Small Warehouse_Plug Loads_20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Small Warehouse_Plug Loads_20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Small Warehouse_Plug Loads_20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Small Warehouse_Refrigeration_20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Small Warehouse_Refrigeration_20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Small Warehouse_Refrigeration_20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Small Warehouse_Refrigeration_20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
PPL_Small Warehouse_Refrigeration_20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Small Warehouse_Refrigeration_20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
PPL_Small Warehouse_Refrigeration_20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Small Warehouse_Space Heating_20910	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20911	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20913	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20914	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20915	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20916	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20917	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20919	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20923	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20925	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20927	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20929	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20932	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20934	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Space Heating_20936	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Small Warehouse_Total Electric_21701	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21702	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21703	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21704	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Small Warehouse_Total Electric_21705	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21706	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21707	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21708	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21709	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21710	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21711	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
PPL_Small Warehouse_Total Electric_21712	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
PPL_Small Warehouse_Total Electric_21713	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Total Electric_21714	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Small Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Small Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Small Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Small Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Small Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Small Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PPL_Small Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PPL_Small Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PPL_Small Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PPL_Small Warehouse_Water Heating_21103	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Small Warehouse_Water Heating_21107	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Small Warehouse_Water Heating_21109	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Small Warehouse_Water Heating_21114	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Small Warehouse_Water Heating_21115	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Small Warehouse_Water Heating_21118	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.900	0.900
PPL_Large Education - College/University_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - College/University_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - College/University_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - College/University_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - College/University_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - College/University_Cooling_20301	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20302	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20303	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20304	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20308	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20309	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20311	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20312	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20313	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	1.000	1.000
PPL_Large Education - College/University_Cooling_20314	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20315	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20316	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20317	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20318	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20319	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Education - College/University_Cooling_20320	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20321	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20322	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20323	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20330	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20331	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20333	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20334	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20335	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20336	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20338	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Cooling_20339	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.482	0.482
PPL_Large Education - College/University_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Education - College/University_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Education - College/University_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Education - College/University_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Education - College/University_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
PPL_Large Education - College/University_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
PPL_Large Education - College/University_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
PPL_Large Education - College/University_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
PPL_Large Education - College/University_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - College/University_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - College/University_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - College/University_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - College/University_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - College/University_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - College/University_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - College/University_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - College/University_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - College/University_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - College/University_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - College/University_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - College/University_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - College/University_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Education - College/University_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - College/University_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - College/University_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
PPL_Large Education - College/University_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - College/University_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - College/University_Space Heating_20910	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20911	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20913	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20914	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20915	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20916	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20917	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20919	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20923	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20929	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20932	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20934	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Space Heating_20936	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - College/University_Total Electric_21701	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21702	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21703	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21704	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21705	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21706	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21707	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21708	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21709	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21710	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21711	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
PPL_Large Education - College/University_Total Electric_21712	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
PPL_Large Education - College/University_Total Electric_21713	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Total Electric_21714	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - College/University_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.429	0.429
PPL_Large Education - College/University_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.429	0.429
PPL_Large Education - College/University_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.429	0.429
PPL_Large Education - College/University_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.429	0.429
PPL_Large Education - College/University_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.429	0.429
PPL_Large Education - College/University_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PPL_Large Education - College/University_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PPL_Large Education - College/University_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PPL_Large Education - College/University_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PPL_Large Education - College/University_Water Heating_21103	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - College/University_Water Heating_21107	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - College/University_Water Heating_21109	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - College/University_Water Heating_21114	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Education - College/University_Water Heating_21115	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - College/University_Water Heating_21116	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - College/University_Water Heating_21118	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
PPL_Large Education - Other_Cooking_20201	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - Other_Cooking_20202	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - Other_Cooking_20204	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - Other_Cooking_20206	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - Other_Cooking_20208	28.0%	10.8%	17.8%	6.9%	26.5%	10.1%	0.900	0.900
PPL_Large Education - Other_Cooling_20301	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20302	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20303	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20304	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20308	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20309	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20311	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20312	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20313	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	1.000	1.000
PPL_Large Education - Other_Cooling_20314	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20315	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20316	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20317	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20318	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20319	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20320	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20321	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20322	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20323	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20330	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20331	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20333	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20334	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20335	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20336	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20338	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Cooling_20339	87.3%	7.7%	0.0%	0.0%	5.0%	0.0%	0.149	0.149
PPL_Large Education - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Education - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Education - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Education - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Education - Other_Interior Lighting_20508	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20509	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20511	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20512	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20514	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20515	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Education - Other_Interior Lighting_20517	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
PPL_Large Education - Other_Interior Lighting_20518	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	1.000	1.000
PPL_Large Education - Other_Interior Lighting_20520	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20521	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20522	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
PPL_Large Education - Other_Interior Lighting_20524	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20525	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20529	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.990	0.990
PPL_Large Education - Other_Interior Lighting_20531	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Interior Lighting_20532	23.5%	13.9%	16.2%	9.8%	23.1%	13.5%	0.450	0.450
PPL_Large Education - Other_Plug Loads_20701	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - Other_Plug Loads_20702	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - Other_Plug Loads_20703	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - Other_Plug Loads_20704	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - Other_Plug Loads_20705	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - Other_Plug Loads_20706	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - Other_Plug Loads_20707	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - Other_Plug Loads_20708	18.5%	17.9%	14.1%	12.7%	19.4%	17.5%	0.542	0.542
PPL_Large Education - Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - Other_Refrigeration_20805	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - Other_Refrigeration_20806	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - Other_Refrigeration_20807	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.094	0.094
PPL_Large Education - Other_Refrigeration_20808	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - Other_Refrigeration_20809	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - Other_Refrigeration_20811	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.403	0.403
PPL_Large Education - Other_Refrigeration_20818	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - Other_Refrigeration_20821	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Education - Other_Space Heating_20910	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20911	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20913	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20914	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20915	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20916	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20917	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20919	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20923	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20929	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20932	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20934	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Space Heating_20936	0.1%	0.2%	38.4%	36.9%	12.6%	11.8%	0.000	0.000
PPL_Large Education - Other_Total Electric_21701	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21702	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21703	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21704	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Education - Other_Total Electric_21705	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21706	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21707	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21708	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21709	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21710	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21711	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
PPL_Large Education - Other_Total Electric_21712	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	1.000	1.000
PPL_Large Education - Other_Total Electric_21713	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Total Electric_21714	28.5%	14.1%	13.5%	10.4%	19.4%	14.2%	0.560	0.560
PPL_Large Education - Other_Ventilation_21001	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.144	0.144
PPL_Large Education - Other_Ventilation_21002	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.144	0.144
PPL_Large Education - Other_Ventilation_21003	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.144	0.144
PPL_Large Education - Other_Ventilation_21005	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.144	0.144
PPL_Large Education - Other_Ventilation_21006	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.144	0.144
PPL_Large Education - Other_Ventilation_21007	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PPL_Large Education - Other_Ventilation_21008	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PPL_Large Education - Other_Ventilation_21009	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PPL_Large Education - Other_Ventilation_21010	18.0%	13.3%	14.1%	15.1%	18.8%	20.7%	0.558	0.558
PPL_Large Education - Other_Water Heating_21103	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - Other_Water Heating_21107	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - Other_Water Heating_21109	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - Other_Water Heating_21114	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - Other_Water Heating_21115	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - Other_Water Heating_21116	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.579	0.579
PPL_Large Education - Other_Water Heating_21118	30.1%	8.3%	20.9%	6.1%	27.0%	7.5%	0.900	0.900
PPL_Large Grocery_Cooking_20201	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PPL_Large Grocery_Cooking_20202	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PPL_Large Grocery_Cooking_20206	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PPL_Large Grocery_Cooking_20208	23.2%	18.9%	13.7%	10.9%	18.3%	15.0%	0.900	0.900
PPL_Large Grocery_Cooling_20301	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20302	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20303	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20304	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20308	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20309	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20311	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20312	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20313	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	1.000	1.000
PPL_Large Grocery_Cooling_20317	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20318	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20319	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20320	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20321	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20322	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Grocery_Cooling_20330	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20331	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20333	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20334	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20335	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20336	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20338	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Cooling_20339	52.3%	39.7%	0.0%	0.0%	5.8%	2.2%	0.259	0.259
PPL_Large Grocery_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Grocery_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Grocery_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Grocery_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Grocery_Interior Lighting_20508	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20509	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20511	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20512	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20514	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20515	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20517	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
PPL_Large Grocery_Interior Lighting_20518	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	1.000	1.000
PPL_Large Grocery_Interior Lighting_20520	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20521	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20522	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
PPL_Large Grocery_Interior Lighting_20524	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20525	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20529	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.990	0.990
PPL_Large Grocery_Interior Lighting_20531	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Interior Lighting_20532	23.9%	18.1%	14.1%	10.4%	19.0%	14.4%	0.930	0.930
PPL_Large Grocery_Plug Loads_20701	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Large Grocery_Plug Loads_20702	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Large Grocery_Plug Loads_20703	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Large Grocery_Plug Loads_20704	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Large Grocery_Plug Loads_20705	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Large Grocery_Plug Loads_20706	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Large Grocery_Plug Loads_20707	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Large Grocery_Plug Loads_20708	21.7%	20.3%	12.9%	11.8%	17.2%	16.2%	1.000	1.000
PPL_Large Grocery_Refrigeration_20803	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PPL_Large Grocery_Refrigeration_20805	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PPL_Large Grocery_Refrigeration_20806	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PPL_Large Grocery_Refrigeration_20807	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.094	0.094
PPL_Large Grocery_Refrigeration_20808	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PPL_Large Grocery_Refrigeration_20811	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.403	0.403
PPL_Large Grocery_Refrigeration_20818	21.7%	22.4%	11.6%	11.9%	15.8%	16.6%	0.974	0.974
PPL_Large Grocery_Space Heating_20910	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20911	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Grocery_Space Heating_20913	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20915	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20916	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20917	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20919	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20923	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20929	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20932	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20934	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Space Heating_20936	0.0%	0.4%	25.7%	46.0%	5.7%	22.1%	0.000	0.000
PPL_Large Grocery_Total Electric_21701	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21702	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21703	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21704	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21705	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21706	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21707	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21708	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21709	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21710	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21711	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	1.000	1.000
PPL_Large Grocery_Total Electric_21712	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	1.000	1.000
PPL_Large Grocery_Total Electric_21713	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Total Electric_21714	24.7%	23.2%	11.0%	10.7%	15.4%	15.0%	0.906	0.906
PPL_Large Grocery_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.238	0.238
PPL_Large Grocery_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.238	0.238
PPL_Large Grocery_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.238	0.238
PPL_Large Grocery_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.238	0.238
PPL_Large Grocery_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.238	0.238
PPL_Large Grocery_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
PPL_Large Grocery_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
PPL_Large Grocery_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
PPL_Large Grocery_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.6%	0.994	0.994
PPL_Large Grocery_Water Heating_21103	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Large Grocery_Water Heating_21107	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Large Grocery_Water Heating_21109	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Large Grocery_Water Heating_21114	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Large Grocery_Water Heating_21115	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.701	0.701
PPL_Large Grocery_Water Heating_21118	23.0%	14.7%	17.4%	10.8%	20.6%	13.3%	0.900	0.900
PPL_Large Health - Hospital_Cooking_20201	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Large Health - Hospital_Cooking_20202	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Large Health - Hospital_Cooking_20204	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Large Health - Hospital_Cooking_20206	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Large Health - Hospital_Cooking_20208	23.8%	18.1%	14.2%	10.5%	19.0%	14.4%	0.900	0.900
PPL_Large Health - Hospital_Cooling_20301	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Health - Hospital_Cooling_20302	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20303	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20304	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20308	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20309	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20311	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20312	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20313	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	1.000	1.000
PPL_Large Health - Hospital_Cooling_20314	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20315	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20316	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20317	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20318	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20319	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20320	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20321	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20322	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20323	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20330	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20331	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20333	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20334	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20335	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20336	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20338	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Cooling_20339	46.3%	38.1%	2.7%	2.8%	5.7%	4.4%	0.413	0.413
PPL_Large Health - Hospital_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Health - Hospital_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Health - Hospital_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Health - Hospital_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Health - Hospital_Interior Lighting_20508	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20509	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20511	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20512	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20514	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20515	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20517	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
PPL_Large Health - Hospital_Interior Lighting_20518	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	1.000	1.000
PPL_Large Health - Hospital_Interior Lighting_20520	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20521	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20522	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
PPL_Large Health - Hospital_Interior Lighting_20524	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20525	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Interior Lighting_20529	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.990	0.990
PPL_Large Health - Hospital_Interior Lighting_20531	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Health - Hospital_Interior Lighting_20532	22.3%	19.6%	13.3%	11.4%	17.8%	15.6%	0.520	0.520
PPL_Large Health - Hospital_Other_20601	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
PPL_Large Health - Hospital_Other_20602	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.900	0.900
PPL_Large Health - Hospital_Other_20603	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.405	0.405
PPL_Large Health - Hospital_Other_20604	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Large Health - Hospital_Other_20606	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Large Health - Hospital_Other_20607	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Large Health - Hospital_Other_20610	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Large Health - Hospital_Other_20611	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Large Health - Hospital_Other_20613	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Large Health - Hospital_Other_20614	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Large Health - Hospital_Other_20615	22.1%	19.8%	13.2%	11.5%	17.6%	15.8%	0.885	0.885
PPL_Large Health - Hospital_Plug Loads_20701	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Large Health - Hospital_Plug Loads_20702	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Large Health - Hospital_Plug Loads_20703	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Large Health - Hospital_Plug Loads_20704	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Large Health - Hospital_Plug Loads_20705	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Large Health - Hospital_Plug Loads_20706	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Large Health - Hospital_Plug Loads_20707	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Large Health - Hospital_Plug Loads_20708	21.7%	20.2%	13.0%	11.7%	17.3%	16.1%	0.958	0.958
PPL_Large Health - Hospital_Refrigeration_20801	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Large Health - Hospital_Refrigeration_20802	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Large Health - Hospital_Refrigeration_20805	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Large Health - Hospital_Refrigeration_20806	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Large Health - Hospital_Refrigeration_20807	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.094	0.094
PPL_Large Health - Hospital_Refrigeration_20808	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Large Health - Hospital_Refrigeration_20809	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Large Health - Hospital_Refrigeration_20811	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.403	0.403
PPL_Large Health - Hospital_Refrigeration_20818	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Large Health - Hospital_Refrigeration_20821	20.7%	21.2%	12.4%	12.3%	16.5%	16.9%	0.959	0.959
PPL_Large Health - Hospital_Space Heating_20910	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20911	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20913	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20914	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20915	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20916	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20917	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20919	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20923	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20929	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20932	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20934	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Space Heating_20936	0.3%	1.1%	26.8%	42.1%	8.3%	21.4%	0.047	0.047
PPL_Large Health - Hospital_Total Electric_21701	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21702	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Health - Hospital_Total Electric_21703	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21704	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21705	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21706	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21707	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21708	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21709	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21710	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21711	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
PPL_Large Health - Hospital_Total Electric_21712	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	1.000	1.000
PPL_Large Health - Hospital_Total Electric_21713	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Total Electric_21714	27.5%	24.6%	10.5%	9.7%	14.3%	13.4%	0.810	0.810
PPL_Large Health - Hospital_Ventilation_21001	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Large Health - Hospital_Ventilation_21002	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Large Health - Hospital_Ventilation_21003	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Large Health - Hospital_Ventilation_21005	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Large Health - Hospital_Ventilation_21006	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.436	0.436
PPL_Large Health - Hospital_Ventilation_21007	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
PPL_Large Health - Hospital_Ventilation_21008	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
PPL_Large Health - Hospital_Ventilation_21009	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
PPL_Large Health - Hospital_Ventilation_21010	19.9%	22.3%	11.7%	12.6%	16.0%	17.4%	0.760	0.760
PPL_Large Health - Hospital_Water Heating_21103	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Large Health - Hospital_Water Heating_21107	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Large Health - Hospital_Water Heating_21114	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Large Health - Hospital_Water Heating_21115	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Large Health - Hospital_Water Heating_21116	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.619	0.619
PPL_Large Health - Hospital_Water Heating_21118	20.9%	16.7%	16.0%	12.4%	18.9%	15.1%	0.900	0.900
PPL_Large Health - Other_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Large Health - Other_Cooking_20202	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Large Health - Other_Cooking_20204	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Large Health - Other_Cooking_20206	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Large Health - Other_Cooking_20208	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Large Health - Other_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
PPL_Large Health - Other_Cooling_20314	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Health - Other_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.293	0.293
PPL_Large Health - Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Health - Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Health - Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Health - Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Health - Other_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PPL_Large Health - Other_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PPL_Large Health - Other_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PPL_Large Health - Other_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PPL_Large Health - Other_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.520	0.520
PPL_Large Health - Other_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PPL_Large Health - Other_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PPL_Large Health - Other_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
PPL_Large Health - Other_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Health - Other_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Health - Other_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Health - Other_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Health - Other_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Health - Other_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Health - Other_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Health - Other_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Health - Other_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Health - Other_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Health - Other_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Health - Other_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Health - Other_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Health - Other_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Health - Other_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Health - Other_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Health - Other_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Health - Other_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20914	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Health - Other_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
PPL_Large Health - Other_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
PPL_Large Health - Other_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Health - Other_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Large Health - Other_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Large Health - Other_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Large Health - Other_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Large Health - Other_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.271	0.271
PPL_Large Health - Other_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Large Health - Other_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Large Health - Other_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Large Health - Other_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Health - Other_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Health - Other_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Health - Other_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Health - Other_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Health - Other_Water Heating_21116	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Health - Other_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
PPL_Large Industrial Manufacturing_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Industrial Manufacturing_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Industrial Manufacturing_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Industrial Manufacturing_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Industrial Manufacturing_Interior Lighting_20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PPL_Large Industrial Manufacturing_Interior Lighting_20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PPL_Large Industrial Manufacturing_Interior Lighting_20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Interior Lighting_20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.960	0.960
PPL_Large Industrial Manufacturing_Other_20617	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Institutional/Public Service_Cooking_20201	31.9%	10.3%	18.7%	5.8%	25.1%	8.3%	0.900	0.900
PPL_Large Institutional/Public Service_Cooling_20301	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20302	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20303	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20304	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20308	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20309	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20311	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20312	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20313	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	1.000	1.000
PPL_Large Institutional/Public Service_Cooling_20315	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20316	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20317	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20318	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20319	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20320	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20321	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20322	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20323	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20330	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Institutional/Public Service_Cooling_20331	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20333	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20334	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20335	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20336	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20338	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Cooling_20339	87.2%	12.3%	0.0%	0.0%	0.5%	0.1%	0.564	0.564
PPL_Large Institutional/Public Service_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Institutional/Public Service_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Institutional/Public Service_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Institutional/Public Service_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Institutional/Public Service_Interior Lighting_20508	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20509	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20511	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20512	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20514	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20515	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20517	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PPL_Large Institutional/Public Service_Interior Lighting_20518	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	1.000	1.000
PPL_Large Institutional/Public Service_Interior Lighting_20520	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20521	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20522	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PPL_Large Institutional/Public Service_Interior Lighting_20524	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20525	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20529	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.990	0.990
PPL_Large Institutional/Public Service_Interior Lighting_20531	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Interior Lighting_20532	28.2%	13.9%	16.6%	7.9%	22.3%	11.1%	0.230	0.230
PPL_Large Institutional/Public Service_Other_20601	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PPL_Large Institutional/Public Service_Other_20602	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.900	0.900
PPL_Large Institutional/Public Service_Other_20603	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.405	0.405
PPL_Large Institutional/Public Service_Other_20604	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Institutional/Public Service_Other_20606	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Institutional/Public Service_Other_20607	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Institutional/Public Service_Other_20610	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Institutional/Public Service_Other_20611	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Institutional/Public Service_Other_20613	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Institutional/Public Service_Other_20614	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Institutional/Public Service_Other_20615	25.8%	16.2%	15.2%	9.3%	20.4%	13.0%	0.815	0.815
PPL_Large Institutional/Public Service_Plug Loads_20701	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Institutional/Public Service_Plug Loads_20702	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Institutional/Public Service_Plug Loads_20703	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Institutional/Public Service_Plug Loads_20704	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Institutional/Public Service_Plug Loads_20705	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Institutional/Public Service_Plug Loads_20706	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Institutional/Public Service_Plug Loads_20707	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Institutional/Public Service_Plug Loads_20708	23.1%	18.9%	13.7%	10.9%	18.4%	15.1%	0.866	0.866
PPL_Large Institutional/Public Service_Refrigeration_20801	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Institutional/Public Service_Refrigeration_20802	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Institutional/Public Service_Refrigeration_20805	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Institutional/Public Service_Refrigeration_20806	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Institutional/Public Service_Refrigeration_20807	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PPL_Large Institutional/Public Service_Refrigeration_20808	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Institutional/Public Service_Refrigeration_20809	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Institutional/Public Service_Refrigeration_20811	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PPL_Large Institutional/Public Service_Refrigeration_20818	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Institutional/Public Service_Refrigeration_20821	21.0%	21.0%	12.5%	12.2%	16.7%	16.7%	0.993	0.993
PPL_Large Institutional/Public Service_Space Heating_20910	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20911	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20913	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20915	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20916	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20917	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20919	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20923	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20929	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20932	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20934	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Space Heating_20936	0.0%	0.0%	32.4%	36.8%	14.5%	16.3%	0.000	0.000
PPL_Large Institutional/Public Service_Total Electric_21701	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21702	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21703	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21704	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21705	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21706	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21707	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21708	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21709	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21710	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21711	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
PPL_Large Institutional/Public Service_Total Electric_21712	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	1.000	1.000
PPL_Large Institutional/Public Service_Total Electric_21713	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Total Electric_21714	30.5%	13.3%	14.6%	9.9%	19.1%	12.7%	0.749	0.749
PPL_Large Institutional/Public Service_Ventilation_21001	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Large Institutional/Public Service_Ventilation_21002	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Large Institutional/Public Service_Ventilation_21003	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Large Institutional/Public Service_Ventilation_21005	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Large Institutional/Public Service_Ventilation_21006	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.562	0.562
PPL_Large Institutional/Public Service_Ventilation_21007	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Large Institutional/Public Service_Ventilation_21008	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Large Institutional/Public Service_Ventilation_21009	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Institutional/Public Service_Ventilation_21010	18.2%	2.6%	18.0%	19.4%	21.4%	20.5%	0.886	0.886
PPL_Large Institutional/Public Service_Water Heating_21103	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Institutional/Public Service_Water Heating_21107	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Institutional/Public Service_Water Heating_21109	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Institutional/Public Service_Water Heating_21114	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Institutional/Public Service_Water Heating_21115	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.730	0.730
PPL_Large Institutional/Public Service_Water Heating_21118	23.6%	14.1%	17.9%	10.4%	21.2%	12.8%	0.900	0.900
PPL_Large Lodging_Cooking_20201	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Large Lodging_Cooking_20202	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Large Lodging_Cooking_20204	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Large Lodging_Cooking_20206	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Large Lodging_Cooking_20208	26.3%	15.6%	15.7%	9.0%	21.0%	12.4%	0.900	0.900
PPL_Large Lodging_Cooling_20301	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20302	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20303	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20304	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20308	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20309	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20311	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20312	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20313	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	1.000	1.000
PPL_Large Lodging_Cooling_20315	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20316	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20317	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20318	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20319	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20320	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20321	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20322	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20323	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20324	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20325	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20330	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20331	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20333	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20334	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20335	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20336	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20338	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Cooling_20339	61.7%	37.3%	0.0%	0.0%	0.7%	0.3%	0.767	0.767
PPL_Large Lodging_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Lodging_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Lodging_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Lodging_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Lodging_Interior Lighting_20508	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Lodging_Interior Lighting_20509	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20511	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20512	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20514	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20515	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20517	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
PPL_Large Lodging_Interior Lighting_20518	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	1.000	1.000
PPL_Large Lodging_Interior Lighting_20520	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20521	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20522	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
PPL_Large Lodging_Interior Lighting_20524	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20525	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20529	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.990	0.990
PPL_Large Lodging_Interior Lighting_20531	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Interior Lighting_20532	22.4%	19.5%	13.4%	11.3%	17.9%	15.5%	0.450	0.450
PPL_Large Lodging_Other_20601	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
PPL_Large Lodging_Other_20602	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.900	0.900
PPL_Large Lodging_Other_20603	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.405	0.405
PPL_Large Lodging_Other_20604	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Large Lodging_Other_20606	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Large Lodging_Other_20607	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Large Lodging_Other_20610	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Large Lodging_Other_20611	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Large Lodging_Other_20613	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Large Lodging_Other_20614	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Large Lodging_Other_20615	22.6%	19.3%	13.5%	11.2%	18.0%	15.4%	0.929	0.929
PPL_Large Lodging_Plug Loads_20701	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Large Lodging_Plug Loads_20702	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Large Lodging_Plug Loads_20703	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Large Lodging_Plug Loads_20704	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Large Lodging_Plug Loads_20705	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Large Lodging_Plug Loads_20706	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Large Lodging_Plug Loads_20707	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Large Lodging_Plug Loads_20708	21.1%	20.8%	12.6%	12.1%	16.8%	16.6%	0.991	0.991
PPL_Large Lodging_Refrigeration_20801	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Large Lodging_Refrigeration_20802	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Large Lodging_Refrigeration_20805	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Large Lodging_Refrigeration_20806	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Large Lodging_Refrigeration_20807	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.094	0.094
PPL_Large Lodging_Refrigeration_20808	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Large Lodging_Refrigeration_20809	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Large Lodging_Refrigeration_20811	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.403	0.403
PPL_Large Lodging_Refrigeration_20818	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Large Lodging_Refrigeration_20821	20.9%	21.0%	12.5%	12.2%	16.7%	16.7%	0.998	0.998
PPL_Large Lodging_Space Heating_20910	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Lodging_Space Heating_20911	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20913	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20914	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20915	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20916	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20917	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20919	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20921	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20923	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20929	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20932	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20934	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Space Heating_20936	0.0%	0.2%	26.7%	50.9%	5.3%	16.8%	0.000	0.000
PPL_Large Lodging_Total Electric_21701	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21702	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21703	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21704	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21705	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21706	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21707	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21708	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21709	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21710	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21711	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	1.000	1.000
PPL_Large Lodging_Total Electric_21712	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	1.000	1.000
PPL_Large Lodging_Total Electric_21713	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Total Electric_21714	30.4%	24.6%	9.7%	9.4%	13.0%	12.9%	0.722	0.722
PPL_Large Lodging_Ventilation_21001	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.680	0.680
PPL_Large Lodging_Ventilation_21002	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.680	0.680
PPL_Large Lodging_Ventilation_21003	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.680	0.680
PPL_Large Lodging_Ventilation_21005	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.680	0.680
PPL_Large Lodging_Ventilation_21006	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.680	0.680
PPL_Large Lodging_Ventilation_21007	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
PPL_Large Lodging_Ventilation_21008	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
PPL_Large Lodging_Ventilation_21009	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
PPL_Large Lodging_Ventilation_21010	19.9%	22.0%	11.9%	12.8%	15.9%	17.5%	0.998	0.998
PPL_Large Lodging_Water Heating_21103	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Large Lodging_Water Heating_21107	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Large Lodging_Water Heating_21109	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Large Lodging_Water Heating_21114	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Large Lodging_Water Heating_21115	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Large Lodging_Water Heating_21116	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.730	0.730
PPL_Large Lodging_Water Heating_21118	21.1%	16.5%	16.2%	12.2%	19.1%	14.9%	0.900	0.900
PPL_Large Miscellaneous/Other_Cooling_20301	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20302	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Miscellaneous/Other_Cooling_20303	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20304	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20308	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20309	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20311	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20312	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20313	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	1.000	1.000
PPL_Large Miscellaneous/Other_Cooling_20317	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20318	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20319	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20320	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20321	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20322	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20330	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20331	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20333	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20334	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20335	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20336	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20338	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Cooling_20339	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.480	0.480
PPL_Large Miscellaneous/Other_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Miscellaneous/Other_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Miscellaneous/Other_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Miscellaneous/Other_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Miscellaneous/Other_Interior Lighting_20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
PPL_Large Miscellaneous/Other_Interior Lighting_20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
PPL_Large Miscellaneous/Other_Interior Lighting_20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
PPL_Large Miscellaneous/Other_Interior Lighting_20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
PPL_Large Miscellaneous/Other_Interior Lighting_20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Interior Lighting_20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.580	0.580
PPL_Large Miscellaneous/Other_Other_20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
PPL_Large Miscellaneous/Other_Other_20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
PPL_Large Miscellaneous/Other_Other_20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
PPL_Large Miscellaneous/Other_Other_20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Miscellaneous/Other_Other_20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Miscellaneous/Other_Other_20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Miscellaneous/Other_Other_20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Miscellaneous/Other_Other_20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Miscellaneous/Other_Other_20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Miscellaneous/Other_Other_20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Miscellaneous/Other_Other_20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Miscellaneous/Other_Plug Loads_20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Miscellaneous/Other_Plug Loads_20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Miscellaneous/Other_Plug Loads_20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Miscellaneous/Other_Plug Loads_20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Miscellaneous/Other_Plug Loads_20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Miscellaneous/Other_Plug Loads_20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Miscellaneous/Other_Plug Loads_20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Miscellaneous/Other_Plug Loads_20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Miscellaneous/Other_Refrigeration_20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Miscellaneous/Other_Refrigeration_20802	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Miscellaneous/Other_Space Heating_20910	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20911	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20913	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20915	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20916	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20917	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20919	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20923	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20929	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20932	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20934	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Space Heating_20936	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Miscellaneous/Other_Total Electric_21701	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21702	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21703	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21704	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21705	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21706	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21707	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21708	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21709	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21710	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21711	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
PPL_Large Miscellaneous/Other_Total Electric_21712	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
PPL_Large Miscellaneous/Other_Total Electric_21713	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Total Electric_21714	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Miscellaneous/Other_Ventilation_21001	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.394	0.394
PPL_Large Miscellaneous/Other_Ventilation_21002	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.394	0.394

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Miscellaneous/Other_Ventilation_21003	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.394	0.394
PPL_Large Miscellaneous/Other_Ventilation_21005	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.394	0.394
PPL_Large Miscellaneous/Other_Ventilation_21006	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.394	0.394
PPL_Large Miscellaneous/Other_Ventilation_21007	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
PPL_Large Miscellaneous/Other_Ventilation_21008	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
PPL_Large Miscellaneous/Other_Ventilation_21009	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
PPL_Large Miscellaneous/Other_Ventilation_21010	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
PPL_Large Miscellaneous/Other_Water Heating_21103	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Miscellaneous/Other_Water Heating_21107	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Miscellaneous/Other_Water Heating_21109	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Miscellaneous/Other_Water Heating_21114	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Miscellaneous/Other_Water Heating_21115	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Miscellaneous/Other_Water Heating_21118	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.900	0.900
PPL_Large Office_Cooking_20201	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
PPL_Large Office_Cooking_20202	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
PPL_Large Office_Cooking_20206	31.6%	10.3%	18.4%	5.9%	25.5%	8.3%	0.900	0.900
PPL_Large Office_Cooling_20301	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20302	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20303	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20304	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20308	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20309	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20311	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20312	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20313	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	1.000	1.000
PPL_Large Office_Cooling_20314	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20315	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20316	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20317	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20318	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20319	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20320	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20321	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20321	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20322	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20323	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20330	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20331	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20333	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20334	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20335	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20336	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20338	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Cooling_20339	65.4%	12.6%	4.8%	2.4%	12.1%	2.8%	0.332	0.332
PPL_Large Office_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Office_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Office_ Exterior Lighting_ 20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Office_ Exterior Lighting_ 20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Office_ Interior Lighting_ 20508	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20509	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20511	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20512	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20514	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20515	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20517	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
PPL_Large Office_ Interior Lighting_ 20518	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	1.000	1.000
PPL_Large Office_ Interior Lighting_ 20520	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20521	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20522	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
PPL_Large Office_ Interior Lighting_ 20524	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20525	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20529	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.990	0.990
PPL_Large Office_ Interior Lighting_ 20531	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Interior Lighting_ 20532	26.9%	15.0%	15.8%	8.7%	21.7%	12.0%	0.480	0.480
PPL_Large Office_ Other_ 20601	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
PPL_Large Office_ Other_ 20602	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.900	0.900
PPL_Large Office_ Other_ 20603	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.405	0.405
PPL_Large Office_ Other_ 20604	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Office_ Other_ 20606	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Office_ Other_ 20607	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Office_ Other_ 20610	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Office_ Other_ 20611	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Office_ Other_ 20613	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Office_ Other_ 20614	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Office_ Other_ 20615	24.9%	17.0%	14.6%	9.9%	20.0%	13.6%	0.850	0.850
PPL_Large Office_ Plug Loads_ 20701	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Office_ Plug Loads_ 20702	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Office_ Plug Loads_ 20703	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Office_ Plug Loads_ 20704	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Office_ Plug Loads_ 20705	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Office_ Plug Loads_ 20706	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Office_ Plug Loads_ 20707	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Office_ Plug Loads_ 20708	22.7%	19.2%	13.4%	11.1%	18.2%	15.4%	0.916	0.916
PPL_Large Office_ Refrigeration_ 20801	20.8%	21.2%	12.4%	12.3%	16.6%	16.9%	0.936	0.936
PPL_Large Office_ Space Heating_ 20910	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_ Space Heating_ 20911	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_ Space Heating_ 20913	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_ Space Heating_ 20914	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_ Space Heating_ 20915	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_ Space Heating_ 20916	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_ Space Heating_ 20917	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Office_Space Heating_20919	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_Space Heating_20923	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_Space Heating_20929	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_Space Heating_20932	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_Space Heating_20934	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_Space Heating_20936	0.0%	0.0%	44.7%	31.1%	12.5%	11.7%	0.000	0.000
PPL_Large Office_Total Electric_21701	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21702	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21703	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21704	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21705	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21706	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21707	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21708	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21709	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21710	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21711	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
PPL_Large Office_Total Electric_21712	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	1.000	1.000
PPL_Large Office_Total Electric_21713	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Total Electric_21714	32.5%	14.5%	13.1%	9.4%	18.6%	12.0%	0.775	0.775
PPL_Large Office_Ventilation_21001	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.339	0.339
PPL_Large Office_Ventilation_21002	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.339	0.339
PPL_Large Office_Ventilation_21003	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.339	0.339
PPL_Large Office_Ventilation_21005	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.339	0.339
PPL_Large Office_Ventilation_21006	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.339	0.339
PPL_Large Office_Ventilation_21007	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
PPL_Large Office_Ventilation_21008	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
PPL_Large Office_Ventilation_21009	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
PPL_Large Office_Ventilation_21010	20.7%	4.9%	15.8%	17.7%	20.5%	20.5%	0.764	0.764
PPL_Large Office_Water Heating_21103	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Office_Water Heating_21107	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Office_Water Heating_21109	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Office_Water Heating_21114	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Office_Water Heating_21115	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.724	0.724
PPL_Large Office_Water Heating_21118	19.1%	18.5%	14.5%	13.8%	17.3%	16.8%	0.900	0.900
PPL_Large Retail_Cooking_20201	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PPL_Large Retail_Cooking_20202	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PPL_Large Retail_Cooking_20204	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PPL_Large Retail_Cooking_20206	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PPL_Large Retail_Cooking_20208	29.4%	12.7%	17.3%	7.2%	23.2%	10.1%	0.900	0.900
PPL_Large Retail_Cooling_20301	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20302	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20303	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20304	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20308	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513



## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Retail_Cooling_20309	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20311	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20312	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20313	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
PPL_Large Retail_Cooling_20317	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20318	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20319	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20320	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20321	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20322	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20330	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20331	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20333	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20334	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20335	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20336	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20338	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Cooling_20339	69.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.513	0.513
PPL_Large Retail_Exterior Lighting_20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Retail_Exterior Lighting_20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Retail_Exterior Lighting_20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Retail_Exterior Lighting_20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Retail_Interior Lighting_20508	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20509	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20511	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20512	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20514	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20515	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20517	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
PPL_Large Retail_Interior Lighting_20518	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	1.000	1.000
PPL_Large Retail_Interior Lighting_20520	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20521	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20522	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
PPL_Large Retail_Interior Lighting_20524	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20525	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20529	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.990	0.990
PPL_Large Retail_Interior Lighting_20531	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Interior Lighting_20532	26.4%	15.6%	15.6%	9.0%	20.9%	12.5%	0.660	0.660
PPL_Large Retail_Other_20601	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
PPL_Large Retail_Other_20602	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.900	0.900
PPL_Large Retail_Other_20603	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	0.405	0.405
PPL_Large Retail_Other_20604	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PPL_Large Retail_Other_20606	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PPL_Large Retail_Other_20607	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PPL_Large Retail_Other_20610	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Retail_Other_20611	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PPL_Large Retail_Other_20613	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PPL_Large Retail_Other_20614	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PPL_Large Retail_Other_20615	24.6%	17.4%	14.5%	10.0%	19.5%	13.9%	1.000	1.000
PPL_Large Retail_Plug Loads_20701	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PPL_Large Retail_Plug Loads_20702	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PPL_Large Retail_Plug Loads_20703	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PPL_Large Retail_Plug Loads_20704	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PPL_Large Retail_Plug Loads_20705	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PPL_Large Retail_Plug Loads_20706	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PPL_Large Retail_Plug Loads_20707	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PPL_Large Retail_Plug Loads_20708	22.0%	20.0%	13.0%	11.6%	17.5%	15.9%	1.000	1.000
PPL_Large Retail_Refrigeration_20801	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PPL_Large Retail_Refrigeration_20805	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PPL_Large Retail_Refrigeration_20806	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PPL_Large Retail_Refrigeration_20807	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.094	0.094
PPL_Large Retail_Refrigeration_20808	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PPL_Large Retail_Refrigeration_20809	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PPL_Large Retail_Refrigeration_20811	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.403	0.403
PPL_Large Retail_Refrigeration_20818	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PPL_Large Retail_Refrigeration_20821	20.7%	21.2%	12.3%	12.3%	16.5%	16.9%	0.993	0.993
PPL_Large Retail_Space Heating_20910	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20911	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20913	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20915	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20916	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20917	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20919	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20923	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20929	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20932	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20934	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Space Heating_20936	0.0%	0.0%	43.4%	28.2%	17.0%	11.3%	0.000	0.000
PPL_Large Retail_Total Electric_21701	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21702	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21703	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21704	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21705	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21706	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21707	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21708	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21709	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21710	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21711	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	1.000	1.000
PPL_Large Retail_Total Electric_21712	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	1.000	1.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Retail_Total Electric_21713	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Total Electric_21714	36.4%	19.8%	10.5%	8.5%	13.9%	11.0%	0.690	0.690
PPL_Large Retail_Ventilation_21001	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.501	0.501
PPL_Large Retail_Ventilation_21002	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.501	0.501
PPL_Large Retail_Ventilation_21003	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.501	0.501
PPL_Large Retail_Ventilation_21005	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.501	0.501
PPL_Large Retail_Ventilation_21006	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.501	0.501
PPL_Large Retail_Ventilation_21007	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
PPL_Large Retail_Ventilation_21008	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
PPL_Large Retail_Ventilation_21009	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
PPL_Large Retail_Ventilation_21010	21.4%	10.8%	14.7%	15.8%	18.9%	18.4%	0.995	0.995
PPL_Large Retail_Water Heating_21103	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
PPL_Large Retail_Water Heating_21107	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
PPL_Large Retail_Water Heating_21109	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
PPL_Large Retail_Water Heating_21114	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
PPL_Large Retail_Water Heating_21115	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.720	0.720
PPL_Large Retail_Water Heating_21118	23.7%	14.1%	17.9%	10.3%	21.2%	12.7%	0.900	0.900
PPL_Large Warehouse_Cooling_20301	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20302	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20303	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20304	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20308	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20309	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20311	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20312	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20313	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	1.000	1.000
PPL_Large Warehouse_Cooling_20314	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20315	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20316	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20317	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20318	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20319	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20320	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20321	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20322	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20323	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20330	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20331	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20333	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20334	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20335	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20336	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20337	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20338	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209
PPL_Large Warehouse_Cooling_20339	59.3%	40.7%	0.0%	0.0%	0.0%	0.0%	0.209	0.209

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Warehouse_ Exterior Lighting_ 20401	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Warehouse_ Exterior Lighting_ 20402	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.000	0.000
PPL_Large Warehouse_ Exterior Lighting_ 20403	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Warehouse_ Exterior Lighting_ 20404	9.8%	27.1%	9.5%	18.8%	10.7%	24.1%	0.110	0.110
PPL_Large Warehouse_ Interior Lighting_ 20508	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20509	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20511	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20512	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20514	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20515	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20517	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PPL_Large Warehouse_ Interior Lighting_ 20518	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	1.000	1.000
PPL_Large Warehouse_ Interior Lighting_ 20520	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20521	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20524	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20525	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20531	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Interior Lighting_ 20532	30.4%	11.6%	17.9%	6.7%	24.0%	9.3%	0.480	0.480
PPL_Large Warehouse_ Other_ 20601	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
PPL_Large Warehouse_ Other_ 20602	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.900	0.900
PPL_Large Warehouse_ Other_ 20603	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.405	0.405
PPL_Large Warehouse_ Other_ 20604	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Warehouse_ Other_ 20606	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Warehouse_ Other_ 20607	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Warehouse_ Other_ 20610	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Warehouse_ Other_ 20611	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Warehouse_ Other_ 20613	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Warehouse_ Other_ 20614	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Warehouse_ Other_ 20615	29.7%	12.3%	17.5%	7.1%	23.5%	9.8%	0.963	0.963
PPL_Large Warehouse_ Plug Loads_ 20701	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Large Warehouse_ Plug Loads_ 20702	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Large Warehouse_ Plug Loads_ 20703	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Large Warehouse_ Plug Loads_ 20704	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Large Warehouse_ Plug Loads_ 20705	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Large Warehouse_ Plug Loads_ 20706	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Large Warehouse_ Plug Loads_ 20707	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Large Warehouse_ Plug Loads_ 20708	23.8%	18.2%	14.1%	10.5%	18.9%	14.5%	0.904	0.904
PPL_Large Warehouse_ Refrigeration_ 20803	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Large Warehouse_ Refrigeration_ 20805	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Large Warehouse_ Refrigeration_ 20806	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Large Warehouse_ Refrigeration_ 20807	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.094	0.094
PPL_Large Warehouse_ Refrigeration_ 20808	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Large Warehouse_ Refrigeration_ 20811	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	0.403	0.403
PPL_Large Warehouse_ Refrigeration_ 20818	21.7%	20.3%	12.9%	11.8%	17.3%	16.1%	1.000	1.000
PPL_Large Warehouse_ Space Heating_ 20910	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
PPL_Large Warehouse_Space Heating_20911	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20913	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20914	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20915	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20916	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20917	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20919	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20923	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20929	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20932	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20934	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Space Heating_20936	0.0%	0.1%	28.2%	36.8%	12.4%	22.5%	0.000	0.000
PPL_Large Warehouse_Total Electric_21701	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21702	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21703	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21704	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21705	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21706	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21707	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21708	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21709	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21710	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21711	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
PPL_Large Warehouse_Total Electric_21712	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	1.000	1.000
PPL_Large Warehouse_Total Electric_21713	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Total Electric_21714	27.1%	17.5%	14.5%	9.2%	19.2%	12.4%	0.815	0.815
PPL_Large Warehouse_Ventilation_21001	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Large Warehouse_Ventilation_21002	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Large Warehouse_Ventilation_21003	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Large Warehouse_Ventilation_21005	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Large Warehouse_Ventilation_21006	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.209	0.209
PPL_Large Warehouse_Ventilation_21007	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PPL_Large Warehouse_Ventilation_21008	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PPL_Large Warehouse_Ventilation_21009	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PPL_Large Warehouse_Ventilation_21010	19.7%	21.8%	12.0%	12.9%	15.9%	17.6%	0.979	0.979
PPL_Large Warehouse_Water Heating_21103	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Large Warehouse_Water Heating_21107	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Large Warehouse_Water Heating_21109	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Large Warehouse_Water Heating_21114	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Large Warehouse_Water Heating_21115	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.702	0.702
PPL_Large Warehouse_Water Heating_21118	26.5%	11.2%	20.0%	8.3%	23.7%	10.2%	0.900	0.900

## Appendix F. Load Shapes

Load Shape Name ("EDC_Building Type_End Use_Meas")	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder On-Peak	Shoulder Off-Peak	Summer Gener. Capacity	T&D Capacity
ComprehensiveIndustrial	24.7%	16.9%	14.8%	10.2%	19.8%	13.5%	0.450	0.450
None	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.000	0.000