

Act 129 Statewide Evaluator Quarterly Report

2nd Quarter, Program Year 4

Presented to:

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Table of Contents

1	INTRODUCTION	1
2	QUARTERLY REPORT SUMMARY	2
2.1	AGGREGATED EDC PORTFOLIO IMPACT SUMMARY	2
2.2	IMPACT SUMMARY BY EDC	3
2.3	STATEWIDE EVALUATOR SUMMARY	4
3	STATEWIDE EVALUATOR AUDIT ACTIVITIES	6
3.1	AUDIT ACTIVITIES	6
3.1.1	RESIDENTIAL PROGRAMS	6
3.1.2	LOW-INCOME PROGRAMS	6
3.1.3	NON-RESIDENTIAL PROGRAMS	6
3.2	PROGRAM EVALUATION GROUP MEETINGS	7
3.2.1	PROGRAM EVALUATION GROUP MEETING, SEPTEMBER 27 TH , 2012	7
3.2.2	PROGRAM EVALUATION GROUP MEETING, OCTOBER 24 TH , 2012	7
3.2.3	PROGRAM EVALUATION GROUP MEETING, NOVEMBER 28 TH , 2013	8
3.3	EDC MEETINGS	8
3.4	STATUS OF TRM UPDATE	9
3.5	DEMAND RESPONSE ISSUES	9
3.6	NET TO GROSS ISSUES	9
4	DUQUESNE LIGHT IMPACT SUMMARIES AND AUDIT FINDINGS	10
4.1	PROGRAM IMPLEMENTATION AND EVALUATION SUMMARY	12
4.2	STATUS OF EM&V ACTIVITIES	12
4.2.1	STATUS OF EM&V PLANS	12
4.2.2	STATUS OF M&V ACTIVITIES	12
4.3	RESIDENTIAL PROGRAM AUDIT SUMMARY	13
4.3.1	RESIDENTIAL LIGHTING PROGRAM	13
4.3.2	APPLIANCE RECYCLING PROGRAM	13
4.3.3	EFFICIENT EQUIPMENT PROGRAM	13
4.3.4	NEW CONSTRUCTION PROGRAM	13
4.4	LOW-INCOME PROGRAM AUDIT SUMMARY	14
4.5	NON-RESIDENTIAL PROGRAM AUDIT SUMMARY	15
4.5.1	REVIEW OF SAVINGS DATABASE	16
4.5.2	REVIEW OF SAMPLE DESIGN	17

4.5.3	ON-SITE INSPECTIONS	17
4.6	FINALS RECOMMENDATIONS	18
5	PECO IMPACT SUMMARIES AND AUDIT FINDINGS	19
<hr/>		
5.1	PROGRAM IMPLEMENTATION AND EVALUATION SUMMARY	21
5.2	STATUS OF EM&V ACTIVITIES	21
5.2.1	STATUS OF EM&V PLANS	21
5.2.2	STATUS OF M&V ACTIVITIES	21
5.3	RESIDENTIAL PROGRAM AUDIT SUMMARY	24
5.3.1	RESIDENTIAL LIGHTING PROGRAM	24
5.3.2	APPLIANCE RECYCLING PROGRAM	24
5.3.3	EFFICIENT EQUIPMENT PROGRAM	24
5.3.4	NEW CONSTRUCTION PROGRAM	24
5.4	LOW-INCOME PROGRAM AUDIT SUMMARY	25
5.5	NON-RESIDENTIAL PROGRAM AUDIT SUMMARY	25
5.5.1	REVIEW OF SAVINGS DATABASE	26
5.5.2	REVIEW OF SAMPLE DESIGN	27
5.5.3	ON-SITE INSPECTIONS	27
5.6	FINALS RECOMMENDATIONS	28
6	PPL IMPACT SUMMARIES AND AUDIT FINDINGS	29
<hr/>		
6.1	PROGRAM IMPLEMENTATION AND EVALUATION SUMMARY	30
6.1	STATUS OF EM&V ACTIVITIES	30
6.1.1	STATUS OF EM&V PLANS	30
6.1.2	STATUS OF M&V ACTIVITIES	31
6.2	RESIDENTIAL PROGRAM AUDIT SUMMARY	32
6.2.1	RESIDENTIAL LIGHTING PROGRAM	32
6.2.2	APPLIANCE RECYCLING PROGRAM	32
6.2.3	EFFICIENT EQUIPMENT PROGRAM	32
6.2.4	NEW CONSTRUCTION PROGRAM	32
6.3	LOW-INCOME PROGRAM AUDIT SUMMARY	33
6.4	NON-RESIDENTIAL PROGRAM AUDIT SUMMARY	35
6.4.1	REVIEW OF SAVINGS DATABASE	35
6.4.2	REVIEW OF SAMPLE DESIGN	36
6.4.3	ON-SITE INSPECTIONS	36
6.5	FINALS RECOMMENDATIONS	36
7	MET-ED IMPACT SUMMARIES AND AUDIT FINDINGS	37
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7.1	PROGRAM IMPLEMENTATION AND EVALUATION SUMMARY	38
7.1	STATUS OF EM&V ACTIVITIES	39
7.1.1	STATUS OF EM&V PLANS	39
7.1.2	STATUS OF M&V ACTIVITIES	39
7.2	RESIDENTIAL PROGRAM AUDIT SUMMARY	41
7.2.1	RESIDENTIAL LIGHTING PROGRAM	41
7.2.2	APPLIANCE RECYCLING PROGRAM	41
7.2.3	EFFICIENT EQUIPMENT PROGRAM	41
7.2.4	NEW CONSTRUCTION PROGRAM	41
7.3	LOW-INCOME PROGRAM AUDIT SUMMARY	42
7.4	NON-RESIDENTIAL PROGRAM AUDIT SUMMARY	43
7.4.1	REVIEW OF SAVINGS DATABASE	43
7.4.2	REVIEW OF SAMPLE DESIGN	44
7.4.3	ON-SITE INSPECTIONS	44
7.5	FINALS RECOMMENDATIONS	44
8	PENELEC IMPACT SUMMARIES AND AUDIT FINDINGS	45
8.1	PROGRAM IMPLEMENTATION AND EVALUATION SUMMARY	46
8.1	STATUS OF EM&V ACTIVITIES	47
8.1.1	STATUS OF EM&V PLANS	47
8.1.2	STATUS OF M&V ACTIVITIES	47
8.2	RESIDENTIAL PROGRAM AUDIT SUMMARY	49
8.2.1	RESIDENTIAL LIGHTING PROGRAM	49
8.2.2	APPLIANCE RECYCLING PROGRAM	49
8.2.3	EFFICIENT EQUIPMENT PROGRAM	49
8.2.4	NEW CONSTRUCTION PROGRAM	49
8.3	LOW-INCOME PROGRAM AUDIT SUMMARY	50
8.4	NON-RESIDENTIAL PROGRAM AUDIT SUMMARY	51
8.4.1	REVIEW OF SAVINGS DATABASE	52
8.4.2	REVIEW OF SAMPLE DESIGN	53
8.4.3	ON-SITE INSPECTIONS	53
8.5	FINALS RECOMMENDATIONS	53
9	PENN POWER IMPACT SUMMARIES AND AUDIT FINDINGS	54
9.1	PROGRAM IMPLEMENTATION AND EVALUATION SUMMARY	55
9.1	STATUS OF EM&V ACTIVITIES	56
9.1.1	STATUS OF EM&V PLANS	56
9.1.2	STATUS OF M&V ACTIVITIES	56

9.2 RESIDENTIAL PROGRAM AUDIT SUMMARY	58
9.2.1 RESIDENTIAL LIGHTING PROGRAM	58
9.2.2 APPLIANCE RECYCLING PROGRAM	58
9.2.3 EFFICIENT EQUIPMENT PROGRAM	58
9.2.4 NEW CONSTRUCTION PROGRAM	58
9.3 LOW-INCOME PROGRAM AUDIT SUMMARY	59
9.4 NON-RESIDENTIAL PROGRAM AUDIT SUMMARY	59
9.4.1 REVIEW OF SAVINGS DATABASE	59
9.4.2 REVIEW OF SAMPLE DESIGN	60
9.4.3 ON-SITE INSPECTIONS	60
9.5 FINALS RECOMMENDATIONS	60
10 WEST PENN POWER POWER IMPACT SUMMARIES AND AUDIT FINDINGS	62
10.1 PROGRAM IMPLEMENTATION AND EVALUATION SUMMARY	64
10.1 STATUS OF EM&V ACTIVITIES	64
10.1.1 STATUS OF EM&V PLANS	64
10.1.2 STATUS OF M&V ACTIVITIES	64
10.2 RESIDENTIAL PROGRAM AUDIT SUMMARY	66
10.2.1 RESIDENTIAL LIGHTING PROGRAM	66
10.2.2 APPLIANCE RECYCLING PROGRAM	66
10.2.3 EFFICIENT EQUIPMENT PROGRAM	66
10.2.4 NEW CONSTRUCTION PROGRAM	66
10.3 LOW-INCOME PROGRAM AUDIT SUMMARY	67
10.4 NON-RESIDENTIAL PROGRAM AUDIT SUMMARY	68
10.4.1 REVIEW OF SAVINGS DATABASE	69
10.4.2 REVIEW OF SAMPLE DESIGN	69
10.4.3 ON-SITE INSPECTIONS	70
10.5 FINALS RECOMMENDATIONS	70
11 SUMMARY AND RECOMMENDATIONS	71

List of Tables

Table 2-1: Summary of EDC Quarterly Report Impacts – Program Year 4, 2nd Quarter	2
Table 2-2: Summary of EDC Energy and Demand Savings	3
Table 4-1: Summary of Duquesne Quarterly Report Impacts.....	10
Table 4-2: Summary of Program Impacts on Gross Reported Portfolio Savings – Duquesne	11
Table 4-3: Summary of Programs Implemented to Date by Duquesne.....	12
Table 4-4: Summary of CFL Program Audit - Duquesne	13
Table 4-5: Low-Income Energy Efficiency Program Quarterly Report and Database Summary.....	14
Table 4-6: Duquesne Non-Residential Programs Quarterly Summary	15
Table 4-7: Duquesne Non-Residential Programs Savings Database Summary.....	16
Table 4-8: Duquesne Non-Residential Program Discrepancies	17
Table 5-1: Summary of PECO Quarterly Report Impacts	19
Table 5-2: Summary of Program Impacts on Gross Reported Portfolio Savings – PECO.....	20
Table 5-3: Summary of Programs Implemented to Date by PECO	21
Table 5-4: Summary of CFL Program Audit - PECO	24
Table 5-5: Low-Income Energy Efficiency Program Quarterly Report and Database Summary.....	25
Table 5-6: PECO Non-Residential Programs Quarterly Summary	26
Table 5-7: PECO Non-Residential Programs Savings Database Summary	26
Table 5-8: PECO Non-Residential Program Discrepancies	27
Table 6-1: Summary of PPL Quarterly Report Impacts	29
Table 6-2: Summary of Program Impacts on Gross Reported Portfolio Savings – PPL.....	30
Table 6-3: Summary of Programs Implemented to Date by PPL	30
Table 6-4: Summary of CFL Program Audit - PPL	32
Table 6-5: E-Power Wise Quarterly Report and Database Summary	33
Table 6-6: Winter Assistance Relief Program Quarterly Report and Database Summary.....	33
Table 6-7: PPL Non-Residential Programs Savings Database Summary	35
Table 7-1: Summary of Met-Ed Quarterly Report Impacts	37
Table 7-2: Summary of Program Impacts on Gross Reported Portfolio Savings – Met-Ed.....	38
Table 7-3: Summary of Programs Implemented to Date by Met-Ed	39
Table 7-4: Summary of CFL Program Audit – Met-Ed	41
Table 7-5: WARM Programs Quarterly Report and Database Summary	42
Table 7-6: Met-Ed Non-Residential Programs Quarterly Summary.....	43
Table 7-7: Met-Ed Non-Residential Programs Savings Database Summary	43
Table 7-8: Met-Ed Non-Residential Program Discrepancies	44
Table 8-1: Summary of Penelec Quarterly Report Impacts	45
Table 8-2: Summary of Program Impacts on Gross Reported Portfolio Savings – Penelec.....	46
Table 8-3: Summary of Programs Implemented to Date by Penelec	47
Table 8-4: Summary of CFL Program Audit – Penelec	49
Table 8-5: WARM Programs Quarterly Report and Database Summary	50
Table 8-6: Penelec Non-Residential Programs Quarterly Summary	51

Table 8-7: Penelec Non-Residential Programs Savings Database Summary	52
Table 8-8: Penelec Non-Residential Program Discrepancies	53
Table 9-1: Summary of Penn Power Quarterly Report Impacts	54
Table 9-2: Summary of Program Impacts on Gross Reported Portfolio Savings – Penn Power	55
Table 9-3: Summary of Programs Implemented to Date by Penn Power.....	55
Table 9-4: Summary of CFL Program Audit – Penn Power.....	58
Table 9-5: WARM Programs Quarterly Report and Database Summary	59
Table 9-6: Penn Power Non-Residential Programs Quarterly Summary	59
Table 9-7: Penn Power Non-Residential Programs Quarterly Summary	60
Table 9-8: Penn Power Non-Residential Program Discrepancies	60
Table 10-1: Summary of West Penn Power Quarterly Report Impacts	62
Table 10-2: Summary of Program Impacts on Gross Reported Portfolio Savings – West Penn Power.....	63
Table 10-3: Summary of Programs Implemented to Date by West Penn Power	64
Table 10-4: Summary of CFL Program Audit – West Penn Power	66
Table 10-5: Limited Income Energy Efficiency Program Quarterly Report and Database Summary.....	67
Table 10-6: Joint Utility Usage Management Program Quarterly Report and Database Summary	67
Table 10-7: West Penn Power Non-Residential Programs Quarterly Summary.....	68
Table 10-8: West Penn Power Non-Residential Programs Savings Database Summary	69
Table 10-9: West Penn Power Non-Residential Program Discrepancies	69

1 Introduction

As part of the *Audit Plan* the Statewide Evaluation team (SWE or SWE team) is required to submit quarterly reports to the Pennsylvania Public Utility Commission (PUC or Commission) with updates on energy (MWh) and demand (MW) savings, impact evaluations, cost-effectiveness, and process evaluations related to the programs implemented under PA Act 129 and detailed in the following Electric Distribution Company's (EDC) respective Energy Efficiency and Conservation (EE&C) Plan¹:

- West Penn Power Company (West Penn or West Penn Power);²
- Duquesne Light Company (Duquesne);
- The FirstEnergy companies –
 - Metropolitan Edison Company (Met-Ed),
 - Pennsylvania Electric Company (Penelec), and
 - Pennsylvania Power Company (Penn Power);
- PECO Energy Company (PECO), and
- PPL Electric Utilities (PPL).

This report covers the second quarter of Program Year 4 (PY4Q2) and details the Act 129 program activities occurring in both the current program year and since the implementation of energy savings programs per the EDC EE&C plans. Thus, impacts reported as Program Year to Date (PYTD) include impacts occurring between September 1, 2013 and November 30, 2013. Impacts reported as Cumulative Program Inception to Date (CPITD) include savings since the implementation of Act 129 programs (June 1, 2009) through November 30, 2013.

The findings, conclusions, and recommendations contained in the Statewide Evaluator's Quarterly Report are the findings, conclusions, and recommendations of the Statewide Evaluator only and, as such, are not necessarily agreed to by the EDCs or the Commission. The Commission, while not adopting the findings, conclusions, and recommendations contained in the Statewide Evaluator's Quarterly Report, may consider and adopt some or all of them at a later date in appropriate proceedings, such as the annual Technical Reference Manual update, Total Resource Cost Test Manual update, and individual EDC Energy Efficiency and Conservation Plan revision proceedings.

¹ See Statewide Evaluation Team, *Audit Plan and Evaluation Framework for Pennsylvania*, December 1 2009, page 138.

² While West Penn Power has since merged with the FirstEnergy Companies, it will be referred to as a separate company for purposes of this report.

2 Quarterly Report Summary

The following sections present a summary of the EDC program impacts and SWE activities completed to date.

2.1 Aggregated EDC Portfolio Impact Summary

Table 2-1 presents the seven EDCs' aggregated cumulative program inception to date (CPITD³) reported gross MWh and MW impacts and cumulative program inception to date – quarter (CPITD-Q⁴) gross MWh and MW impacts based on verified savings through Program Year 3 (PY3) and gross savings from PY4. The following table also includes estimates in the reduction of CO₂ emissions through the end of the second quarter for PY4 (P4Q2) based on CPITD-Q MWh savings. This quarter ended on November 30, 2012.

Table 2-1: Summary of EDC Quarterly Report Impacts – Program Year 4, 2nd Quarter

	CPITD Reported Gross Impact	CPITD-Q Reported Impact ^[a]
Total Energy Savings (MWh)	4,333,105	4,210,389
Total Demand Reduction (MW)	850	819
TRC Benefits (\$) ^[a]	Not Reported	Not Reported
TRC Costs (\$) ^[b]	Not Reported	Not Reported
TRC Benefit-Cost Ratio ^[c]	Not Reported	Not Reported
CO ₂ Emissions Reduction ^{[d][e]} (Tons)	3,509,815	3,410,415
NOTES:		
[a] Avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction. Subject to TRC Order. TRC Benefits reporting requirement is waived for quarterly reports.		
[b] Costs paid by the program administrator and participants plus the increase in supply costs for any period when load is increased. Subject to TRC Order. TRC Costs reporting requirement is waived for quarterly reports.		
[c] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is required in annual reports only.		
[d] 8.1x10 ⁻⁴ metric tons of CO ₂ per kWh (EPC's eGRID2007 Version 1.1, RFCE Region annual non-baseload CO ₂ output emissions rate, year 2005 data).		
[e] CO ₂ Emissions are reported due to Stakeholder interest in this information and to recognize that reporting this information is recommended by the National Action Plan for Energy Efficiency.		

³ CPITD Reported Gross = CPITD Reported Gross Savings through PY3 + PYTD Reported Gross Savings. All savings reported as CPITD are reported this way.

⁴ CPITD-Q Gross = CPITD Verified Gross Savings through PY3 + PYTD Reported Gross Savings. All savings reported as CPITD –Q gross savings are computed this way. CPITD-Q savings provide the best available estimate of savings achieved through the current quarter. CPITD Verified Gross savings will be reported in the Annual Report.

2.2 Impact Summary by EDC

The following table contains a summary of the energy and demand savings impacts of each EDC during PY4.⁵

Table 2-2: Summary of EDC Energy and Demand Savings

	Statewide	Duquesne	PECO	PPL	Met-Ed	Penelec	Penn Power	West Penn
PYTD Reported Gross ⁶ Energy Savings (MWh)	743,474	98,587	90,277	239,746	97,458	70,692	25,642	121,072
CPITD Reported Gross ⁷ Energy Savings (MWh)	4,333,105	414,585	1,187,210	1,246,646	419,118	407,753	140,789	517,004
CPITD-Q Gross ⁸ Energy Savings (MWh)	4,210,389	407,001	1,162,018	1,213,081	398,856	380,668	133,455	515,310
% of 2013 Energy Savings Target Achieved	98%	98%	100%	109%	94%	94%	98%	82%
PYTD Reported Gross Demand Reduction (MW)	308.85	73.76	13.4	163	26.32	7.54	2.44	22.39
CPITD Reported Gross Demand Reduction (MW)	850	108	201	322.16	70	54	17	78
CPITD-Q Gross Demand Reduction (MW)	819	108	199	315.08	66	46	15	70
% of 2013 Demand Reduction Target	71%	96%	57%	108%	59%	50%	39%	50%

Cumulative Portfolio Energy Impacts

- The CPITD reported gross energy savings is 4,333,105 MWh.
- The CPITD-Q gross energy savings is 4,210,389 MWh.

Portfolio Demand Reduction⁹

- The CPITD reported gross demand reduction is 850 MW.
- The CPITD-Q gross demand reduction is 819 MW.

⁵ Note: The “Savings Achieved as a % of 2011 Targets” are based on CPITD-Q reported savings. Thus, this achievement is subject to change pending results of final impact evaluation activities.

⁶ Gross savings represent change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program, regardless of why they participated.

⁷ Gross savings represent change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program, regardless of why they participated.

⁸ CPITD-Q Gross = CPITD Verified Gross Savings through PY3 + PYTD Reported Gross Savings. All savings reported as CPITD –Q gross savings are computed this way. CPITD-Q savings provide the best available estimate of savings achieved through the current quarter. CPITD Verified Gross savings will be reported in the Annual Report. Verified gross impact is calculated by applying the realization rate to reported gross impacts. Realization rate is a term used in several contexts in the development of reported program savings. The primary applications include the ratio of project tracking system savings data (e.g. initial estimates of project savings) to savings (a) adjusted for data errors and (b) that incorporate evaluated or verified results of the tracked savings.

⁹ Demand reduction to include both the demand savings from the installation of energy efficiency measures and the demand reduction associated with demand response programs.

Low-Income Sector

- The number of measures offered to the Low-Income Sector comprises approximately 31% of the total number of measures offered through all programs.
- The CPITD reported gross energy savings for low-income sector programs is 298,541 MWh.
- The CPITD-Q gross energy savings for low-income sector programs is 142,022 MWh¹⁰.

Government and Non-Profit Sector

- The CPITD reported gross energy savings for government and non-profit sector programs is 561,189 MWh.
- The CPITD-Q gross energy savings for government and non-profit sector programs is 518,935 MWh.

Program Year portfolio highlights as of the end of the reporting period:

- The PYTD reported gross energy savings is 743,474 MWh.
- The PYTD reported gross demand reduction is 308.85 MW.
- The PYTD reported participation is 1,139,035 participants.¹¹

2.3 Statewide Evaluator Summary

Below is a summary of the activities undertaken by the SWE team during PY4Q2.

The SWE has reviewed the EDC Quarterly Reports for PY4Q2 for completeness against the requirements of the SWE Audit Plan. The SWE reviewed the available CPITD reported gross impacts, CPITD-Q gross impacts, and PYTD gross impacts for each EDC. The SWE team audit activities and findings related to the savings reported in the EDCs' quarterly reports can be found in Section 3 of this report.

A summary of the SWE team findings includes:

- Currently¹² 97 programs have been implemented and are generating savings across the state.
- Progress towards 2013 MWh savings targets ranges from 82% - 109%.
- Progress towards 2013 MW reduction targets ranges from 38% - 108%.

Key SWE team activities during the PY4Q2 included the following:

- Residential program desk audits.
- Low-Income program desk audits.
- Non-residential program desk audits and on-site inspections.
- Participation in Program Evaluation Group meetings.
- Development of Audit Plan updates.

¹⁰ CPITD-Q energy savings in the low-income sector were not report by Met-Ed, Penelec, Penn Power, West Penn Power in the most recent quarterly reports.

¹¹ Statewide participants are based upon the participant numbers reported by each EDC. Most EDCs excluded the number of CFL bulbs distributed from these numbers; other EDCs estimated the number of bulbs per participant and included that estimate in their totals.

¹² Currently as of November 2012.

- Baseline study surveys and analyses for residential, commercial and industrial sectors.
- Development of statewide energy efficiency potential study methodology.

3 Statewide Evaluator Audit Activities

As part of the SWE audit activities, the members of the SWE team meet with each EDC to review current program implementation and evaluation activities and to address any pressing issues. Currently, the SWE team holds bi-weekly teleconferences with each EDC to discuss current and planned M&V activities, to schedule upcoming site-visits and audit activities, and to address any unresolved questions or issues that may arise throughout the evaluation process. During the current program year, the SWE team travels to each EDC and to specific project sites to conduct on-site audits of the various programs implemented in PY4. Additionally, the SWE team is in the process of conducting desktop audits for various programs. An update on each of these activities is provided in the following sections.

3.1 Audit Activities

3.1.1 Residential Programs

The residential program audits typically consist of a desktop audit which includes a review of: program kWh and kW savings calculations and database quality. The information required to conduct these reviews was provided by the EDCs in conjunction with their respective PY4Q2 reports. An update on these audits, by program type and EDC, is provided in the following sections.

3.1.2 Low-Income Programs

The low-income audit process involves quarterly desktop reviews to ensure that EDCs are utilizing technical reference manual (TRM) protocols and assumptions correctly, to verify that EDCs are reporting savings in accordance with custom protocols, and to validate that savings reported in EDC quarterly reports align with database extracts. In addition, the SWE verifies that EDCs are in compliance with the Act 129 mandate that the number of measures offered to the low-income sector is proportionate to the low-income sector's share of total energy usage.¹³ The following sections offer EDC-specific low-income audit findings and recommendations.

For EDCs that conduct on-site inspections the SWE conducts a desktop review of a select number of site visit reports. The review is intended to evaluate whether all measures are being satisfactorily installed by contractors, that "job types" are being characterized correctly in accordance with EDC custom protocols, and whether the corresponding savings are correctly reported. For SWE review of EDC site visit reports in lieu of the SWE conducting site visits the reports must meet the requirements outlined in Guidance Memo 16. Otherwise, EDCs can elect to have the SWE conduct the quarterly site inspections of low-income installations.

3.1.3 Non-Residential Programs

The following sections detail audit findings for non-residential programs. Each quarter, the SWE audits each of the non-residential programs run by the EDCs. Whereas residential programs are typically separated into discrete programs, most EDCs combine their non-residential programs into meta-programs for reporting and evaluation purposes. For example, a lighting program and an HVAC program may be combined into one efficient equipment program. The SWE audit of non-residential programs typically aligns with evaluation groups developed by EDC evaluators such that SWE audit findings and

¹³ Act 129 includes a provision requiring EDCs to offer a number of energy conservation measures to low-income households "proportionate to those households' share of the total energy usage in the service territory" (66 Pa.C.S. §2806.1(b)(i)(G)). The legislation contains no provisions regarding participation targets, or energy or demand savings.

recommendations would be relevant and directly applicable to each EDC. One drawback to this approach is that program groupings are not always consistent between EDCs. For example, one EDC may group all prescriptive and custom projects into one program, whereas another will evaluate those two programs separately. In addition, there may be situations where one EDC uses different criteria to define their programs (e.g., building type vs. measure type). The SWE believes that auditing programs based on EDC program groupings produce the best and most relevant review.

The SWE audit activities vary from quarter to quarter based on what was accomplished by the EDCs and the EDC evaluators. The reviews generally target the following categories:

- Tracking Database and Reporting
- Reported kWh and kW Savings
- Sampling Plan
- Verified kWh and kW Savings
- TRC Calculations

For the PY4Q2 report, the SWE performed the following activities:

- Tracking Database and Reporting
- Reported kWh and kW Savings
- Sampling Plan

3.2 Program Evaluation Group Meetings

3.2.1 Program Evaluation Group Meeting, September 27th, 2012

The SWE participated in a Program Evaluation Group meeting with the TUS staff, EDC representatives and EDC evaluators on September 27th, 2012 via teleconference. The following topics were discussed.

- Low-income Measures Clarification
- End Use Metering Studies
- Demand Response Study updates on data collection and surveys
- Timeline for the Technical Reference Manual updates and redline versions
- Questions on the Program Year Three Annual Report

3.2.2 Program Evaluation Group Meeting, October 24th, 2012

The SWE participated in a Program Evaluation Group (PEG) meeting with the TUS staff, EDC representatives and EDC evaluators on October 24th, 2012 via teleconference. The following topics were discussed.

- Schedule for the EDC's Program Year Four reports
- Decision of the TUS Staff that end-use metering studies be done in Phase 2
- Update on the incremental cost database
- Cut-off date for counting savings from energy efficiency for peak demand reduction
 - EDCs will provide preliminary data to the Commissioners on the status of meeting the DR targets for the summer of 2013.
 - Schedule for this process will be discussed at next PEG Meeting
- Update on eQUEST modeling for the commercial sector

- The eQUEST models will be run to update key parameters for commercial and industrial (C&I) Measures for the 2014 PA TRM and will use simulation models for non-residential buildings developed by the California DEER database team.
- Update on Demand Response Study
 - Schedule for the draft and final Demand Response Interim Report
- PUC's survey requirements for identifying energy efficiency measures provided to low-income customers outside of residential low-income programs
 - For EDCs that plan to count savings from low-income measures outside of low-income programs, there must be a SWE-approved method for counting savings. If EDCs choose to forgo those savings there won't be any surveying required.
 - PPL gave an overview of their low-income survey questionnaire and their sampling plan.

3.2.3 Program Evaluation Group Meeting, November 28th, 2013

The SWE participated in a Program Evaluation Group meeting with the TUS staff, EDC representatives and EDC evaluators on November 28th, 2012 via teleconference. The following topics were discussed.

- Methodology for impact evaluations of low-income energy efficiency programs
 - FirstEnergy will share the billing analysis with the SWE Team pertaining to the methodology for impact evaluations of Act 129 residential low-income energy efficiency programs. The SWE Team will in turn analyze the analyses and share their opinions at the January PEG meeting.
- Schedule for the reporting by EDCs of kW savings for the summer 2012 Demand Response (DR) programs
 - Deadline is March 1, 2013 for the reporting by the EDCs of kW savings for the summer 2012 DR programs
- Schedule for the SWE Program Year Three Annual Report
 - Schedule has been updated to allow time to incorporate data analysis of from the November 30th EDC data requests
 - SWE Program Year Three Report now due February 28th, 2013
- Update on DR Surveys
 - Completed survey responses from the EDCs should be received by the SWE by the end of the year or possibly the first week in January.
- Development of the 2014 TRM
 - 2014 TRM will be a part of Phase 2 and will concur under the Phase 2 budget
 - There will be one major Stakeholder meeting regarding the 2014 TRM.
- Guidance Memo on calculating realization rates and confidence intervals
- Pennsylvania Incremental Cost Database
 - Updated version will incorporate TUS and EDC comments and will be released in January 2013.

3.3 EDC Meetings

The SWE and TUS staff conduct bi-weekly meetings held by teleconference with each EDC. These calls provide an opportunity for the SWE to communicate with each EDC on their specific program and evaluations. Topics discussed on these calls are specific to the EDC's and SWE's needs. In the past quarter, EDCs have used these calls to discuss reporting schedules for summer 2013 Demand Response

programs, questions concerning appropriate use of realization rates and other savings protocols, SWE data requests and a variety of other topics.

3.4 Status of TRM Update

The tentative schedule of the 2014 TRM update is as follows:

- March – June 2013: SWE conducts PEG conference calls and meetings to discuss new and revised protocols and other TRM issues.
- July 2013: SWE begins drafting 2014 TRM.
- September 13, 2013: 2014 TRM and TRM Tentative Order at Public Meeting.
- September 29, 2013: 2014 TRM and TRM Tentative Order notice published in *Pennsylvania Bulletin*.
- October 29, 2013: Initial comments due.
- November 8, 2013: Reply comments due.
- December 20, 2013: 2014 TRM and TRM Final Order at Public Meeting.

3.5 Demand Response Issues

In PY4Q2, the SWE developed survey instruments for the EDCs to interview DR participants regarding their participation in Act 129 and/or PJM events to determine the impact of Act 129 programs on DR reductions. The SWE also developed data requests for the EDC's to provide Summer 2012 DR results to the SWE for audit activities and for data to determine cost/benefit for the DR study. The SWE completed the Interim DR study and submitted it to TUS for review and approval.

3.6 Net to Gross Issues

There were no issues raised related to net-to-gross (NTG) during the second quarter of PY4.

4 Duquesne Light Impact Summaries and Audit Findings

Section 4 contains information on Duquesne’s energy and demand impacts to date, current evaluation activities and findings, and current SWE audit activities, findings, and recommendations.

Table 4-1: Summary of Duquesne Quarterly Report Impacts

	CPITD Reported Gross Impact	CPITD-Q Reported Impact ^[a]	Savings Achieved as % of 2013 Targets ^[f]
Total Energy Savings (MWh)	414,585	407,001	98%
Total Demand Reduction (MW)	108	108	95%
TRC Benefits (\$) ^[a]	Not Reported	Not Reported	Not Applicable
TRC Costs (\$) ^[b]	Not Reported	Not Reported	Not Applicable
TRC Benefit-Cost Ratio ^[c]	Not Reported	Not Reported	Not Applicable
CO ₂ Emissions Reduction ^{[d][e]} (Tons)	335,814	329,671	Not Applicable

NOTES:

[a] Avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction. Subject to TRC Order. TRC Benefits reporting requirement is waived for quarterly reports.

[b] Costs paid by the program administrator and participants plus the increase in supply costs for any period when load is increased. Subject to TRC Order. TRC Costs reporting requirement is waived for quarterly reports.

[c] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is required in annual reports only.

[d] 8.1x10⁻⁴ metric tons of CO₂ per kWh (EPC’s eGRID2007 Version 1.1, RFCE Region annual non-baseload CO₂ output emissions rate, year 2005 data).

[e] CO₂ Emissions are reported due to Stakeholder interest in this information and to recognize that reporting this information is recommended by the National Action Plan for Energy Efficiency.

[f] Savings based on CPITD.

Duquesne has reported PY4 gross energy savings for 17 programs. The following table provides a breakdown of the contribution of each program’s gross energy savings towards the PY4 portfolio savings.

Table 4-2: Summary of Program Impacts on Gross Reported Portfolio Savings – Duquesne

Program:	Percent of PYTD Gross MWh Savings Portfolio
Residential: EE Program (REEP): Rebate Program	2.6%
Residential: EE Program Upstream Lighting	25.1%
Residential: School Energy Pledge	0.0%
Residential: Appliance Recycling	3.6%
Residential: Low-Income EE	1.3%
Residential: Low-Income EE (Upstream Lighting)	0.0%
Commercial Sector Umbrella EE	0.4%
Healthcare EE	4.2%
Industrial Sector Umbrella EE	0.3%
Chemical Products EE	0.2%
Mixed Industrial EE	4.0%
Office Building – Large – EE	19.7%
Office Building – Small EE	1.8%
Primary Metals EE	12.5%
Public Agency / Non-Profit	16.4%
Retail Stores – Small EE	4.5%
Retail Stores – Large EE	3.5%
Total	100.0%

4.1 Program Implementation and Evaluation Summary

The following table contains a summary of programs reporting participation and savings to-date, programs evaluated in PY4, and programs to be implemented or with no reported savings. Programs “implemented” include only those programs with reported gross impacts; “evaluated” programs include programs with preliminary verified impacts.

Table 4-3: Summary of Programs Implemented to Date by Duquesne

<i>Programs Reporting PY4 Gross Savings:</i>
<ul style="list-style-type: none">• Residential: EE Program (REEP): Rebate Program• Residential: EE Program Upstream Lighting• Residential: Appliance Recycling• Residential: Low-Income EE• Commercial Sector Umbrella EE• Healthcare EE• Industrial Sector Umbrella EE• Chemical Products EE• Mixed Industrial EE• Office Building – Large – EE• Office Building – Small EE• Primary Metals EE• Public Agency / Non-Profit• Retail Stores – Small EE• Retail Stores – Large EE
<i>Programs to be Implemented or with No Reported PY4 Savings:</i>
<ul style="list-style-type: none">• Residential: School Energy Pledge• Residential: Low-Income EE (Upstream Lighting)

4.2 Status of EM&V Activities

4.2.1 Status of EM&V Plans

No revised EM&V Plans were submitted for SWE review in PY4Q2.

4.2.2 Status of M&V Activities

In PY4Q2, Duquesne’s evaluator, Navigant, received the Demand Response questionnaire prepared by the SWE and participated in a training session on how to conduct the survey. The surveys are expected to be conducted with a sample of Duquesne’s Curtailable Load program participants in January 2013.

Navigant also prepared to conduct on-site visits to a sample of Residential Direct Load Control program participants, to verify the installation and proper functioning of switches attached to customer cooling equipment used in the program.

4.3 Residential Program Audit Summary

4.3.1 Residential Lighting Program

To audit these programs, the SWE team conducted the following activities:

- Verified the number of bulbs reported;
- Verified the savings protocol utilized to report kWh and kW savings;
- Verified the baseline assumptions utilized to calculate savings; and
- Verified the bulbs tracked against invoices received.

To verify each of these aspects, the SWE team reviewed those values reported in the PY4Q2 Report to the data tracked in the EDC’s database and tracking system. The following table contains a summary of the SWE team audit findings and recommendations:

Table 4-4: Summary of CFL Program Audit - Duquesne

Category:	PY4Q2 Report:	Database Verification:	Notes:
Gross Energy Savings	IQ: 17,146 MWh	√	This represents the savings from bulbs sold through the upstream CFL program administered through Ecos.
Gross Demand Reduction	IQ: 0.841 MW	√	This represents the savings from bulbs sold through the upstream CFL program administered through Ecos.
Use of TRM Protocols	Not Applicable	√	All savings calculated in accordance with the TRM protocols.
Baseline Assumptions	Not Applicable	√	All baseline assumptions valid.
Invoice Review	Not Applicable	√	A total of 3 individual invoices were reviewed for bulbs sold and distributed during PY4Q2. Bulb counts and total dollars reimbursed were verified.

4.3.2 Appliance Recycling Program

The SWE has started, in PY4, to conduct database sample checks for the Appliance Recycling program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that no program changes occurred in this quarter.

4.3.3 Efficient Equipment Program

The SWE has started, in PY4, to conduct database sample checks for the Efficient Equipment program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE did not encountered any QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of Program Year Four) will be available in the PY4 Annual Report. The SWE notes that no program changes occurred in this quarter.

4.3.4 New Construction Program

Duquesne did not have an active Residential New Construction program in PY4Q2.

4.4 Low-Income Program Audit Summary

The SWE requested that Duquesne provide all spreadsheets and supporting calculations detailing low-income program participation, energy and demand savings, and other relevant information such as measures installed. The Low-Income Energy Efficiency Program (LIEEP), which consists primarily of kits, bulb giveaways and appliance removal and replacement, as well as a portion of the Upstream Lighting program, which is assumed to have low-income population participation. Savings for the latter is allocated annually and thus is not reported for the PY4Q2 report. Table 4-5 presents the LIEEP participation, energy savings, and demand impact listed in Duquesne's quarterly report and the corresponding information gleaned from the SWE's review of the database extract. The SWE applied a peak line loss factor of 6.9% to database demand impacts to facilitate a comparison with reported figures. The adjustment is reflected in the database demand impact listed in Table 4-5. The SWE made Duquesne aware of the participation count discrepancy and Duquesne confirmed it was the result of an inadvertent spreadsheet error. Duquesne has corrected the PY4Q2 LIEEP participant count to 428 participants.

Table 4-5: Low-Income Energy Efficiency Program Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	27	338	0.042
Database	428	338	0.042
Discrepancy (Report - Database)	-401	0	0

The SWE also verified that all measure and kit calculations were consistent with the 2012 TRM protocols. Since PY4Q1 Duquesne has appropriately adjusted the baseline assumptions for 23 watt CFLs from 100 watts to 72 watts to be in accordance with the 2012 TRM. Also, for refrigerator recycling Duquesne explained that a savings value of 1,190 kWh was assigned to secondary units based on updated survey results on the percentage of recycled appliances that are replaced and the assumption that 87% of replaced secondary units are ENERGY STAR models.

Low-income site inspections were not performed in PY4Q2. The SWE plans to review low-income site inspection reports after Duquesne's third party contractor has completed the inspections in PY4Q4.

Duquesne reported 26 measures available to the low-income sector, which is 38% of the total number of measures offered by Duquesne across all sectors. Therefore, Duquesne is in compliance with its proportion of measures target, which is 7.88% for Duquesne.

4.5 Non-Residential Program Audit Summary

Duquesne lists 11 programs under its non-residential portfolio. Seven of these programs are offered to the Commercial and Government/Non-Profit sectors and four are offered to the Industrial sector. Each of Duquesne’s non-residential programs achieved energy and demand impacts during the PY4Q2 quarter. The Office Building Large EE Program resulted in the largest energy savings whereas Primary Metals EE Program resulted in the largest demand savings towards Duquesne’s total portfolio savings. The gross reported energy savings for these programs was 43,081 MWh and the gross reported demand impact was 66.95 MW and almost \$3.25 million in incentives were paid to participants. Table 4-6 provides the reported number of participants, energy savings, demand savings and incentives paid from PY4Q2. The two Retail EE programs are presented together because Duquesne did not report the incentives paid to the Small and Large program separately. Demand impact figures were adjusted to reflect a peak line loss factor of 7.0% for all non-residential programs prior to reporting.

Table 4-6: Duquesne Non-Residential Programs Quarterly Summary

Program	Participants	MWh Impact	MW Impact	Incentive Amount
Commercial Sector Umbrella EE	1	361	0.45	\$37,000
Healthcare EE	3	1,938	1.42	\$126,000
Industrial Sector Umbrella EE	0	323	3.47	\$48,000
Chemical Products EE	1	190	0.49	\$8,000
Mixed Industrial EE	1	1,713	5.98	\$114,000
Office Building Large EE	1	16,227	7.07	\$692,000
Office Building Small EE	1	1100	0.25	\$40,000
Primary Metals EE	1	9,964	38.47	\$1,291,000
Public Agency/ Non-Profit	5	7,166	7.82	\$673,000
Retail Stores- Small EE	1	1,514	0.32	\$222,000
Retail Stores- Large EE	1	2585	1.20	
Totals	16	43,081	66.95	\$3,251,000

4.5.1 Review of Savings Database

Duquesne provided a database of all PY4Q2 activity to the SWE team for review. Table 4-7 provides the participant count, energy impact, demand impact and total incentives paid by program according to the Duquesne database extract. As with the previous section, the two retail programs (small and large) are presented together. The SWE applied a peak line loss factor of 7.0% to demand impacts for all non-residential programs to facilitate a comparison with reported figures.

Several of Duquesne’s programs are composed of multiple sub-programs. For example, Duquesne’s Public Agency/Non-Profit program is made up of the Education, Education – CCx, PAPP Public Agency Partnership, Non-Profit, PAPP-RE, and PAPP – CCx customer segments. The abbreviations which follow these sub-programs further classify projects by type and CSP in Duquesne’s tracking system, PMRS. The SWE counted energy and demand impacts from several sub-programs from the extract level database and matched with the figures at the program level in Duquesne’s PY4Q2 report.

Table 4-7: Duquesne Non-Residential Programs Savings Database Summary

Program	Participants	MWh Impact	MW Impact	Incentive Amount
Commercial Sector Umbrella EE	6	361	0.42	\$23,798
Healthcare EE	8	1,938	1.32	\$134,030
Industrial Sector Umbrella EE	9	323	3.23	\$48,412
Chemical Products EE	5	190	0.45	\$21,776
Mixed Industrial EE	30	1,713	5.57	\$154,964
Office Building Large EE	38	16,227	6.58	\$691,192
Office Building Small EE	31	1,100	0.23	\$57,193
Primary Metals EE	16	9,964	35.81	\$1,281,477
Public Agency/ Non-Profit	37	7,166	7.28	\$563,219
Retail Stores- Small EE	79	4,099	1.42	\$264,154
Retail Stores- Large EE				
Totals	259	43,080	62.33	\$3,240,216

In Table 4-8, the discrepancies between the reported figures and the information contained in the database are presented. All discrepancies are reported as follows:

$$\text{Reported Figure} - \text{Database Summary} = \text{Discrepancy}$$

Table 4-8: Duquesne Non-Residential Program Discrepancies

Program	Participants	MWh Impact	*MW Impact	Incentive Amount
Commercial Sector Umbrella EE	-5	0	0.00	\$13,202
Healthcare EE	-5	0	0.00	-\$8,030
Industrial Sector Umbrella EE	-9	0	0.00	-\$412
Chemical Products EE	-4	0	0.00	-\$13,776
Mixed Industrial EE	-29	0	0.00	-\$40,964
Office Building Large EE	-37	0	0.00	\$808
Office Building Small EE	-30	0	0.00	-\$17,193
Primary Metals EE	-15	0	0.00	\$9,523
Public Agency/ Non-Profit	-32	0	0.00	\$109,781
Retail Stores- Small EE	-77	0	0.00	-\$42,154
Retail Stores- Large EE				
Totals	-243	0	0.00	\$10,784
* Database demand impacts adjusted to reflect a peak loss factor of 7.0% for all non-residential programs.				

Table 4-8 shows perfect agreement between the reported energy and demand savings for each of Duquesne’s non-residential programs. Table 4-8 shows that there was considerable variation between the participant counts and incentives in the report and the values contained in the Duquesne tracking data. The total reported participant counts for PY4Q2 were 243 lower than the participant counts shown in the savings database. Duquesne’s PY4Q2 report does not show any participants for the Industrial Sector Umbrella Program; however, the report shows that the program achieved savings impacts for PY4Q2. The total reported incentive amounts for PY4Q2 were \$10,784 higher than the rebates shown in the savings database. This is because Duquesne reports the incentives that were actually paid during the quarter rather than the sum of the incentives associated with projects completed in the quarter.

4.5.2 Review of Sample Design

Duquesne’s sample design will be reviewed for the PY4Q3 report. The SWE will request the sample design for each evaluation group in early 2013 and review to ensure that the sampling plan is adequate to achieve the annual confidence and precision targets set forth in the Audit Plan.

4.5.3 On-site Inspections

Duquesne recently began its on-site inspections of PY4 installations. The SWE will conduct ride-along site inspections of PY4 installations in PY4Q3.

4.6 Finals Recommendations

Based on SWE audit findings, the SWE team recommends the following:

- The SWE recommends that Duquesne and its evaluator perform a comparison between the values reported in quarterly reports and those listed in quarterly tracking data extracts. This comparison will help ensure that the participant counts and incentives shown in the filed reports match to that of the database.

5 PECO Impact Summaries and Audit Findings

Section 5 contains information on PECO’s energy and demand impacts to date, current evaluation activities and findings, and current SWE audit activities, findings, and recommendations.

Table 5-1: Summary of PECO Quarterly Report Impacts

	CPITD Reported Gross Impact	CPITD-Q Reported Impact ^[a]	Savings Achieved as % of 2013 Targets ^[f]
Total Energy Savings (MWh)	1,187,210	1,162,018	100%
Total Demand Reduction (MW)	201	199	57%
TRC Benefits (\$) ^[a]	Not Reported	Not Reported	Not Applicable
TRC Costs (\$) ^[b]	Not Reported	Not Reported	Not Applicable
TRC Benefit-Cost Ratio ^[c]	Not Reported	Not Reported	Not Applicable
CO ₂ Emissions Reduction ^{[d][e]} (Tons)	961,640	941,235	Not Applicable
NOTES:			
[a] Avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction. Subject to TRC Order. TRC Benefits reporting requirement is waived for quarterly reports.			
[b] Costs paid by the program administrator and participants plus the increase in supply costs for any period when load is increased. Subject to TRC Order. TRC Costs reporting requirement is waived for quarterly reports.			
[c] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is required in annual reports only.			
[d] 8.1x10 ⁻⁴ metric tons of CO ₂ per kWh (EPC’s eGRID2007 Version 1.1, RFCE Region annual non-baseload CO ₂ output emissions rate, year 2005 data).			
[e] CO ₂ Emissions are reported due to Stakeholder interest in this information and to recognize that reporting this information is recommended by the National Action Plan for Energy Efficiency.			
[f] Savings based on CPITD.			

PECO has reported PY4 gross energy savings for 16 programs. The following table provides a breakdown of the contribution of each program’s gross energy savings towards the PY4 portfolio savings.

Table 5-2: Summary of Program Impacts on Gross Reported Portfolio Savings – PECO

Program:	Percent of PYTD Gross MWh Savings Portfolio
Smart Lighting Discounts Program	6.5%
Smart Appliance Recycling Program	2.9%
Smart Homes Rebates Program	5.7%
Residential Conservation Voltage Reduction	0.0%
Low-Income Energy Efficiency Program	18.5%
Low-Income Conservation Voltage Reduction	0.0%
C&I Smart Equipment Incentives- Retrofit	38.8%
C&I Smart Equipment Incentives- Multi-Tenant	0.3%
C&I Smart Equipment Incentives- Appliance Recycling	0.0%
C&I Smart Construction Incentives	1.8%
C&I Conservation Voltage Reduction	0.0%
Gov/NP Smart Equipment Incentives- Retrofit	21.5%
Gov/NP Smart Equipment Incentives- Multi-Tenant	0.0%
Gov/NP Smart Equipment Incentives- Appliance Recycling	0.0%
Gov/NP Smart Construction Incentives	4.0%
Gov/NP Conservation Voltage Reduction	0.0%
Total	100.0%

5.1 Program Implementation and Evaluation Summary

The following table contains a summary of programs reporting participation and savings to-date, programs evaluated in PY4, and programs to be implemented or with no reported savings. Programs “implemented” include only those programs with reported gross impacts; “evaluated” programs include programs with preliminary verified impacts.

Table 5-3: Summary of Programs Implemented to Date by PECO

<i>Programs Reporting PY4 Gross Savings:</i>
<ul style="list-style-type: none">• Smart Lighting Discounts Program• Smart Appliance Recycling Program• Smart Homes Rebates Program• Low-Income Energy Efficiency Program• C&I Smart Equipment Incentives- Retrofit• C&I Smart Equipment Incentives- Multi-Tenant• C&I Smart Equipment Incentives- Appliance Recycling• C&I Smart Construction Incentives• Gov/NP Smart Equipment Incentives- Retrofit• Gov/NP Smart Equipment Incentives- Multi-Tenant• Gov/NP Smart Construction Incentives
<i>Programs to be Implemented or with No Reported PY4 Savings:</i>
<ul style="list-style-type: none">• Residential Conservation Voltage Reduction• Low-Income Conservation Voltage Reduction• C&I Conservation Voltage Reduction• Gov/NP Smart Equipment Incentives- Appliance Recycling• Gov/NP Conservation Voltage Reduction

5.2 Status of EM&V Activities

5.2.1 Status of EM&V Plans

No revised EM&V Plans were submitted for SWE review in PY4Q2.

5.2.2 Status of M&V Activities

Each program’s evaluation updates and findings are as follows:

- Low-Income Energy Efficiency Program: PECO will determine PY4 savings for Component 1 of LEEP using a four-year average of billing analysis results from the 2008—2009 Low-Income Usage Reduction Program (LIURP) and PY1 and PY2 LEEP data. PY4 savings for Components 2 through 5 will be verified via a review of the tracking system database. Process evaluation activities beginning in PY4Q3 will include in-depth interviews with utility and implementation contractor staff and telephone surveys of participants.
- Smart Lighting Discounts: The M&V completed for PY4Q2 consisted of reviewing the tracking data provided to the evaluation team by PECO program staff, as well as reviewing all manufacturer invoices received and approved by PECO and Ecova¹⁴ through the end of PY4Q2.

¹⁴ Ecova is the implementation contractor for PECO’s Smart Lighting Discounts program.

The data used to estimate the PY4 PYTD savings for this report was based upon the manufacturer invoices.

- Smart Appliance Recycling: The M&V completed for PY4Q2 consisted of reviewing the PY4Q2 tracking data provided to the evaluation team by PECO program staff. The PY4 PYTD savings in this report were estimated by applying the TRM specified savings algorithm to this quarterly and program year-to-date tracking data provided by PECO, and verified by the evaluation team.
- Smart Home Rebates: PECO will begin evaluation work on the Smart Home Rebates program in PY4Q3 including conducting staff, contractor, and trade ally interviews. Data collection from participants and trade allies will begin in PY4Q4.
- Smart Equipment Incentives Commercial and Industrial (SEI C&I) Program: PECO’s evaluation of the SEI C&I program will align closely with the PY3 evaluation in terms of approaches and tasks. In PY4, the team will complete an initial sample design based on Q1 and Q2 completed project files as well as any available pipeline project information. The team plans to re-visit the sample design and strata based on the findings from PY3. The sample will be designed to achieve an 85/15 or better level of confidence and relative precision at the program level. Based on the initial sample design, the team will choose projects to sample from the project population and request project files from PECO/KEMA¹⁵.
- Smart Equipment Incentives Government, Nonprofit, and Institutional (SEI GNP) Program: Consistent with the evaluation of the SEI C&I program, the PY4 evaluation of the SEI GNP Program will align closely with the PY3 evaluation in terms of approaches and tasks. In PY4, the evaluation team will complete an initial sample design based on Q1 and Q2 completed project files as well as any available pipeline project information. The sample will be designed to achieve an 85/15 or better level of confidence and relative precision at the program level. The team plans to re-visit the sample design and strata based on the findings from PY3, particularly the wide range of gross realization rates and the precision achieved with the PY3 sample. The sample will be designed to achieve an 85/15 or better level of confidence and relative precision at the program level. Based on the initial sample design, the team will choose projects to sample from the project population and request project files from PECO/KEMA.
- Smart Construction Incentives: Navigant is preparing to launch the PY4 program evaluation in the upcoming weeks. As in PY3, Navigant will conduct in-depth interviews with staff members at the beginning of the evaluation. The process evaluation will also include participant surveys and trade ally interviews. The impact evaluation will include file reviews and on-site verification of a sample of projects. Navigant may use billing data to calibrate modeled savings from whole building projects in the sample. Navigant will draw an initial sample after PY4Q3 and draw additional projects as needed from Q4. The sample size and design will be based on the number and types of completed projects at the end of Q3 and the remaining pipeline projects for Q4.
- Residential Smart AC Saver Program: Navigant utilized the “Deemed Savings Estimates for Legacy Air Conditioning and Water Heating Direct Load Control Programs in PJM Region” report in conjunction with the PECO tracking database of residential customers to predict reduction by connected air conditioning load. PECO is in the process of additional data collection and analysis to identify its top 100 load hours. The average demand reduction during these hours by participants in the AC Saver Program and the predicted savings values will be utilized to calculate residential load reductions for PY4. A final survey of participants will be conducted to understand customer demographics, how customers learned of the program, satisfaction with

¹⁵ KEMA is the implementation contractor for PECO’s non-residential programs

the program, how the customers handled their AC on a typical summer day and during heat waves, if they noticed load control events, and how they and their homes responded to these events.

- Commercial Smart AC Saver Program: Navigant has utilized the data from the M&V group (a sample of participants that had additional metering equipment installed on their air conditioners) to calculate load reduction for the commercial direct load control population. PECO is in the process of additional data collection and analysis to identify its top 100 load hours. The average demand reduction during these hours by participants in the AC Saver Program and the calculated savings values will be utilized to determine commercial load reductions for PY4. A final survey of participants will be conducted to understand customer demographics, how customers learned of the program, satisfaction with the program, how the customers handled their AC on a typical summer day and during heat waves, if they noticed load control events, and how they and their businesses responded to these events.
- Permanent Load Reduction (PLR): Only one project has been completed in the PLR program. Given this very low participation, the project will be evaluated in conjunction with the Smart Equipment Incentives program.
- Demand Response Aggregator: Navigant is currently analyzing the data from participants in the Demand Response Aggregator program to determine customer baselines and demand impacts during hours of dispatch. Once this effort is complete, Navigant will work with PECO to reconstruct the load curve, identify the top 100 hours, and calculate the average demand reduction over the top 100 hours. This information will be provided to the PUC and the statewide evaluator (SWE) in the Preliminary Demand Reduction Compliance report, due in March 2013.
- Distributed Energy Resources: Similar to the Demand Response Aggregator program, Navigant is currently analyzing the data from participants in the Demand Energy Resources program to determine customer baselines and demand impacts during hours of dispatch. Once this effort is complete, Navigant will work with PECO to reconstruct the load curve, identify the top 100 hours, and calculate the average demand reduction over the top 100 hours. This information will be provided to the PUC and the SWE in the Preliminary Demand Reduction Compliance report, due in March of 2013.

5.3 Residential Program Audit Summary

5.3.1 Residential Lighting Program

To audit these programs, the SWE team conducted the following activities:

- Verified the number of bulbs reported;
- Verified the savings protocol utilized to report kWh and kW savings;
- Verified the baseline assumptions utilized to calculate savings; and
- Verified the bulbs tracked against invoices received.

To verify each of these aspects, the SWE team reviewed those values reported in the PY4Q2 Report to the data tracked in the EDC’s database and tracking system. The following table contains a summary of the SWE team audit findings and recommendations:

Table 5-4: Summary of CFL Program Audit - PECO

Category:	PY4Q2 Report:	Database Verification:	Notes:
Gross Energy Savings	IQ: 3,305 MWh	√	This represents the savings from bulbs reimbursed and given-away through the Smart Lighting Program in PY4Q2.
Gross Demand Reduction	IQ: 0.2 MW	√	This represents the savings from of bulbs reimbursed and given-away through the Smart Lighting Program in PY4Q2.
Use of TRM Protocols	Not Applicable	√	All savings calculated in accordance with the TRM protocols.
Baseline Assumptions	Not Applicable	√	All baseline assumptions valid.
Invoice Review	Not Applicable	√	A total of 3 individual invoices were reviewed for bulbs sold and distributed during PY4Q2. Bulb counts and total dollars reimbursed were verified.

5.3.2 Appliance Recycling Program

The SWE has started, in PY4, to conduct database sample checks for the Appliance Recycling program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that no program changes occurred in this quarter.

5.3.3 Efficient Equipment Program

The SWE has started, in PY4, to conduct database sample checks for the Efficient Equipment program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE did not encountered any QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of Program Year Four) will be available in the PY4 Annual Report. The SWE notes that no program changes occurred in this quarter.

5.3.4 New Construction Program

PECO did not have an active Residential New Construction program in PY4Q2.

5.4 Low-Income Program Audit Summary

The SWE requested that PECO provide a quarterly database extract, consisting of all spreadsheets and supporting calculations detailing program participation, energy and demand savings, and other relevant information such as measures installed. The SWE compared the data provided in the quarterly data extract to PECO's PY4Q2 report. As is shown in Table 5-5, no discrepancies were found between the two sources.

Table 5-5: Low-Income Energy Efficiency Program Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	2,390	7,532	0.4
Database	2,390	7,532	0.4
Discrepancy (Report - Database)	0	0	0.0

Low-Income Energy Efficiency Program (LEEP) participant savings are recorded based on "measure group," which is determined by both the type of space heating and measures installed. The SWE found that the values used in PECO's tracking data are preliminary values from PY3 and have yet to be updated to the most recent results presented in PECO's PY3 Annual Report. Regardless, all PY4 results will be based on 2008-2009 LIURP and PY1 and PY2 LEEP data and therefore PY4Q2 results are subject to change. Additionally, the LIURP program consistently distributed a maximum of four CFLs and therefore the billing analysis can only be extended to the LEEP program energy savings for the first four CFLs installed. The SWE verified the savings for a sample of 10 participants receiving in excess of four bulbs to ensure the savings calculations followed TRM protocols. No discrepancies were found. The SWE also confirmed that savings for Component 4 of LEEP, which is a refrigerator replacement program, was assigned in accordance with the 2012 TRM.

In addition to the desk audit, the SWE conducted site inspections of 10 LEEP installations. The site visits were conducted in December 2012 and were of PY4Q1 installations. The visits consisted of verifying installation and operability of all invoiced measures. Site visit results were cross-checked against the PECO database to verify that job types were properly assigned and measures correctly recorded. The SWE found that there were isolated instances of measure failures, but otherwise all measures were installed as reported.

Lastly, PECO offered 44 measures to the low-income sector in the first quarter of program year four, which is 36.29% of the total number of measures offered across all sectors. Therefore, PECO is in compliance with its proportion of 8.05% measures target. It should be noted that PECO stated that the proportion of measures target is 3.1%, which is incorrect. The target it set at 8.05% for Phase I of Act 129.

5.5 Non-Residential Program Audit Summary

PECO reported savings impacts from four non-residential programs in PY4Q2: Smart Equipment Incentives C&I, Smart Equipment Incentives GNP, Smart Construction Incentives C&I, and Smart Construction Incentives GNP. The participation, energy and demand impacts of the multi-tenant components of the Smart Equipment Incentives programs were reported separately for PY4Q2. Incentives paid to multi-tenant participants were not reported separately. There were no participants or savings reported for the Appliance Recycling Programs for both C&I and GNP sectors. The gross reported energy savings of these programs was 39,161 MWh and the gross reported demand savings was 6.3 MW

and almost \$3.47 million in incentives were paid to participants. Table 5-6 provides the reported number of participants, energy savings, demand savings and incentives paid from PY4Q2. Demand impact figures were adjusted to reflect a peak line loss factor of 10.0% for C&I programs; 10.5% for GNP programs; and 10.2% for New Construction programs prior to reporting.

Table 5-6: PECO Non-Residential Programs Quarterly Summary

Program	Participants	MWh	MW	Incentives
Smart Equipment Incentives - C&I Retrofit	49	24,507	4.5	\$2,222,000
Smart Equipment Incentives - C&I Multi-tenant	7	262	0.0	
Smart Equipment Incentives - C&I Appliance Recycling	0	0	0.0	\$0
Smart Equipment Incentives - GNP Retrofit	45	10,632	1.3	\$1,120,000
Smart Equipment Incentives - GNP Multi-tenant	2	0	0.0	
Smart Equipment Incentives - GNP Appliance Recycling	0	0	0.0	\$0
Smart Construction Incentives - C&I	4	818	0.1	\$131,000
Smart Construction Incentives - GNP	10	2,942	0.4	
Totals	117	39,161	6.3	\$3,473,000

5.5.1 Review of Savings Database

PECO provided a database of all PY4Q2 activity to the SWE team for review. Table 5-7 provides the participant count, energy impact, demand impact and total incentives paid by program according to the PECO database extract. The SWE applied a peak line loss factor of 10.0% for C&I programs; 10.5% for GNP programs; and 10.2% for New Construction programs to demand impacts to facilitate a comparison with reported figures. PECO's PY4Q2 report does not show any savings impacts for the Smart Equipment Incentive – GNP Multi-tenant Program because of rounding; however, the two program participants did achieve an energy reduction of 464 kWh and 0.35 kW for PY4Q2.

Table 5-7: PECO Non-Residential Programs Savings Database Summary

Program	Participants	MWh	MW	Incentives
Smart Equipment Incentives - C&I Retrofit	49	24,507	4.0	\$2,222,000
Smart Equipment Incentives - C&I Multi-tenant	7	262	0.0	
Smart Equipment Incentives - C&I Appliance Recycling	0	0	0.0	\$0
Smart Equipment Incentives - GNP Retrofit	45	10,632	1.2	\$1,120,000
Smart Equipment Incentives - GNP Multi-tenant	2	0	0.0	
Smart Equipment Incentives - GNP Appliance Recycling	0	0	0.0	\$0
Smart Construction Incentives - C&I	4	818	0.1	\$131,000
Smart Construction Incentives - GNP	10	2,942	0.4	
Totals	117	39,162	5.73	\$3,473,000

In Table 5-8, the discrepancies between the reported figures and the information contained in the database are presented. All discrepancies are reported as follows:

$$\text{Reported Figure} - \text{Database Summary} = \text{Discrepancy}$$

Table 5-8: PECO Non-Residential Program Discrepancies

Program	Participants	MWh	*MW	Incentives
Smart Equipment Incentives - C&I Retrofit	0	0	0.0	\$0
Smart Equipment Incentives - C&I Multi-tenant	0	0	0.0	
Smart Equipment Incentives - C&I Appliance Recycling	0	0	0.0	\$0
Smart Equipment Incentives - GNP Retrofit	0	0	0.0	\$0
Smart Equipment Incentives - GNP Multi-tenant	0	0	0.0	
Smart Equipment Incentives - GNP Appliance Recycling	0	0	0.0	\$0
Smart Construction Incentives - C&I	0	0	0.0	\$0
Smart Construction Incentives - GNP	0	0	0.0	
Totals	0	0	0.00	\$0
* Database demand impacts reflect a peak line loss factor of 10.0% for C&I programs; 10.5% for GNP programs; and 10.2% for New Construction programs.				

The participation counts, energy savings, and demand savings in the project databases match the reported numbers perfectly for each of the non-residential programs. The incentive amounts PECO reports for the Smart Construction Incentives program in its quarterly reports only reflects the C&I portion of the program. Rebates paid to GNP participants in the Smart Construction Incentives program are reported along with Smart Equipment Incentives – GNP program. After accounting for this reporting procedure, the SWE was able to match all participant counts, energy, peak demand and rebate amounts between the PECO tracking data and PY4Q2 report.

5.5.2 Review of Sample Design

The SWE received a memo from PECO’s evaluation contractor on February 1, 2013 detailing the proposed sampling strategy for the Smart Equipment Incentives programs. Each program was separated into several strata based on project size and equipment type. Combined Heat and Power (CHP), Energy Management System (EMS) and Municipal Lighting projects were assigned to separate strata to limit the evaluation uncertainty which can accompany these measure categories. Sample sizes for the GNP program were increased for PY4 because the program failed to meet the confidence and precision targets set forth in the Audit Plan in PY3. The SWE requested that sample sizes also be increased for the C&I portion of the program because the measure rebates offered by the two programs are very similar.

PECO added several “cushion sites” to the sample design for both programs following the SWE request, increasing PY4 sample sizes to 30 sites for the C&I program and 37 sites for the GNP program. The SWE approved the sample designs for the Smart Equipment Incentive programs on February 4, 2013.

5.5.3 On-site Inspections

PECO is planning to begin its on-site inspections of PY4 installations in PY4Q4. The SWE plans to conduct ride-along site inspections of PY4 installations at that time.

5.6 Finals Recommendations

Based on SWE audit findings, the SWE team recommends the following:

- The SWE team commends PECO for the zero variance between tracked and reported savings for the non-residential programs.
- The SWE team recommends that PECO continue to use the proportion of low-income measures target set for Phase I of Act 129 for PY4.

6 PPL Impact Summaries and Audit Findings

Section 6 contains information on PPL’s energy and demand impacts to date, current evaluation activities and findings, and current SWE audit activities, findings, and recommendations.

Table 6-1: Summary of PPL Quarterly Report Impacts

	CPITD Reported Gross Impact	CPITD-Q Reported Impact ^[a]	Savings Achieved as % of 2013 Targets ^[f]
Total Energy Savings (MWh)	1,246,646	1,213,081	109%
Total Demand Reduction (MW)	322	315	108%
TRC Benefits (\$) ^[a]	Not Reported	Not Reported	Not Applicable
TRC Costs (\$) ^[b]	Not Reported	Not Reported	Not Applicable
TRC Benefit-Cost Ratio ^[c]	Not Reported	Not Reported	Not Applicable
CO ₂ Emissions Reduction ^{[d][e]} (Tons)	1,009,783	982,596	Not Applicable
NOTES:			
[a] Avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction. Subject to TRC Order. TRC Benefits reporting requirement is waived for quarterly reports.			
[b] Costs paid by the program administrator and participants plus the increase in supply costs for any period when load is increased. Subject to TRC Order. TRC Costs reporting requirement is waived for quarterly reports.			
[c] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is required in annual reports only.			
[d] 8.1x10 ⁻⁴ metric tons of CO ₂ per kWh (EPC’s eGRID2007 Version 1.1, RFCE Region annual non-baseload CO ₂ output emissions rate, year 2005 data).			
[e] CO ₂ Emissions are reported due to Stakeholder interest in this information and to recognize that reporting this information is recommended by the National Action Plan for Energy Efficiency. [f] Savings based on CPITD.			

PPL has reported PY4 gross energy savings for 10 programs. The following table provides a breakdown of the contribution of each program’s gross energy savings towards the PY4 portfolio savings.

Table 6-2: Summary of Program Impacts on Gross Reported Portfolio Savings – PPL

Program:	Percent of PYTD Gross MWh Savings Portfolio
Appliance Recycling Program	6.4%
Residential Lighting Program	22.9%
Custom Incentive Program	15.8%
Energy Efficiency Behavior & Education Program	0.0%
Efficient Equipment Incentive Program	50.8%
E-Power Wise Program	0.4%
Low-Income WRAP	2.1%
Renewable Energy Program	0.1%
HVAC Tune-Up Program	0.2%
Residential Energy Assessment & Weatherization Program	1.4%
Total	100.0%

6.1 Program Implementation and Evaluation Summary

The following table contains a summary of programs reporting participation and savings to-date, programs evaluated in PY4, and programs to be implemented or with no reported savings. Programs “implemented” include only those programs with reported gross impacts; “evaluated” programs include programs with preliminary verified impacts.

Table 6-3: Summary of Programs Implemented to Date by PPL

<i>Programs Reporting PY4 Gross Savings:</i>
<ul style="list-style-type: none"> • Appliance Recycling Program • Residential Lighting Program • Custom Incentive Program • Efficient Equipment Incentive Program • E-Power Wise Program • Low-Income WRAP • Renewable Energy Program • HVAC Tune-Up Program • Residential Energy Assessment & Weatherization Program
<i>Programs to be Implemented or with No Reported PY4 Savings:</i>
<ul style="list-style-type: none"> • Energy Efficiency Behavior & Education Program

6.1 Status of EM&V Activities

6.1.1 Status of EM&V Plans

No revised EM&V Plans were submitted for SWE review in PY4Q2.

6.1.2 Status of M&V Activities

Each program's evaluation updates and findings are as follows:

- **Appliance Recycling Program:** During PY4 Q2, the evaluation team verified the number of records in the Energy Efficiency Management Information System (EEMIS) for PY4Q2 by reconciling EEMIS data with the Q2 program database from JACO (the program CSP).
- **Residential Lighting Program:** During PY4Q2, the EM&V CSP reviewed a census of records exported from EEMIS to ensure that the recorded measure-level savings were consistent with savings equations specified in the TRM.
- **Custom Incentive Program:** Ongoing evaluation of large custom projects continued in PY4Q2.
- **Direct Load Control Program:** Events called during PY4Q1 were analyzed in Q2, and findings will be reported in a standalone report.
- **Efficient Equipment Incentive Program (non-lighting measures):** Cadmus conducted a records review for residential projects rebated in PY4Q1.
- **Efficient Equipment Incentive Program (C&I lighting):** During PY4Q2, the EM&V CSP completed site visits for the PY4Q1 sample. Results from analysis and final determination of realization rates, currently underway, will be available in PY4Q3.
- **Load Curtailment Program:** Events called during PY4Q1 were analyzed in PY4Q2, and findings will be reported in a standalone report.
- **WRAP:** During PY4Q2, the EM&V CSP reviewed 12 PY4Q1 records.
- **Renewable Energy Program:** This program closed in PY3. A records review was conducted for projects committed in PY2/PY3 that received their rebates in PY4Q1.
- **HVAC Tune-Up Program:** Raw tracking data from the implementer was reviewed and organized into spreadsheets.
- **Residential Energy Assessment & Weatherization Program:** During PY4Q2, the EM&V CSP reviewed 15 PY4Q1 records.

6.2 Residential Program Audit Summary

6.2.1 Residential Lighting Program

To audit these programs, the SWE team conducted the following activities:

- Verified the number of bulbs reported;
- Verified the savings protocol utilized to report kWh and kW savings;
- Verified the baseline assumptions utilized to calculate savings; and
- Verified the bulbs tracked against invoices received.

To verify each of these aspects, the SWE team reviewed those values reported in the PY4Q2 Report to the data tracked in the EDC’s database and tracking system. The following table contains a summary of the SWE team audit findings and recommendations:

Table 6-4: Summary of CFL Program Audit - PPL

Category:	PY4Q2 Report:	Database Verification:	Notes:
Gross Energy Savings	IQ: 33,397 MWh	√	This represents the savings from bulbs reimbursed and given-away through the Residential Lighting Program and entered in PPL’s database in PY4Q2.
Gross Demand Reduction	IQ: 1.52 MW	√	This represents the savings from bulbs reimbursed and given-away through the Residential Lighting Program and entered in PPL’s database in PY4Q2.
Use of TRM Protocols	Not Applicable	√	All savings calculated in accordance with the TRM protocols.
Baseline Assumptions	Not Applicable	√	All baseline assumptions valid.
Invoice Review	Not Applicable	√	A total of 3 individual invoices were reviewed for bulbs sold and distributed during PY4Q2. Bulb counts and total dollars reimbursed were verified.

6.2.2 Appliance Recycling Program

The SWE has started, in PY4, to conduct database sample checks for the Appliance Recycling program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes a temporary programmatic change occurred from November 1, 2012 until December 31, 2012 where the rebate for a recycled appliance increased from \$35 to \$50 as a limited time offer.

6.2.3 Efficient Equipment Program

The SWE has started, in PY4, to conduct database sample checks for the Efficient Equipment program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes in the Efficient Equipment Program.

6.2.4 New Construction Program

PPL did not have an active Residential New Construction program in PY4Q2.

6.3 Low-Income Program Audit Summary

The SWE requested that PPL provide a database extract, consisting of all spreadsheets and supporting calculations detailing program participation, energy and demand savings, and other relevant information such as measures installed. The SWE verified the participation and savings recorded in the database extract and compared these values to those reported in PPL’s quarterly report. The results for the E-Power Wise program are presented in Table 6-5 and those for the Winter Relief Assistance Program (WRAP) in Table 6-6.

Table 6-5: E-Power Wise Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	858	511	0.04
Database	858	511	0.04
Discrepancy (Report - Database)	0	0	0.00

Table 6-6: Winter Assistance Relief Program Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	1,067	2,046	0
Database	1,067	2,046	0
Discrepancy (Report - Database)	0	0	0

The SWE reproduced measure calculations for all components of E-Power Wise kits. The kit components include low-flow faucet aerators, low-flow showerheads, LED nightlights and CFLs. All savings values followed TRM protocols or any deviation from TRM protocols was sufficiently explained by PPL. For example, the TRM deemed measure savings for low-flow showerheads is based on a flow rate of 1.5 gallons per minute (gpm). However, PPL distributes showerheads with a flow rate of 2.0 gpm and assigns a savings value of 217 kWh per showerhead in the tracking database. The TRM calculated savings for a showerhead with a flow rate of 2.0 gpm is 231 kWh. PPL adjusts the tracking database value to be in accordance with the TRM at the end of the program year before performing the program evaluation. Low-flow showerhead installation rates obtained through evaluation are typically less than 100% and therefore the verified measure savings for this measure is likely to be less than the TRM value. This adjustment process is also explained in detail in PPL’s PY3 Annual Report.

The SWE reviewed the savings assigned to all WRAP participants based on job type (Baseload, Low Cost, High Cost). Job types with an installation date prior to April of 2012 had reported savings that utilized billing analysis results from PY3Q1. New billing analysis results became available as of PY3Q4 that would subsequently be applied to all PY3 jobs. PPL noted that retroactive savings adjustments are not made to the EEMIS tracking system when new billing analysis results are provided, but instead adjustments are made *ex ante*. While PY4Q2 reported results do not incorporate the latest billing analysis for all installations, old values were used for less than four percent of WRAP participants. Ultimately, PPL will conduct another billing analysis in PY4, which will result in adjustments to the reported job-type savings for all PY4 installations.

The SWE also reviewed 20 audit forms and site inspection reports of PY4Q1 and PY4Q2 WRAP installations. The documentation was reviewed to verify that the correct job type had been appropriately assigned in PPL's tracking database based on the comprehensiveness of measures installed, cooling usage and space heating and/or domestic hot water heating fuel. The reports were also reviewed to determine whether measures were being installed by contractors. The SWE found very few instances of uninstalled measures and no cases of uninstalled measures that affected job type.

Lastly, PPL offered 54 measures to the low-income sector in PY4Q1, which is 36.99% of the total number of measures offered across all sectors. Therefore, PPL is in compliance with its 8.64% proportion of measures target.

6.4 Non-Residential Program Audit Summary

PPL listed six programs under the non-residential umbrella, which includes the Small C&I, Large C&I, and GNP sectors. All six programs achieved energy and demand savings during PY4Q2. PPL’s programs are designed to be cross-cutting, allowing customers from all rate classes to participate in the programs. Because the quarterly report format does not include sector level insight, the SWE did not separate the participation and impacts of the non-residential portions of PPL’s programs from the participation and impacts from the residential portion.

6.4.1 Review of Savings Database

PPL provided a series of databases capturing all PY4Q2 activity to the SWE team for review. Table 6-7 provides the participant count, energy savings and demand savings, by program and sector, according to the PPL database extracts. The Small C&I sector contributed the largest *ex ante* energy savings (49,710 MWh) and the greatest *ex ante* peak demand savings (8.8 MW). Lighting retrofit projects accounted for almost 72% of the gross reported energy savings and almost 76% of the gross peak demand savings from non-residential customers in PY4Q2.

Table 6-7: PPL Non-Residential Programs Savings Database Summary

Sector	Program	Participants	MWh	MW
Gov/Non-Profit	C&I Lighting - New Construction	10	781	0.21
Gov/Non-Profit	C&I Lighting Retrofit	206	8,958	1.84
Gov/Non-Profit	Custom Incentives	3	1,282	0.11
Gov/Non-Profit	EE Non-Lighting	219	5,224	0.78
Gov/Non-Profit	Renewable Energy Program	24	358	0.18
Large C&I	Appliance Recycling	1	2	0.00
Large C&I	C&I Lighting - New Construction	3	590	0.09
Large C&I	C&I Lighting Retrofit	21	5,396	0.65
Large C&I	Custom Incentives	8	5,983	0.76
Large C&I	EE Non-Lighting	12	278	0.05
Large C&I	HVAC Tune-Up Program	35	48	0.02
Small C&I	Appliance Recycling	116	219	0.04
Small C&I	C&I Lighting - New Construction	17	2,704	0.53
Small C&I	C&I Lighting Retrofit	914	42,055	7.81
Small C&I	Custom Incentives	8	1,998	0.16
Small C&I	EE Non-Lighting	133	2,620	0.24
Small C&I	HVAC Tune-Up Program	119	114	0.05
Totals		1,849	78,609	13.5

The SWE team did not compare PPL’s reported non-residential impacts to this database summary because the program participation and impacts were not reported at a sector level.

6.4.2 Review of Sample Design

PPL's sample design will be reviewed for the PY4Q3 report. The SWE will request the sample design for each evaluation group in early 2013 and review to ensure that the sampling plan is adequate to achieve the annual confidence and precision targets set forth in the Audit Plan.

6.4.3 On-site Inspections

The SWE conducted one ride-along site inspection in PY4Q2. The SWE will issue a ride-along site inspection report to PPL once the evaluator's analysis and report for this project is received.

6.5 Finals Recommendations

Based on SWE audit findings, the SWE team recommends the following:

- PPL should work to provide the type of data in the format needed to complete the audits to determine variance of reported and tracked savings of non-residential programs.

7 Met-Ed Impact Summaries and Audit Findings

Section 7 contains information on Met-Ed’s energy and demand impacts to date, current evaluation activities and findings, and current SWE audit activities, findings, and recommendations.

Table 7-1: Summary of Met-Ed Quarterly Report Impacts

	CPITD Reported Gross Impact	CPITD-Q Reported Impact ^[a]	Savings Achieved as % of 2013 Targets ^[f]
Total Energy Savings (MWh)	419,118	398,856	94%
Total Demand Reduction (MW)	70	66	59%
TRC Benefits (\$) ^[a]	Not Reported	Not Reported	Not Applicable
TRC Costs (\$) ^[b]	Not Reported	Not Reported	Not Applicable
TRC Benefit-Cost Ratio ^[c]	Not Reported	Not Reported	Not Applicable
CO ₂ Emissions Reduction ^{[d][e]} (Tons)	339,486	323,073	Not Applicable
NOTES:			
[a] Avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction. Subject to TRC Order. TRC Benefits reporting requirement is waived for quarterly reports.			
[b] Costs paid by the program administrator and participants plus the increase in supply costs for any period when load is increased. Subject to TRC Order. TRC Costs reporting requirement is waived for quarterly reports.			
[c] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is required in annual reports only.			
[d] 8.1x10 ⁻⁴ metric tons of CO ₂ per kWh (EPC’s eGRID2007 Version 1.1, RFCE Region annual non-baseload CO ₂ output emissions rate, year 2005 data).			
[e] CO ₂ Emissions are reported due to Stakeholder interest in this information and to recognize that reporting this information is recommended by the National Action Plan for Energy Efficiency.			
[f] Savings based on CPITD.			

Met-Ed has reported PY4 gross energy savings for 14 programs. The following table provides a breakdown of the contribution of each program’s gross energy savings towards the PY4 portfolio savings.

Table 7-2: Summary of Program Impacts on Gross Reported Portfolio Savings – Met-Ed

Program:	Percent of PYTD Gross MWh Savings
	Portfolio
Demand Reduction	N/A
Home Energy Audits and Outreach	34%
Appliance Turn-In	6%
EE HVAC	2%
EE Products	18%
New Construction	0%
Behavioral Modification and Education	0%
Multiple Family	1%
WARM Programs	1%
Small C/I Equipment	13%
Large C/I Equipment	21%
PJM Demand Response	0%
Street Lighting	0%
Non-Profit	0%
Remaining Government/Non-Profit	6%
Total	100%

7.1 Program Implementation and Evaluation Summary

The following table contains a summary of programs reporting participation and savings to-date, programs evaluated in PY4, and programs to be implemented or with no reported savings. Programs “implemented” include only those programs with reported gross impacts; “evaluated” programs include programs with preliminary verified impacts.

Table 7-3: Summary of Programs Implemented to Date by Met-Ed

Programs Reporting PY4 Gross Savings:
<ul style="list-style-type: none">• Home Energy Audits and Outreach• Appliance Turn-In• EE HVAC• EE Products• New Construction• Multiple Family• WARM Programs• Small C&I Equipment• Large C&I Equipment• Non-Profit• Remaining Government/Non-Profit
Programs to be Implemented or with No Reported PY4 Savings:
<ul style="list-style-type: none">• Behavioral Modification and Education• PJM Demand Response• Street Lighting

7.1 Status of EM&V Activities

7.1.1 Status of EM&V Plans

No revised EM&V Plans were submitted for SWE review in PY4Q2.

7.1.2 Status of M&V Activities

Each program’s evaluation updates and findings are as follows:

Residential Demand Reduction Program: Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013.

Residential Home Energy Audits and Outreach Program: ADM has conducted a desk review of tracking data for all three components of this program (conservation kits, direct install of low-income measures and whole house comprehensive audits with capital cost measures installed.) ADM has also constructed preliminary realization rates that consider historical “in service rates” and successful delivery rates, as well as changes in the TRM protocols for the conservation kit component of the program.

Residential Appliance Turn-In Program: ADM has conducted preliminary desk reviews. First sample will be drawn from the Q1 and Q2 populations. Preliminary realization rates have been constructed from information gained from the recent evaluation effort conducted for PY3.

Residential Energy Efficiency HVAC Program: PY4 evaluation activities to date include calculation and *ex ante* reviews and assignment of preliminary realization rate based on desk review and application of

updated TRM protocols. The average efficiencies and capacities from the PY3 evaluation are used to generate preliminary realization rates for this program

Residential Energy Efficient Products Program: PY4 evaluation activities to date include calculation and *ex ante* reviews and assignment of preliminary realization rate based on desk review and application of updated TRM protocols.

Residential New Construction Program: ADM has met with the implementer to discuss the results of last year's evaluation. ADM has reviewed tracking data to identify projects that may have potential modeling issues related to ground source heat pumps. The projects approved so far do not appear likely to have such modeling issues.

Residential Behavioral Modification and Education Program: The impact evaluation effort for this program will involve billing analysis. M&V plans have been completed and initial data requests have been made by the M&V team.

Residential Multiple Family Program: No sampling or surveying has occurred yet. ADM will begin sampling for surveys when the program population size is sufficiently large relative to the expected PY4 population size.

Residential Low-Income (WARM) Program: For the WARM Plus Program, ADM has conducted desk reviews and has applied preliminary realization rates defined as the ratio of the verified per-unit savings from the PY3 evaluation to the reported per-unit savings in the PY4 tracking data. For the WARM Extra Measures Program, ADM has conducted a preliminary review of the tracking data. Verification surveys will occur late in the evaluation cycle.

Commercial / Industrial Small Sector Equipment Program: ADM has completed a desk review for C&I CFL kits. For the custom applications component of the program, ADM conducts ongoing checks of evaluability for pending projects.

Commercial / Industrial Large Sector Performance Contracting / Equipment Program: For the custom applications component of the program, ADM conducts ongoing checks of evaluability for pending projects.

Commercial / Industrial Large Sector Demand Response Program – CSP Mandatory and Voluntary Curtailment Program (“PJM Demand Response”): Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013. The evaluation effort will involve stratified sampling and inspection of the hourly demand reduction calculations for selected projects.

Governmental / Non-Profit Program: ADM conducts ongoing checks of evaluability for pending projects.

Governmental / Remaining Non-Profit Program: ADM conducts ongoing checks of evaluability for pending projects.

7.2 Residential Program Audit Summary

7.2.1 Residential Lighting Program

To audit these programs, the SWE team conducted the following activities:

- Verified the number of bulbs reported;
- Verified the savings protocol utilized to report kWh and kW savings;
- Verified the baseline assumptions utilized to calculate savings; and
- Verified the bulbs tracked against invoices received.

To verify each of these aspects, the SWE team reviewed those values reported in the PY4Q2 Report to the data tracked in the EDC’s database and tracking system. The following table contains a summary of the SWE team audit findings and recommendations:

Table 7-4: Summary of CFL Program Audit – Met-Ed

Category:	PY4Q2 Report:	Database Verification:	Notes:
Gross Energy Savings	Not Reported	IQ: 9,341 MWh	Met-Ed does not report CFL savings separately in their reports.
Gross Demand Reduction	Not Reported	IQ: 0.48 MW	Met-Ed does not report CFL savings separately in their reports.
Use of TRM Protocols	Not Applicable	√	All savings calculated in accordance with the TRM protocols.
Baseline Assumptions	Not Applicable	√	All baseline assumptions valid.
Invoice Review	Not Applicable		A total of 3 individual invoices were reviewed for bulbs sold and distributed during PY4Q2. Bulb counts and total dollars reimbursed were verified.

7.2.2 Appliance Recycling Program

The SWE has started, in PY4, to conduct database sample checks for the Appliance Recycling program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes to the Appliance Recycling program.

7.2.3 Efficient Equipment Program

The SWE has started, in PY4, to conduct database sample checks for the Efficient Equipment program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes to the Efficient Equipment program.

7.2.4 New Construction Program

Residential New Construction program audit activities are performed for all quarters at the end of the program year.

7.3 Low-Income Program Audit Summary

The SWE requested that Met-Ed provide a WARM programs database extract, consisting of all spreadsheets and supporting calculations detailing program participation, energy and demand savings, and other relevant information such as measures installed. The SWE received the database extract approximately one month after the publication of Met-Ed's PY4Q2 report. Therefore, from the time between when Met-Ed's quarterly report was filed and the database extract was submitted there were additional PY4Q2 participants and savings recorded in the tracking database. Table 7-5 presents the participation, energy savings, and demand impact listed in Met-Ed's quarterly report, the corresponding information gleaned from the SWE's review of the database extract, and the discrepancy between the two. Though the SWE does not have the version of the tracking database extract that was used to compile Met-Ed's quarterly report, the discrepancy between the two sources appears to be due only to the reporting lag of PY4Q2 participant data following Met-Ed's PY4Q2 report.

Table 7-5: WARM Programs Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	247	155	0.03
Database	302	250	0.05
Discrepancy (Report - Database)	-55	-95	-0.02

The SWE also reviewed the WARM Extra Measures savings assumptions for all measures distributed through the program in PY4Q2 to determine whether Met-Ed was appropriately applying the TRM algorithms and assumptions. Two discrepancies were found. First, Met-Ed applied the deemed in-service rate for all specialty CFLs except 17-20 watt bulbs. Therefore, the savings value for 17-20 watt specialty CFLs should be adjusted to incorporate the TRM in-service rate. The second discrepancy with the TRM is the assumed baseline for the 21-25 watt CFL, which was the 100 watt incandescent in prior program years, but has shifted to 72 watts in PY4 due to EISA 2007 standards. Met-Ed was made aware of this issue in PY4Q1 and noted to the SWE that the database has not yet been updated from the PY3 assumptions.

The SWE checked the Met-Ed WARM Plus savings by job type and noted that through October 2012 the savings were reported based on the 2009 LIURP billing analysis results. Late in PY4Q2 the WARM Plus savings value was inadvertently entered in the tracking database as 1,495 kWh per job for several jobs, which corresponds to the 2009 Penn Power LIURP billing analysis result for "baseload" jobs. Met-Ed was made aware of this error and confirmed that the value was mistakenly entered into the tracking data. Ultimately, all PY4 verified savings will be based on a WARM Plus billing analysis and therefore PY4Q2 results are subject to change.

The SWE also reviewed 20 audit forms and site inspection reports of PY4Q1 and PY4Q2 WARM installations. The documentation was reviewed to verify that the correct job type had been appropriately assigned in Met-Ed's tracking database based on the comprehensiveness of measures installed and space heating and/or domestic hot water heating fuel. The review found that the audit forms were consistent with the job types assigned in the tracking database. The reports were also reviewed to determine whether measures were being installed by contractors. The SWE found very few instances of uninstalled measures and no cases of uninstalled measures that affected job type. The SWE noted some cases where work was reported as incomplete by the inspector or there were missed

opportunities and the auditor returned to address the outstanding issues. For WARM Extra Measures participants, the SWE verified whether TRM protocols and measure savings were applied appropriately. There was only one case where the reported savings was incorrect because the baseline was assumed to be a 100 watt incandescent instead of 72 watts.

Met-Ed offered 7 measures to the low-income sector in the first quarter of program year four, which is 17 percent of the total number of measures offered across all sectors. Therefore, Met-Ed is in compliance with its 7.84% proportion of measures target. It should be noted that Met-Ed stated that the proportion of measures target is 9%, which is incorrect. The target it set at 7.84% for Phase I of Act 129.

7.4 Non-Residential Program Audit Summary

Met-Ed lists six programs in its non-residential portfolio. Met-Ed defines programs within its non-residential portfolio primarily by customer sector. Only three of these programs achieved energy and demand savings during PY4Q2. The reported gross energy savings from non-residential programs was 10,694 MWh and the reported gross demand savings was 4.79 MW. The number of participants, gross reported energy impact and gross reported demand impact for PY4Q2 are shown in Table 7-6.

Table 7-6: Met-Ed Non-Residential Programs Quarterly Summary

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	59	4,431	1.18
Large C&I Performance Contracting/Equipment	3	3,375	1.92
Remaining Government/Non-Profit	11	2,888	1.69
Totals	73	10,694	4.79

7.4.1 Review of Savings Database

FirstEnergy provided the SWE team a database of project activity for each of its operating companies. This database contained the key reporting metrics for each project reporting savings in the quarter as well as additional detail on the types of efficient equipment installed at each site to generate savings. The SWE team identified each of the distinct participants and the energy and demand impacts associated with that participant for each Met-Ed’s non-residential programs. Table 7-7 contains the total participant counts, energy savings and demand savings by program, from Met-Ed non-residential projects in the FirstEnergy savings database. Incentive amounts were not provided in the FirstEnergy extract for the non-residential projects and are omitted from Table 7-7.

Table 7-7: Met-Ed Non-Residential Programs Savings Database Summary

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	59	4,431	1.18
Large C&I Performance Contracting/Equipment	3	3,375	1.92
Remaining Government/Non-Profit	11	2,888	1.69
Totals	73	10,695	4.78

In Table 7-8, the discrepancies between the reported figures and the information contained in the FirstEnergy tracking database are presented. All discrepancies are reported as follows:

Reported Figure – Database Summary = Discrepancy

Table 7-8: Met-Ed Non-Residential Program Discrepancies

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	0	0	0.00
Large C&I Performance Contracting/Equipment	0	0	0.00
Remaining Government/Non-Profit	0	0	0.00
Totals	0	0	0.00

The total number of non-residential participants and total demand impacts in the database summary match perfectly with the figures reported in Met-Ed PY4Q2 report.

7.4.2 Review of Sample Design

Met-Ed's sample design will be reviewed for the PY4Q3 report. The SWE will request a PY4 sampling plan from each of the FirstEnergy Companies in early 2013 to verify that evaluation activities are targeting the confidence and precision requirements laid out in the Audit Plan.

7.4.3 On-site Inspections

Met-Ed is planning to begin its on-site inspections of PY4 installations in PY4Q4. The SWE plans to conduct ride-along site inspections of PY4 installations at that time.

7.5 Finals Recommendations

Based on SWE audit findings, the SWE team recommends the following:

- The SWE team commends FirstEnergy for the zero variance between tracked and reported savings for the non-residential programs for Met-Ed Company.
- Low-income savings calculations for CFLs that assumed a 100 watt baseline in prior program years should be adjusted to a 72 watt baseline in accordance with the 2012 TRM. Also, the TRM in-service rate should be applied to the savings calculations for 17-20 watt specialty CFLs to be consistent with the TRM and the other Met-Ed specialty bulb calculations.

8 Penelec Impact Summaries and Audit Findings

Section 8 contains information on Penelec’s energy and demand impacts to date, current evaluation activities and findings, and current SWE audit activities, findings, and recommendations.

Table 8-1: Summary of Penelec Quarterly Report Impacts

	CPITD Reported Gross Impact	CPITD-Q Reported Impact ^[a]	Savings Achieved as % of 2013 Targets ^[f]
Total Energy Savings (MWh)	407,753	380,668	94%
Total Demand Reduction (MW)	54	46	50%
TRC Benefits (\$) ^[a]	Not Reported	Not Reported	Not Applicable
TRC Costs (\$) ^[b]	Not Reported	Not Reported	Not Applicable
TRC Benefit-Cost Ratio ^[c]	Not Reported	Not Reported	Not Applicable
CO ₂ Emissions Reduction ^{[d][e]} (Tons)	330,280	308,341	Not Applicable

NOTES:

[a] Avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction. Subject to TRC Order. TRC Benefits reporting requirement is waived for quarterly reports.

[b] Costs paid by the program administrator and participants plus the increase in supply costs for any period when load is increased. Subject to TRC Order. TRC Costs reporting requirement is waived for quarterly reports.

[c] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is required in annual reports only.

[d] 8.1x10⁻⁴ metric tons of CO₂ per kWh (EPC’s eGRID2007 Version 1.1, RFCE Region annual non-baseload CO₂ output emissions rate, year 2005 data).

[e] CO₂ Emissions are reported due to Stakeholder interest in this information and to recognize that reporting this information is recommended by the National Action Plan for Energy Efficiency. [f] Savings based on CPITD.

Penelec has reported PY4 gross energy savings for 14 programs. The following table provides a breakdown of the contribution of each program’s gross energy savings towards the PY4 portfolio savings.

Table 8-2: Summary of Program Impacts on Gross Reported Portfolio Savings – Penelec

Program:	Percent of PYTD Gross
	MWh Savings Portfolio
Demand Reduction	N/A
Home Energy Audits and Outreach	37%
Appliance Turn-In	9%
EE HVAC	1%
EE Products	25%
New Construction	0%
Behavioral Modification and Education	0%
Multiple Family	1%
WARM Programs	1%
Small C/I Equipment	8%
Large C/I Equipment	7%
PJM Demand Response	0%
Street Lighting	1%
Non-Profit	0%
Remaining Government/Non-Profit	11%
Total	100%

8.1 Program Implementation and Evaluation Summary

The following table contains a summary of programs reporting participation and savings to-date, programs evaluated in PY4, and programs to be implemented or with no reported savings. Programs “implemented” include only those programs with reported gross impacts; “evaluated” programs include programs with preliminary verified impacts.

Table 8-3: Summary of Programs Implemented to Date by Penelec

Programs Reporting PY4 Gross Savings:
<ul style="list-style-type: none">• Home Energy Audits and Outreach• Appliance Turn-In• EE HVAC• EE Products• Multiple Family• WARM Programs• Small C&I Equipment• Large C&I Equipment• Street Lighting• Non-Profit• Remaining Government/Non-Profit
Programs to be Implemented or with No Reported PY4 Savings:
<ul style="list-style-type: none">• New Construction• Behavioral Modification and Education• PJM Demand Response

8.1 Status of EM&V Activities

8.1.1 Status of EM&V Plans

No revised EM&V Plans were submitted for SWE review in PY4Q2.

8.1.2 Status of M&V Activities

Each program’s evaluation updates and findings are as follows:

Residential Demand Reduction Program: Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013.

Residential Home Energy Audits and Outreach Program: ADM has conducted a desk review of tracking data for all three components of this program (conservation kits, direct install of low-income measures and whole house comprehensive audits with capital cost measures installed.) ADM has also constructed preliminary realization rates that consider historical “in service rates” and successful delivery rates, as well as changes in the TRM protocols for the conservation kit component of the program.

Residential Appliance Turn-In Program: ADM has conducted preliminary desk reviews. First sample will be drawn from the Q1 and Q2 populations. Preliminary realization rates have been constructed from information gained from the recent evaluation effort conducted for PY3.

Residential Energy Efficiency HVAC Program: PY4 evaluation activities to date include calculation and *ex ante* reviews and assignment of preliminary realization rate based on desk review and application of updated TRM protocols. The average efficiencies and capacities from the PY3 evaluation are used to generate preliminary realization rates for this program

Residential Energy Efficient Products Program: PY4 evaluation activities to date include calculation and *ex ante* reviews and assignment of preliminary realization rate based on desk review and application of updated TRM protocols.

Residential New Construction Program: ADM has met with the implementer to discuss the results of last year's evaluation. ADM has reviewed tracking data to identify projects that may have potential modeling issues related to ground source heat pumps. The projects approved so far do not appear likely to have such modeling issues.

Residential Behavioral Modification and Education Program: The impact evaluation effort for this program will involve billing analysis. M&V plans have been completed and initial data requests have been made by the M&V team.

Residential Multiple Family Program: No sampling or surveying has occurred yet. ADM will begin sampling for surveys when the program population size is sufficiently large relative to the expected PY4 population size.

Residential Low-Income (WARM) Program: For the WARM Plus Program, ADM has conducted desk reviews and has applied preliminary realization rates defined as the ratio of the verified per-unit savings from the PY3 evaluation to the reported per-unit savings in the PY4 tracking data. For the WARM Extra Measures Program, ADM has conducted a preliminary review of the tracking data. Verification surveys will occur late in the evaluation cycle.

Commercial / Industrial Small Sector Equipment Program: ADM has completed a desk review for C&I CFL kits. For the custom applications component of the program, ADM conducts ongoing checks of evaluability for pending projects.

Commercial / Industrial Large Sector Performance Contracting / Equipment Program: For the custom applications component of the program, ADM conducts ongoing checks of evaluability for pending projects.

Commercial / Industrial Large Sector Demand Response Program – CSP Mandatory and Voluntary Curtailment Program (“PJM Demand Response”): Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013. The evaluation effort will involve stratified sampling and inspection of the hourly demand reduction calculations for selected projects.

Governmental / Non-Profit Program: ADM conducts ongoing checks of evaluability for pending projects.

Governmental / Remaining Non-Profit Program: ADM conducts ongoing checks of evaluability for pending projects.

8.2 Residential Program Audit Summary

8.2.1 Residential Lighting Program

To audit these programs, the SWE team conducted the following activities:

- Verified the number of bulbs reported;
- Verified the savings protocol utilized to report kWh and kW savings;
- Verified the baseline assumptions utilized to calculate savings; and
- Verified the bulbs tracked against invoices received.

To verify each of these aspects, the SWE team reviewed those values reported in the PY4Q2 Report to the data tracked in the EDC’s database and tracking system. The following table contains a summary of the SWE team audit findings and recommendations:

Table 8-4: Summary of CFL Program Audit – Penelec

Category:	PY4Q2 Report:	Database Verification:	Notes:
Gross Energy Savings	Not Reported	IQ: 9,920 MWh	Penelec does not report CFL savings separately in their reports.
Gross Demand Reduction	Not Reported	IQ: 0.52 MW	Penelec does not report CFL savings separately in their reports.
Use of TRM Protocols	Not Applicable	√	All savings calculated in accordance with the TRM protocols.
Baseline Assumptions	Not Applicable	√	All baseline assumptions valid.
Invoice Review	Not Applicable		A total of 3 individual invoices were reviewed for bulbs sold and distributed during PY4Q2. Bulb counts and total dollars reimbursed were verified.

8.2.2 Appliance Recycling Program

The SWE has started, in PY4, to conduct database sample checks for the Appliance Recycling program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes to the Appliance Recycling program.

8.2.3 Efficient Equipment Program

The SWE has started, in PY4, to conduct database sample checks for the Efficient Equipment program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes to the Efficient Equipment program.

8.2.4 New Construction Program

Residential New Construction program audit activities are performed for all quarters at the end of the program year.

8.3 Low-Income Program Audit Summary

The SWE requested that Penelec provide a WARM programs database extract, consisting of all spreadsheets and supporting calculations detailing program participation, energy and demand savings, and other relevant information such as measures installed. The SWE received the database extract approximately one month after the publication of Penelec’s PY4Q2 report. Therefore, from the time between when Penelec’s quarterly report was filed and the database extract was submitted there were additional PY4Q2 participants and savings recorded in the tracking database. Table 8-5 presents the participation, energy savings, and demand impact listed in Penelec’s quarterly report, the corresponding information gleaned from the SWE’s review of the database extract, and the discrepancy between the two. Though the SWE does not have the version of the tracking database extract that was used to compile Penelec’s quarterly report, the discrepancy between the two sources appears to be due only to the reporting lag of PY4Q2 participant data following Penelec’s PY4Q2 report.

Table 8-5: WARM Programs Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	503	239	0.04
Database	621	325	0.06
Discrepancy (Report - Database)	-118	-86	-0.02

The SWE also reviewed the WARM Extra Measures savings assumptions for all measures distributed through the program in PY4Q2 to determine whether Penelec was appropriately applying the TRM algorithms and assumptions. Two discrepancies were found. First, Penelec applied the deemed in-service rate for all specialty CFLs except 17-20 watt bulbs. Therefore, the savings value for 17-20 watt specialty CFLs should be adjusted to incorporate the TRM in-service rate. The second discrepancy with the TRM is the baseline for the 21-25 watt CFL, which was the 100 watt incandescent in prior program years, but has shifted to 72 watts in PY4 due to EISA 2007 standards. Penelec was made aware of this issue in PY4Q1 and noted to the SWE that the database has not yet been updated from the PY3 assumptions.

The SWE checked the Penelec WARM Plus savings by job type and noted that through October 2012 the savings were reported based on the 2009 LIURP billing analysis results. Late in PY4Q2 the WARM Plus savings value was inadvertently entered in the tracking database as 1,495 kWh per job for several jobs, which corresponds to the 2009 Penn Power LIURP billing analysis result for “baseload” jobs. Penelec was made aware of this error and confirmed that the value was mistakenly entered into the tracking data. Ultimately, all PY4 verified savings will be based on a WARM Plus billing analysis and therefore PY4Q2 results are subject to change.

The SWE also reviewed 20 audit forms and site inspection reports of PY4Q1 and PY4Q2 WARM installations. Documentation for four WARM Plus participants was reviewed to verify that the correct job type had been appropriately assigned in Penelec’s tracking database based on the comprehensiveness of measures installed and space heating and/or domestic hot water heating fuel. The review found that the audit forms were consistent with the job types assigned in the tracking database. The reports were also reviewed to determine whether measures were being installed by contractors. The SWE found no instances of uninstalled measures. For the 16 WARM Extra Measures participants, the SWE verified whether TRM protocols and measure savings were applied appropriately.

There was only one case where the reported savings was incorrect because the baseline was assumed to be a 100 watt incandescent instead of 72 watts.

Penelec offered seven measures to the low-income sector in PY4Q1, which is 17% of the total number of measures offered across all sectors. Therefore, Penelec is in compliance with its 9.51% proportion of measures target. It should be noted that Penelec stated that the proportion of measures target is 12%, which is incorrect. The target it set at 9.51% for the duration of Phase I of Act 129.

8.4 Non-Residential Program Audit Summary

Penelec lists six programs in its non-residential portfolio. Penelec defines programs within its non-residential portfolio primarily by customer sector. The Small C&I Equipment, Large C&I Equipment, Street Lighting, Non-Profit, and Remaining Government/Non-Profit programs each reported energy and demand savings in PY4Q2. The reported gross energy savings from non-residential programs was 7,194 MWh and the reported gross demand savings was 1.21 MW. The number of participants, gross reported energy impact and gross reported demand impact for PY4Q2 are shown in Table 8-6.

Table 8-6: Penelec Non-Residential Programs Quarterly Summary

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	59	3,221	0.57
Large C&I Performance Contracting/Equipment	6	240	0.07
Streetlighting	10	314	0
Non-Profit	3	14	0
Remaining Government/Non-Profit	16	3,405	0.57
Totals	94	7,194	1.21

8.4.1 Review of Savings Database

FirstEnergy provided the SWE team a database of project activity for each of its operating companies. This database contained the key reporting metrics for each project reporting savings in the quarter as well as additional detail on the types of efficient equipment installed at each site to generate savings. The SWE team identified each of the distinct participants and the energy and demand impacts associated with that participant for each Penelec’s non-residential programs. The tracking data provided by FirstEnergy did not include incentive amounts. Table 8-7 provides the participant counts and the sum of the energy and demand impacts for each program.

Table 8-7: Penelec Non-Residential Programs Savings Database Summary

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	57	3,191	0.57
Large C&I Performance Contracting/Equipment	6	240	0.07
Street Lighting	10	314	0.00
Non-Profit	3	14	0.00
Remaining Government/Non-Profit	18	3,435	0.58
Totals	94	7,193	1.21

In Table 8-8, the discrepancies between the reported figures and the information contained in the database are presented. All discrepancies are reported as follows:

Reported Figure – Database Summary = Discrepancy

Table 8-8: Penelec Non-Residential Program Discrepancies

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	2	30	0.0
Large C&I Performance Contracting/Equipment	0	0	0.0
Street Lighting	0	0	0.0
Non-Profit	0	0	0.0
Remaining Government/Non-Profit	-2	-30	0.0
Totals	0	0	0.0

The total number of participants, energy impact and peak demand impact from the program tracking data matched perfectly with the figures in the quarterly report. The SWE did notice two projects which were classified as part of the Remaining Government/Non-Profit program in the tracking data, but were apparently reported under the Small C&I program. This led to the program level discrepancies shown in Table 8-8. Rebate amounts were not included in the program tracking data so the SWE was not able to audit the incentives payment amounts reported for non-residential programs.

8.4.2 Review of Sample Design

Penelec's sample design will be reviewed for the PY4Q3 report. The SWE will request a PY4 sampling plan from each of the FirstEnergy Companies in early 2013 to verify that evaluation activities are targeting the confidence and precision requirements laid out in the Audit Plan.

8.4.3 On-site Inspections

Penelec is planning to begin its on-site inspections of PY4 installations in PY4Q4. The SWE plans to conduct ride-along site inspections of PY4 installations at that time.

8.5 Finals Recommendations

Based on SWE audit findings, the SWE team recommends the following:

- The SWE team commends Penelec for the zero variance between tracked and reported savings for the non-residential programs.
- Low-income savings calculations for CFLs that assumed a 100 watt baseline in prior program years should be adjusted to a 72 watt baseline in accordance with the 2012 TRM. Also, the TRM in-service rate should be applied to the savings calculations for 17-20 watt specialty CFLs to be consistent with the TRM and the other Penelec specialty bulb calculations.

9 Penn Power Impact Summaries and Audit Findings

Section 9 contains information on Penn Power’s energy and demand impacts to date, current evaluation activities and findings, and current SWE audit activities, findings, and recommendations.

Table 9-1: Summary of Penn Power Quarterly Report Impacts

	CPITD Reported Gross Impact	CPITD-Q Reported Impact ^[a]	Savings Achieved as % of 2013 Targets ^[f]
Total Energy Savings (MWh)	140,789	133,455	98%
Total Demand Reduction (MW)	17	15	38%
TRC Benefits (\$) ^[a]	Not Reported	Not Reported	Not Applicable
TRC Costs (\$) ^[b]	Not Reported	Not Reported	Not Applicable
TRC Benefit-Cost Ratio ^[c]	Not Reported	Not Reported	Not Applicable
CO ₂ Emissions Reduction ^{[d][e]} (Tons)	114,039	108,099	Not Applicable
NOTES:			
<p>[a] Avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction. Subject to TRC Order. TRC Benefits reporting requirement is waived for quarterly reports.</p> <p>[b] Costs paid by the program administrator and participants plus the increase in supply costs for any period when load is increased. Subject to TRC Order. TRC Costs reporting requirement is waived for quarterly reports.</p> <p>[c] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is required in annual reports only.</p> <p>[d] 8.1x10⁻⁴ metric tons of CO₂ per kWh (EPC’s eGRID2007 Version 1.1, RFCE Region annual non-baseload CO₂ output emissions rate, year 2005 data).</p> <p>[e] CO₂ Emissions are reported due to Stakeholder interest in this information and to recognize that reporting this information is recommended by the National Action Plan for Energy Efficiency.</p> <p>[f] Savings based on CPITD.</p>			

Penn Power has reported PY4 gross energy savings for 14 programs. The following table provides a breakdown of the contribution of each program’s gross energy savings towards the PY4 portfolio savings.

Table 9-2: Summary of Program Impacts on Gross Reported Portfolio Savings – Penn Power

Program:	Percent of PYTD Gross MWh Savings
	Portfolio
Demand Reduction	0%
Home Energy Audits and Outreach	38%
Appliance Turn-In	7%
EE HVAC	2%
EE Products	34%
New Construction	0%
Behavioral Modification and Education	0%
Multiple Family	0%
WARM Programs	0%
Small C/I Equipment	16%
Large C/I Equipment	3%
PJM Demand Response	0%
Street Lighting	0%
Non-Profit	0%
Remaining Government/Non-Profit	0%
Total	100%

9.1 Program Implementation and Evaluation Summary

The following table contains a summary of programs reporting participation and savings to-date, programs evaluated in PY4, and programs to be implemented or with no reported savings. Programs “implemented” include only those programs with reported gross impacts; “evaluated” programs include programs with preliminary verified impacts.

Table 9-3: Summary of Programs Implemented to Date by Penn Power

Programs Reporting PY4 Gross Savings:
<ul style="list-style-type: none"> • Home Energy Audits and Outreach • Appliance Turn-In • EE HVAC • EE Products

- Multiple Family
- Small C&I Equipment
- Large C&I Equipment
- Remaining Government/Non-Profit

Programs to be Implemented or with No Reported PY4 Savings:

- New Construction
- Behavioral Modification and Education
- WARM Programs
- PJM Demand Response
- Street Lighting
- Non-Profit

9.1 Status of EM&V Activities

9.1.1 Status of EM&V Plans

No revised EM&V plans were submitted for SWE approval in PY4Q2.

9.1.2 Status of M&V Activities

Each program's evaluation updates and findings are as follows:

Residential Demand Reduction Program: Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013.

Residential Home Energy Audits and Outreach Program: ADM has conducted a desk review of tracking data for all three components of this program (conservation kits, direct install of low-income measures and whole house comprehensive audits with capital cost measures installed.) ADM has also constructed preliminary realization rates that consider historical "in service rates" and successful delivery rates, as well as changes in the TRM protocols for the conservation kit component of the program.

Residential Appliance Turn-In Program: ADM has conducted preliminary desk reviews. First sample will be drawn from the Q1 and Q2 populations. Preliminary realization rates have been constructed from information gained from the recent evaluation effort conducted for PY3.

Residential Energy Efficiency HVAC Program: PY4 evaluation activities to date include calculation and *ex ante* reviews and assignment of preliminary realization rate based on desk review and application of updated TRM protocols. The average efficiencies and capacities from the PY3 evaluation are used to generate preliminary realization rates for this program

Residential Energy Efficient Products Program: PY4 evaluation activities to date include calculation and *ex ante* reviews and assignment of preliminary realization rate based on desk review and application of updated TRM protocols.

Residential New Construction Program: ADM has met with the implementer to discuss the results of last year's evaluation. ADM has reviewed tracking data to identify projects that may have potential modeling issues related to ground source heat pumps. The projects approved so far do not appear likely to have such modeling issues.

Residential Behavioral Modification and Education Program: The impact evaluation effort for this program will involve billing analysis. M&V plans have been completed and initial data requests have been made by the M&V team.

Residential Multiple Family Program: No sampling or surveying has occurred yet. ADM will begin sampling for surveys when the program population size is sufficiently large relative to the expected PY4 population size.

Residential Low-Income (WARM) Program: For the WARM Plus Program, ADM has conducted desk reviews and has applied preliminary realization rates defined as the ratio of the verified per-unit savings from the PY3 evaluation to the reported per-unit savings in the PY4 tracking data. For the WARM Extra Measures Program, ADM has conducted a preliminary review of the tracking data. Verification surveys will occur late in the evaluation cycle.

Commercial / Industrial Small Sector Equipment Program: ADM has completed a desk review for C&I CFL kits. For the custom applications component of the program, ADM conducts ongoing checks of evaluability for pending projects.

Commercial / Industrial Large Sector Performance Contracting / Equipment Program: For the custom applications component of the program, ADM conducts ongoing checks of evaluability for pending projects.

Commercial / Industrial Large Sector Demand Response Program – CSP Mandatory and Voluntary Curtailment Program (“PJM Demand Response”): Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013. The evaluation effort will involve stratified sampling and inspection of the hourly demand reduction calculations for selected projects.

Governmental / Non-Profit Program: ADM conducts ongoing checks of evaluability for pending projects.

Governmental / Remaining Non-Profit Program: ADM conducts ongoing checks of evaluability for pending projects.

9.2 Residential Program Audit Summary

9.2.1 Residential Lighting Program

To audit these programs, the SWE team conducted the following activities:

- Verified the number of bulbs reported;
- Verified the savings protocol utilized to report kWh and kW savings;
- Verified the baseline assumptions utilized to calculate savings; and
- Verified the bulbs tracked against invoices received.

To verify each of these aspects, the SWE team reviewed those values reported in the PY4Q2 Report to the data tracked in the EDC’s database and tracking system. The following table contains a summary of the SWE team audit findings and recommendations:

Table 9-4: Summary of CFL Program Audit – Penn Power

Category:	PY4Q2 Report:	Database Verification:	Notes:
Gross Energy Savings	Not Reported	IQ: 4,363 MWh	Penn Power does not report CFL savings separately in their reports.
Gross Demand Reduction	Not Reported	IQ: 0.63 MW	Penn Power does not report CFL savings separately in their reports.
Use of TRM Protocols	Not Applicable	√	All savings calculated in accordance with the TRM protocols.
Baseline Assumptions	Not Applicable	√	All baseline assumptions valid.
Invoice Review	Not Applicable	√	A total of 3 individual invoices were reviewed for bulbs sold and distributed during PY4Q2. Bulb counts and total dollars reimbursed were verified.

9.2.2 Appliance Recycling Program

The SWE has started, in PY4, to conduct database sample checks for the Appliance Recycling program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes to the Appliance Recycling program.

9.2.3 Efficient Equipment Program

The SWE has started, in PY4, to conduct database sample checks for the Efficient Equipment program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes to the Efficient Equipment program.

9.2.4 New Construction Program

Residential New Construction program audit activities are performed for all quarters at the end of the program year.

9.3 Low-Income Program Audit Summary

Penn Power’s WARM Plus program closed at the end of January 2012 and WARM Extra Measures closed in March 2012. Therefore there was no WARM program activity in PY4Q1 and as a result there are no values presented in Table 9-5.

Table 9-5: WARM Programs Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	0	0	0.00
Database	0	0	0.00
Discrepancy (Report - Database)	0	0	0.00

Penn Power reported offering seven measures to the low-income sector in PY4Q2, which is 17% of the total number of measures offered across all sectors. However, it does not appear that Penn Power accounted for the fact that the WARM programs are now closed. Factoring in the removal of the WARM programs reduces the number of measures offered to the low-income sector to four, which is 9.76% of the total measures offered by Penn Power. Therefore, even with the removal of the WARM programs, Penn Power is in compliance with its 8.16% proportion of measures target. It should be noted that Penn Power stated that the proportion of measures target is 11%, which is incorrect. The target it set at 8.16% for Phase I of Act 129.

9.4 Non-Residential Program Audit Summary

Penn Power lists six programs under its non-residential umbrella, which includes the Small C&I, Large C&I and GNP sectors. Only three of these programs reported savings during PY4Q2. The reported number of participants, energy savings and demand savings are presented for these programs in Table 9-6. The gross reported energy savings of these programs was 4,031 MWh and the gross reported demand savings were 0.46 MW. Incentive amounts were not included in the tracking database for non-residential customers, so these figures are not included in Table 9-6. The Small C&I Equipment program generated over 80% of the non-residential energy and peak demand savings for PY4Q2.

Table 9-6: Penn Power Non-Residential Programs Quarterly Summary

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	28	3,303	0.39
Large C&I Performance Contracting/Equipment	2	705	0.07
Remaining Government/Non-Profit	2	23	0
Totals	32	4,031	0.46

9.4.1 Review of Savings Database

FirstEnergy provided the SWE team a database of project activity for each of its operating companies for PY4Q2. Similar to the other FirstEnergy Companies, the database for Penn Power contained the key reporting metrics for each project reporting savings in the quarter as well as additional detail on the types of efficient equipment installed at each site to generate savings. The SWE team identified each of the distinct participants and the energy and demand impacts associated with that participant for each

Penelec’s non-residential programs. The tracking data provided by FirstEnergy did not include incentive amounts. Table 9-7 provides the participant counts and the sum of the energy and demand impacts for each program.

Table 9-7: Penn Power Non-Residential Programs Quarterly Summary

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	28	3,303	0.39
Large C&I Performance Contracting/Equipment	2	705	0.07
Remaining Government/Non-Profit	2	23	0
Totals	32	4,031	0.46

In Table 9-8, the discrepancies between the figures reported in Penn Power’s quarterly report and the information contained in the savings database are presented. All discrepancies are reported as follows:

$$\text{Reported Figure} - \text{Database Summary} = \text{Discrepancy}$$

Table 9-8: Penn Power Non-Residential Program Discrepancies

Program	Participants	MWh	MW
Small C&I Performance Contracting/Equipment	0	0	0.0
Large C&I Performance Contracting/Equipment	0	0	0.0
Remaining Government/Non-Profit	0	0	0.0
Totals	0	0	0.0

The number of participants, energy impact and peak demand impact from the program tracking data matched perfectly with the figures in the quarterly report. Rebate amounts were not included in the program tracking data so the SWE was not able to audit the incentives payment amounts reported for non-residential programs.

9.4.2 Review of Sample Design

Penn Power’s sample design will be reviewed for the PY4Q3 report. The SWE will request a PY4 sampling plan from each of the FirstEnergy Companies in early 2013 to verify that evaluation activities are targeting the confidence and precision requirements laid out in the Audit Plan.

9.4.3 On-site Inspections

Penn Power is planning to begin its on-site inspections of PY4 installations in PY4Q4. The SWE plans to conduct ride-along site inspections of PY4 installations at that time.

9.5 Finals Recommendations

Based on SWE audit findings, the SWE team recommends the following:

- The SWE team commends Penn Power for the zero variance between tracked and reported savings for the non-residential programs.

- Penn Power should update the low-income measure count to reflect the fact that the WARM Program is not offered in PY4.

10 West Penn Power Impact Summaries and Audit Findings

Section 10 contains information on West Penn Power’s energy and demand impacts to date, current evaluation activities and findings, and current SWE audit activities, findings, and recommendations.

Table 10-1: Summary of West Penn Power Quarterly Report Impacts

	CPITD Reported Gross Impact	CPITD-Q Reported Impact ^[a]	Savings Achieved as % of 2013 Targets ^[f]
Total Energy Savings (MWh)	517,004	515,310	82%
Total Demand Reduction (MW)	78	70	50%
TRC Benefits (\$) ^[a]	Not Reported	Not Reported	Not Applicable
TRC Costs (\$) ^[b]	Not Reported	Not Reported	Not Applicable
TRC Benefit-Cost Ratio ^[c]	Not Reported	Not Reported	Not Applicable
CO ₂ Emissions Reduction ^{[d][e]} (Tons)	418,773	417,401	Not Applicable
NOTES:			
[a] Avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction. Subject to TRC Order. TRC Benefits reporting requirement is waived for quarterly reports.			
[b] Costs paid by the program administrator and participants plus the increase in supply costs for any period when load is increased. Subject to TRC Order. TRC Costs reporting requirement is waived for quarterly reports.			
[c] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is required in annual reports only.			
[d] 8.1x10 ⁻⁴ metric tons of CO ₂ per kWh (EPC’s eGRID2007 Version 1.1, RFCE Region annual non-baseload CO ₂ output emissions rate, year 2005 data).			
[e] CO ₂ Emissions are reported due to Stakeholder interest in this information and to recognize that reporting this information is recommended by the National Action Plan for Energy Efficiency.			
[f] Savings based on CPITD.			

West Penn Power has reported PY4 gross energy savings for 15 programs. The following table provides a breakdown of the contribution of each program’s gross energy savings towards the PY4 portfolio savings.

Table 10-2: Summary of Program Impacts on Gross Reported Portfolio Savings – West Penn Power

Program:	Percent of PYTD Gross MWh Savings Portfolio
Residential Appliance Turn-In	4.9%
Residential Energy Efficient Products	14.7%
Residential Energy Efficient HVAC Equipment	1.9%
Residential Home Performance	2.5%
Critical Peak Rebate (CPR)	0.0%
Limited Income Energy Efficiency (LIEEP)	0.4%
Join Utility Usage Management (JUUMP)	1.0%
Commercial and Industrial Equipment- Small	15.9%
Time of Use (TOU) with Critical Peak Pricing (CPP)	0.0%
Commercial and Industrial Equipment- Large	12.4%
Customer Load Response	0.0%
Customer Resources Demand Response	0.0%
Distributed Generation	0.0%
Conservation Voltage Reduction (CVR)	43.4%
Governmental and Institutional	2.9%
Total	100%

10.1 Program Implementation and Evaluation Summary

The following table contains a summary of programs reporting participation and savings to-date, programs evaluated in PY4, and programs to be implemented or with no reported savings. Programs “implemented” include only those programs with reported gross impacts; “evaluated” programs include programs with preliminary verified impacts.

Table 10-3: Summary of Programs Implemented to Date by West Penn Power

Programs Reporting PY4 Gross Savings:
<ul style="list-style-type: none">• Residential Appliance Turn-In• Residential Energy Efficient Products• Residential Energy Efficient HVAC Equipment• Residential Home Performance• Limited Income Energy Efficiency (LIEEP)• Join Utility Usage Management (JUUMP)• Commercial and Industrial Equipment- Small• Commercial and Industrial Equipment- Large• Conservation Voltage Reduction (CVR)• Governmental and Institutional
Programs to be Implemented or with No Reported PY4 Savings:
<ul style="list-style-type: none">• Critical Peak Rebate (CPR)• Time of Use (TOU) with Critical Peak Pricing (CPP)• Customer Load Response• Customer Resources Demand Response• Distributed Generation

10.1 Status of EM&V Activities

10.1.1 Status of EM&V Plans

No revised EM&V plans were submitted for SWE approval in PY4Q2.

10.1.2 Status of M&V Activities

Each program’s evaluation updates and findings are as follows:

Residential Appliance Turn-In Program: ADM has conducted preliminary desk reviews. First sample will be drawn from the Q1 and Q2 populations. Preliminary realization rates have been constructed from information gained from the recent evaluation effort conducted for PY3.

Residential Energy Efficiency HVAC Program: PY4 evaluation activities to date include calculation and *ex ante* reviews and assignment of preliminary realization rate based on desk review and application of updated TRM protocols. The average efficiencies and capacities from the PY3 evaluation are used to generate preliminary realization rates for this program

Residential Energy Efficient Products Program: PY4 evaluation activities to date include calculation and *ex ante* reviews and assignment of preliminary realization rate based on desk review and application of updated TRM protocols.

Residential Home Performance Program: ADM has conducted desk reviews of the tracking data and has constructed preliminary realization rates that consider historical “in service rates” and successful delivery rates, as well as changes in the TRM protocols for the conservation kits distributed through this

program. For the Direct Install of Low-Cost Measures program component, ADM has conducted preliminary desk reviews and the sample will be drawn shortly after PY4Q2 report is filed. M&V plans are completed and initial data requests have been made by the M&V team for the Behavior Modification component of the program.

Critical Peak Rate Program: Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013.

Limited Income Energy Efficient Program: ADM has conducted preliminary tracking data reviews for both the JUUMP Comprehensive Audits component and conservation kits distributed by this program.

Join Utility Management Program: ADM has conducted preliminary desk reviews. The sample will be drawn shortly after PY4Q2 report is filed.

Commercial / Industrial Small Sector Equipment Program: ADM has completed a desk review for C&I CFL kits. For the custom applications component of the program, ADM conducts ongoing checks of evaluability for pending projects.

Time of Use with Critical Peak Pricing Rate: This program had no participation; thus no impact evaluation will be performed.

Commercial / Industrial Large Sector Equipment Program: ADM has conducted rebate application/tracking and reporting reviews for a direct install program component. Some on/site and analysis work was completed in PY4Q2 for two custom projects with projected impacts above the threshold for the "certainty" stratum.

Customer Load Response: Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013. The evaluation effort will involve stratified sampling and inspection of the hourly demand reduction calculations for selected projects.

Customer Resources Demand Response Program: Impact evaluation for this program will begin in January 2013 and preliminary demand reduction estimates will be available by March 2013. The evaluation effort will involve stratified sampling and inspection of the hourly demand reduction calculations for selected projects.

Distributed Generation: This program had no participation; thus no impact evaluation will be performed.

Conservation Voltage Reduction Program: Three sets of retrofit isolation tests are planned: One in Winter 2013, one in Spring 2013, and one in Summer 2013.

Governmental & Institutional Program: The first sample for this program will be drawn from PY4Q1 and PY4Q2.

10.2 Residential Program Audit Summary

10.2.1 Residential Lighting Program

To audit these programs, the SWE team conducted the following activities:

- Verified the number of bulbs reported;
- Verified the savings protocol utilized to report kWh and kW savings;
- Verified the baseline assumptions utilized to calculate savings; and
- Verified the bulbs tracked against invoices received.

To verify each of these aspects, the SWE team reviewed those values reported in the PY4Q2 Report to the data tracked in the EDC’s database and tracking system. The following table contains a summary of the SWE team audit findings and recommendations:

Table 10-4: Summary of CFL Program Audit – West Penn Power

Category:	PY4Q2 Report:	Database Verification:	Notes:
Gross Energy Savings	Not Reported	IQ: 7,703 MWh	West Penn Power does not report CFL savings separately in their reports.
Gross Demand Reduction	Not Reported	IQ: 0.36 MW	West Penn Power does not report CFL savings separately in their reports.
Use of TRM Protocols	Not Applicable	√	All savings calculated in accordance with the TRM protocols.
Baseline Assumptions	Not Applicable	√	All baseline assumptions valid.
Invoice Review	Not Applicable	√	A total of 3 individual invoices were reviewed for bulbs sold and distributed during PY4Q2. Bulb counts and total dollars reimbursed were verified.

10.2.2 Appliance Recycling Program

The SWE has started, in PY4, to conduct database sample checks for the Appliance Recycling program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes to the Appliance Recycling program.

10.2.3 Efficient Equipment Program

The SWE has started, in PY4, to conduct database sample checks for the Efficient Equipment program on an annual basis. This decision was made by the SWE and TUS in acknowledgement that the SWE has not encountered any unresolved QC issues with this program in PY2 or PY3. Results of the annual database sample check (with samples drawn from each quarter of PY4) will be available in the PY4 Annual Report. The SWE notes that there were no program changes to the Efficient Equipment program.

10.2.4 New Construction Program

West Penn Power did not have an active Residential New Construction program in PY4Q2.

10.3 Low-Income Program Audit Summary

The SWE requested that West Penn Power provide a database extract, consisting of all spreadsheets and supporting calculations detailing program participation, energy and demand savings and other relevant information such as measures installed. Participation, energy savings, and demand savings calculations were verified and compared to the figures reported in the West Penn Power quarterly report. A comparison of the quarterly report and database extract results for the Limited Income Energy Efficiency Program (LIEEP) are presented in Table 10-5 and for the Joint Utility Usage Management Program (JUUMP) in Table 10-6. West Penn Power explained that the participation was erroneously listed as 0 in West Penn Power’s PY4Q2 report for LIEEP because the participants for that program were likely included in the JUUMP participant count.

Table 10-5: Limited Income Energy Efficiency Program Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	0	16	0
Database	19	16	0
Discrepancy (Report - Database)	-19	0	0

Table 10-6: Joint Utility Usage Management Program Quarterly Report and Database Summary

	Participants	MWh	MW
PY4Q2 Report	955	617	0.07
Database	937	609	0.07
Discrepancy (Report - Database)	18	8	0.00

The SWE also checked the reported savings, underlying assumptions, and calculations for all LIEEP participants. The program consisted of refrigerator and freezer replacements and ENERGY STAR air conditioners. The SWE found that all savings assumptions are in accordance with the 2012 TRM.

The SWE also reviewed the savings assumptions and calculations for energy efficiency kits distributed through West Penn Power’s low-income program. The SWE noted that the baseline for 21-25 watt CFL has not been adjusted from 100 watts to 72 watts in accordance with the 2012 TRM. The shift in baseline is a result of EISA 2007 standards. West Penn Power has been made aware of this issue and noted to the SWE that the database has not yet been updated from the PY3 assumptions. The reported savings per kit is based on the assumption that all participants have electric water heating. The final verified savings will be adjusted to reflect the water heating fuel mix of participants as determined through the program evaluation.

For JUUMP participants West Penn Power uses a savings value of 1,495 kWh for tracking and reporting. Due to issues related to integration into the FirstEnergy tracking system, West Penn Power had to develop a savings estimate for all JUUMP projects. As a proxy, the Penn Power WARM “baseload” job savings were used since the mix of measures between the programs is similar. However, final verified results will be based on evaluation results of the West Penn Power JUUMP.

The SWE received low-income site inspection reports from West Penn Power shortly before the publication of the SWE PY4Q2 report. The SWE will report findings of the review of those reports in the SWE PY4Q3 report.

West Penn Power offered 10 measures to the low-income sector in the first quarter of program year four, which is 24% of the total number of measures offered across all sectors. Therefore, West Penn Power is in compliance with its 8.5% proportion of measures target. It should be noted that West Penn Power stated that the proportion of measures target is 10%, which is incorrect. The target it fixed at 8.5% for Phase I of Act 129.

10.4 Non-Residential Program Audit Summary

West Penn Power reported the impacts produced by its non-residential energy efficiency programs using the same categories as the other three FirstEnergy companies. Three programs achieved energy and demand savings for the PY4Q2 which include Small C&I Equipment, Large C&I Equipment, and GNP Program. The reported gross energy savings from non-residential programs was 29,949 MWh and the reported gross demand savings was 5.94 MW. West Penn Power also reported a gross energy savings of 18,101 MWh and a gross demand savings of -1.07 MW from its Conservation Voltage Reduction (CVR) program. The CVR program savings estimates are based on a preliminary engineering estimate. Three sets of retrofit isolation tests are planned for winter 2013, spring 2013, and summer 2013 in order to develop verified savings estimates. The number of participants, gross reported energy impact and gross reported demand impact for PY4Q2 are shown in Table 10-7. Incentive amounts were not included in the tracking database for non-residential customers, so these figures are not included in Table 10-7.

Table 10-7: West Penn Power Non-Residential Programs Quarterly Summary

Program	Participants	MWh	MW
Commercial & Industrial Equipment - Small	6,991	15,529	4.15
Commercial & Industrial Equipment - Large	26	11,708	1.36
Governmental and Institutional	29	2,712	0.43
Totals	7,046	29,949	5.94

10.4.1 Review of Savings Database

West Penn Power provided a tracking database to the SWE team detailing project activity during PY4Q2. The SWE team identified each of the distinct participants and the energy and demand impacts associated with that participant for each of West Penn Power’s non-residential programs. The tracking data provided by FirstEnergy did not include incentive amounts. Table 10-8: West Penn Power Non-Residential Programs Savings Database Summary provides the participant counts and the sum of the energy and demand impacts for each program.

Table 10-8: West Penn Power Non-Residential Programs Savings Database Summary

Program	Participants	MWh	MW
Commercial & Industrial Equipment - Small	6,985	15,523	4.15
Commercial & Industrial Equipment - Large	26	11,708	1.36
Governmental and Institutional	29	2,712	0.43
Totals	213	29,943	5.94

In Table 10-9, the discrepancies between the reported figures and the information contained in the program databases are presented. All discrepancies are reported as follows:

$$\text{Reported Figure} - \text{Database Summary} = \text{Discrepancy}$$

Table 10-9: West Penn Power Non-Residential Program Discrepancies

Program	Participants	MWh	MW
Commercial & Industrial Equipment - Small	6	6	0.00
Commercial & Industrial Equipment - Large	0	0	0.00
Governmental and Institutional	0	0	0.00
Totals	6	6	0.00

The SWE found no discrepancies for the savings impacts between the figures reported in West Penn Power’s PY4Q2 report and the contents of the program tracking data. The tracking database did not assign a unique identification number for customers participating in the Power Direct – C&I Kits sub-program who received CFL Kits; therefore, the SWE attempted to replicate the participant count for the Small C&I Equipment Program by counting the total number of distinct customer account numbers who received kits along with other sub-programs. This produced participant counts very close to the figures reported in PY4Q2 report. Rebate amounts were not included in the program tracking data so the SWE was unable to audit the incentive payments contained in the PY4Q2 report.

10.4.2 Review of Sample Design

West Penn Power’s sample design will be reviewed for the PY4Q3 report. The SWE will request a PY4 sampling plan from each of the FirstEnergy Companies in early 2013 to verify that evaluation activities are targeting the confidence and precision requirements laid out in the Audit Plan.

10.4.3 On-site Inspections

West Penn Power is planning to begin its on-site inspections of PY4 installations in PY4Q4. The SWE plans to conduct ride-along site inspections of PY4 installations at that time.

10.5 Finals Recommendations

Based on SWE audit findings, the SWE team recommends the following:

- The SWE team commends West Penn Power for the minimal variance between tracked and reported savings for the non-residential programs.
- Low-income savings calculations for CFLs that assumed a 100 watt baseline in prior program years should be adjusted to a 72 watt baseline in accordance with the 2012 TRM.

11 Summary and Recommendations

The SWE team, the PA PUC TUS staff, the EDCs and the EDC evaluation contractors have worked hard to develop a solid foundation for the EM&V of the Act 129 energy efficiency and demand response programs. The SWE team notes that improvements continue to be made to the SWE audit processes and appreciates the support and responsiveness of the Energy Association, the Pennsylvania EDCs and their evaluation contractors.

Based on the findings from the SWE audit activities conducted in PY4Q2, the SWE team makes the following recommendations to the PA PUC relating to the Act 129 energy efficiency and demand response programs:

- EDCs should continue to work with the SWE team to resolve variances in tracked and reported savings for both the residential and the non-residential programs. In general, however, the SWE team commends the EDCs for the increased accuracy between quarterly tracked and reported savings.
- The SWE recommends that Duquesne and its evaluator perform a comparison between the values reported in quarterly reports and those listed in quarterly tracking data extracts. This comparison will help ensure that the participant counts and incentives shown in the filed reports match to that of the database.
- PPL should work to provide the type of data in the format needed to complete the audits to determine variance of reported and tracked savings of non-residential programs.
- For the FirstEnergy Companies, low-income savings calculations for CFLs that assumed a 100 watt baseline in prior program years should be adjusted to a 72 watt baseline in accordance with the 2012 TRM. Also, the TRM in-service rate should be applied to the savings calculations for 17-20 watt specialty CFLs to be consistent with the TRM and the other Met-Ed and Penelec specialty bulb calculations.