# Act 129 Statewide Evaluator Quarterly Report

1st Quarter, Program Year 2

*Presented to:*

**Pennsylvania Public Utility Commission**

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Prepared by The Statewide Evaluation Team:

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# 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 Utilities 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 each Electric Distribution Company's (EDC) respective Energy Efficiency and Conservation (EE&C) Plan.[1] These reports are intended to identify progress towards the attainment of Act 129 savings targets, best practices exhibited, areas for improvements, and any necessary recommendations based on the current findings and data reported to date.

This report 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 June 1, 2010 and August 31, 2010. Impacts reported as Cumulative Program Inception to Date (CPITD) include savings since the implementation of Act 129 programs (June 1, 2009) through August 31, 2010.

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.

# 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 EDC aggregated reported and interim verified[2] PYTD reported gross MWh and MW impacts.

Program benefits and costs have been waived for this report until resolution on key issues pertaining to the Total Resource Cost (TRC) Test is reached at upcoming Technical Working Group meetings. Interim or preliminary verified savings reported in this report reflect verified savings for measures that did not

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

[2] Interim or preliminary verified savings refer to the energy or demand savings verified through partial evaluations. The evaluations will not be complete until the close of the current program year, and the verified savings will not be verified to the required levels of confidence and precision until the measurement and verification activities have been conducted on a statistically significant sample of the complete program year population.

yet have approved savings protocols in PY2 or for additional evaluation, measurement and verification (EM&V) activities that have occurred during this current program year. Table 1 below presents available data on PYTD gross, verified and net MWh and MW savings and reductions in $CO_2$ emissions through the end of the first quarter for PY2. This quarter ended on August 31, 2010.

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

| | PYTD Reported Gross Impact | Interim PYTD Verified Impact [a] | Interim PYTD Net Impact [b] |
|---|---|---|---|
| Total Energy Savings (MWh) | 299,131 | 12,925 | 12,925 |
| Total Demand Reduction (MW) | 29.57 | 18.92 | 18.92 |
| TRC Benefits ($) [c] | Not Reported | Not Reported | Not Reported |
| TRC Costs ($) [d] | Not Reported | Not Reported | Not Reported |
| TRC Benefit-Cost Ratio[e] | Not Reported | Not Reported | Not Reported |
| $CO_2$ Emissions Reduction[f] (Tons) | 242,296 | 10,469 | 10,469 |

**NOTES FOR TABLE 1:**
[a] Adjusted by applying realization rate determined by independent EM&V contractor to the Portfolio PYTD Reported Gross Impact, which is calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates. Interim realization rates for the Program Year and impacts are to be used for quarterly reports, i.e., realization rates are to be calculated with available data. Interim realization rates are used to calculate Interim PYTD Verified Impacts. Interim realization rates are based on realization rate calculations from a portion of the sample anticipated over the entire Program Year.
[b] Adjusted by applying net-to-gross ratio to the Portfolio PYTD Verified Impact, which is calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios. Interim net-to-gross ratios for the Program Year are to be used for quarterly reports, i.e., net-to-gross ratios are to be calculated with available data. Net-to-Gross ratio is 1.0 for Program Year 2.
[c] 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 the 1QPY2 quarterly report.
[d] 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.
[e] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is waived for the 1QPY2 quarterly report.
[f] 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).

## 2.2 Statewide Evaluator Summary

Below is a summary of the energy efficiency programs offered by the EDCs subject to Act 129, and a summary of the audit activities undertaken by the SWE team during the first quarter of PY2.

### 2.2.1 Program Implementation Status

The following sections provide an overview of fully implemented programs and programs still to be implemented by each EDC.

### *2.2.1.1 Allegheny*

2.2.1.1.1 Fully Implemented Programs

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| CFL Rewards Program | 3QPY1 |
| Energy Star and High Efficiency Appliance Program | 3QPY1 |
| HVAC Efficiency Program | 3QPY1 |
| Home Performance Program – Online Energy Audit Measure | 4QPY1 |
| **B. LOW-INCOME RESIDENTIAL SECTOR** | |
| Home Performance Check-Up and Appliance Replacement Program | 3QPY1 |
| Joint Utility Management Program | 3QPY1 |
| Room Air Conditioner Replacement Program | 3QPY1 |
| **C. C&I SECTOR** | |
| HVAC Efficiency Program | 3QPY1 |
| Lighting Efficiency Program | 3QPY1 |
| Drives Program | 3QPY1 |
| Custom Technology Application Program | 4QPY1 |
| Custom Application Program | 4QPY1 |
| Government/School/Non-Profit Lighting Efficiency Program | 4QPY1 |

2.2.1.1.2 Programs expected to be implemented after the 1st Quarter of Program Year 2

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Home Performance Program – Check-up Audit and Comprehensive Audit Measures | PY2 |
| Programmable Thermostat Program | PY2 |
| **D. CROSS-CUTTING** | |
| Rate-Based Programs | PY2 |
| Customer Resource Demand Response Programs | PY2 |
| Distributed Generation Program | PY2 |
| Residential Efficiency Rewards Rebate Program | PY2 |
| Pay Ahead (Smart) Service Rate | PY2 |
| Time of Use with Critical Peak Pricing Rate | PY2 |
| Hourly Pricing Option Rate | PY2 |
| Critical Peak rebate Program | PY2 |

### *2.2.1.2 Met-Ed*

2.2.1.2.1 Fully Implemented Programs

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Appliance Turn-In | 10-Mar |
| EE Products Program | 10-Apr |

| | |
|---|---|
| **B. LOW-INCOME RESIDENTIAL SECTOR** | |
| Warm Programs -Warm Plus | 10-Apr |
| Warm Programs -Warm Extra Measures | 9-Nov |
| **C. SMALL C&I SECTOR** | |
| C/I Equipment Rebates | 10-Feb |
| **D. LARGE C&I SECTOR** | |
| Industrial Motors and Variable Speed Drives | 10-Apr |
| **E. GOVERNMENT & NON-PROFIT SECTOR** | |
| Non-Profit | 10-Feb |
| Street Lighting | 10-Apr |

2.2.1.2.2 Programs expected to be implemented after the 1st Quarter of Program Year 2

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Direct Load Control | 4Q 2010 |
| Home Energy Audits | 10-May |
| HVAC & Solar Water Heat | 10-Apr |
| New Construction | 10-Jun |
| Whole Building | 10-Jun |
| Multi-Family -Tenants | 10-Apr |
| **B. LOW-INCOME RESIDENTIAL SECTOR** | |
| Warm Programs -Low Income -Low Use | 10-Sep |
| **C. SMALL C&I SECTOR** | |
| Energy Audit and Technology Assessment Program | 10-Apr |
| **D. LARGE C&I SECTOR** | |
| C/I Equipment Rebates -Performance Contracting | 10-Apr |
| C/I PJM Demand Response | 4Q 2010 |
| **E. GOVERNMENT & NON-PROFIT SECTOR** | |
| Remaining Government/Non-Profit | 10-Apr |

### *2.2.1.3 PennPower*

2.2.1.3.1 Fully Implemented Programs

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Appliance Turn-In | 10-Mar |
| EE Products Program | 10-Apr |
| **B. LOW-INCOME RESIDENTIAL SECTOR** | |
| Warm Programs -Warm Plus | 10-Apr |
| Warm Programs -Warm Extra Measures | 9-Nov |
| **C. SMALL C&I SECTOR** | |
| C/I Equipment Rebates | 10-Feb |
| **D. LARGE C&I SECTOR** | |
| Industrial Motors and Variable Speed Drives | 10-Apr |
| **E. GOVERNMENT & NON-PROFIT SECTOR** | |

| | |
|---|---|
| Non-Profit | 10-Feb |
| Street Lighting | 10-Apr |

2.2.1.3.2 Programs expected to be implemented after the 1st Quarter of Program Year 2

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Direct Load Control | 4Q 2010 |
| Home Energy Audits | 10-May |
| HVAC & Solar Water Heat | 10-Apr |
| New Construction | 10-Jun |
| Whole Building | 10-Jun |
| Multi-Family -Tenants | 10-Apr |
| **B. LOW-INCOME RESIDENTIAL SECTOR** | |
| Warm Programs -Low Income -Low Use | 10-Sep |
| **C. SMALL C&I SECTOR** | |
| Energy Audit and Technology Assessment Program | 10-Apr |
| **D. LARGE C&I SECTOR** | |
| C/I Equipment Rebates -Performance Contracting | 10-Apr |
| C/I PJM Demand Response | 4Q 2010 |
| **E. GOVERNMENT & NON-PROFIT SECTOR** | |
| Remaining Government/Non-Profit | 10-Apr |

### *2.2.1.4 PenElec*

2.2.1.4.1 Fully Implemented Programs

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Appliance Turn-In | 10-Mar |
| EE Products Program | 10-Apr |
| **B. LOW-INCOME RESIDENTIAL SECTOR** | |
| Warm Programs -Warm Plus | 10-Apr |
| Warm Programs -Warm Extra Measures | 9-Nov |
| **C. SMALL C&I SECTOR** | |
| C/I Equipment Rebates | 10-Feb |
| **D. LARGE C&I SECTOR** | |
| Industrial Motors and Variable Speed Drives | 10-Apr |
| **E. GOVERNMENT & NON-PROFIT SECTOR** | |
| Non-Profit | 10-Feb |
| Street Lighting | 10-Apr |

2.2.1.4.2 Programs expected to be implemented after the 1st Quarter of Program Year 2

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Direct Load Control | 4Q 2010 |
| Home Energy Audits | 10-May |

| | |
|---|---|
| HVAC & Solar Water Heat | 10-Apr |
| New Construction | 10-Jun |
| Whole Building | 10-Jun |
| Multi-Family -Tenants | 10-Apr |
| **B. LOW-INCOME RESIDENTIAL SECTOR** | |
| Warm Programs -Low Income -Low Use | 10-Sep |
| **C. SMALL C&I SECTOR** | |
| Energy Audit and Technology Assessment Program | 10-Apr |
| **D. LARGE C&I SECTOR** | |
| C/I Equipment Rebates -Performance Contracting | 10-Apr |
| C/I PJM Demand Response | 4Q 2010 |
| **E. GOVERNMENT & NON-PROFIT SECTOR** | |
| Remaining Government/Non-Profit | 10-Apr |

#### *2.2.1.5 PECO*

2.2.1.5.1 Fully Implemented Programs

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Smart Lighting Discounts | October 2009 |
| Smart Appliance Recycling | March 2010 |
| Smart Home Rebates | March 2010 |
| **B. LOW-INCOME RESIDENTIAL SECTOR** | |
| Low-Income Energy Efficiency Program (LEEP) | January 2010 |
| **C. C&I SECTOR (Including Government and Non-Profit Sectors)** | |
| Smart Equipment Incentives | March 2010 |
| **D. DR Programs** | |
| Conservation Voltage Reduction | January 2010 |
| Residential Direct Load Control | June 2010 |
| C&I Direct Load Control | June 2010 |

2.2.1.5.2 Programs expected to be implemented after the 1st Quarter of Program Year 2

| Program | Actual Launch |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Whole Home Performance | PY3 |
| New Construction | March 2011 |
| **B. C&I SECTOR** | |
| Demand Response Aggregator Contracts | March 2011 |
| Distributed Resources | January 2011 |
| Permanent Load Reduction | October 2010 |
| Conservation Voltage Reduction | June, 2010 |
| New Construction | October 2010 |

### *2.2.1.6 PPL*

2.2.1.6.1 Fully Implemented Programs

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| WRAP Program | October 2009 |
| Appliance Recycling Program | November 2009 |
| Efficiency Equipment Program | December 2009 |
| CFL Program | January 2010 |

2.2.1.6.2 Programs expected to be implemented after the 1st Quarter of Program Year 2

| Program | Actual Launch |
|---|---|
| **A. C&I SECTOR** | |
| Direct Load Control | Summer 2010 |
| Load Curtailment Programs | Summer 2010 |
| Efficient Equipment Program | March/April 2010 |

### *2.2.1.7 Duquesne*

2.2.1.7.1 Fully Implemented Programs

| Program Name | Actual Launch Date |
|---|---|
| **A. RESIDENTIAL SECTOR** | |
| Residential Energy Efficiency | December 1, 2009 |
| Schools Pledge Program | December 1, 2009 |
| Refrigerator Recycling | December 1, 2009 |
| **B. LOW-INCOME SECTOR** | |
| Low-Income Energy Efficiency | December 1, 2009 |
| **C. C& I SECTOR (Including Government/Non-Profit)** | |
| Commercial Rebates - Umbrella | December 1, 2009 |
| Office Buildings – Large | December 1, 2009 |
| Office Buildings – Small | December 1, 2009 |
| Healthcare | December 1, 2009 |
| Retail Stores & Restaurants | December 1, 2009 |
| Education | December 1, 2009 |
| Public Agency Program | December 1, 2009 |
| Industrial Rebates | December 1, 2009 |
| Primary Metals | December 1, 2009 |
| Chemicals | December 1, 2009 |
| Industrial Rebates - Mixed | December 1, 2009 |

2.2.1.7.2 Programs expected to be implemented after the 1st Quarter of Program Year 2

| Program | Expected Launch |
|---|---|
| **A. RESIDENTIAL SECTOR** | |

| | |
|---|---|
| Residential DR | Summer 2010 |
| **B. C&I SECTOR** | |
| Small/Mid C&I DR | Summer 2010 |
| Large C&I Curtailable Load | Summer 2010 |

### 2.2.2 Review of EDC Quarterly Reports

The SWE has reviewed the EDC Quarterly Reports for completeness against the requirements of the SWE *Audit Plan*. The SWE reviewed the available PYTD gross impacts, interim verified impacts and interim net 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 6 of this report.

A summary of the SWE team findings includes:

- Currently[3] 65 programs have been implemented across the state.
- Approximately 56 additional programs are expected to be implemented after PY2Q1.
- Progress towards 2011 MWh savings targets ranges from 1.40% - 83.00%.
- Progress towards 2013 MWh savings targets ranges from 0.50% - 28.00%.
- Progress towards 2013 MW reduction targets ranges from 0.3% - 4.0%.

### 2.2.3 Interim Technical Reference Manual (TRM) Measures

The seven EDCs subject to Act 129 have proposed kWh and kW savings protocols for interim energy efficiency measures. The EDCs have proposed measures for deemed and partially deemed savings protocols. These protocols are currently being reviewed by the SWE team for accuracy, consistency and reasonableness. The SWE has organized sector-based working groups to collaborate on developing common measure baselines and savings protocols between each of the EDCs so that measure savings can be deemed or partially deemed.

In PY1, the SWE team focused on measure protocols with a high priority as indicated by the EDCs. In PY2, the SWE team will begin work on any remaining high priority measure protocols as well as the second- and third-tier priority measures as indicated by the EDCs.

#### *2.2.3.1 Residential TRM Measures*

In addition to the savings protocols that were included in the November 2010 update of the TRM and specified in the PY1 SWE Annual Report, the SWE recently approved an interim protocol for "Residential LED CREE CR6 Lighting" for inclusion in the 2011 TRM update.

#### *2.2.3.2 Commercial and Industrial TRM Measures*

EDC's and the SWE worked collaboratively to develop interim commercial and industrial TRM protocols. A series of working group meetings were held to establish protocol format, identify resources for protocol development and review developed protocols for interim approval.

[3] Currently as of August 31, 2010.

### 2.2.4 TRM Updates

The Statewide Evaluation team received comments from the seven EDCs and other interested parties on proposed modifications to the savings protocols currently included in the TRM. Additionally, based on PY1 evaluation findings, the SWE team recommended that several measure protocols be revised based on the evaluation results. Most notably, the commercial prescriptive lighting table was revised to include more measures and clarity in establishment of the baselines. A revised 2010 TRM was filed with the Commission for public comment on and subsequently approved in June 2010.

### 2.2.5 Demand Response

The EDCs are now mobilizing Demand Response Programs for implementation in the 2011 program year. Uncertainties regarding the methods that would be acceptable under Act 129 for quantifying savings resulted in delays in finalizing contracts with venders by the EDCs. With the Secretarial Letter dated January 12, 2011, this uncertainty has been removed. PJM economic protocols will be utilized to quantify demand impacts during the Act 129 peak 100 hours.

No savings have been reported by the EDCs for Demand Response Programs or Direct Load Control Programs to date. In the current Quarterly Reports filed by the EDCs, only PECO and First Energy reported that Direct Load Control Programs are in place for the 2011 Summer Capability time period.

### 2.2.6 Review of EM&V Plans

The SWE team approved EM&V Plans for all of the EDCs in PY1. The SWE team has not required that the EDCs resubmit plans for review; however, based upon PY1 findings, updates to the TRM, amended EE&C Plans, revised CMP process, etc., the SWE team recommends that the EDCs revisit their EM&V Plans to verify that their respective plans still comply with the requirements laid out by the SWE team in the SWE's December 2009 Audit Plan.

PECO submitted a revised EM&V Plan for the SWE team to review on December 7, 2010. The SWE team returned comments and recommendations to PECO on December 29, 2010. In January 2011 the SWE team held a short teleconference with PECO to discuss the team's key recommendations and comments. Overall, the SWE team concludes that the revised PECO evaluation plan is comprehensive and very well written. The SWE team appreciates the effort and careful thought that went into the development of this detailed plan.

### 2.2.7 EDC Site-Visits

The SWE team attended meetings, in person and through conference calls, at each of the EDC's offices during the second and third week of December 2010. The primary objectives of these meetings were to review savings calculations and database quality. Also discussed were reporting issues, evaluation plans and activities, sampling, custom measure protocols, and site inspection coordination. Minutes from EDC site meetings can be furnished upon request.

For a detailed discussion of resolutions and findings from the meetings, please see 6.1.

### 2.2.8 Project Site-Inspections

As part of its audit activities, the SWE performs site-inspections to verify information provided via interviews or documentation. A summary of inspection findings is detailed in the following sections for residential, low-income, and non-residential programs. For a detailed discussion regarding these site inspections, please see Section 6.3.

#### *2.2.8.1 Residential Programs*

As of August 31, 2010, no project site visits had been conducted for residential programs. Site visits to homes participating in the EDC's residential low income programs were completed during the September to December 2010 time period. The audits of the residential efficient products, appliance removal, and residential lighting programs do not include site visits. Rather these audits are done as desktop audits where the SWE team reviews the supporting data behind the summaries reported in each EDC's respective PY2Q1 reports. This information was provided in response to a data request issued on October 28th, 2010. The audit of residential programs for this quarter includes a desktop review in which the SWE team verifies the savings calculations and database quality for all residential programs, including residential low income programs. This review is done by verifying that the per unit savings for each measure offered through a particular residential program agrees with the PA PUC TRM, approved interim TRM measure protocols, or approved custom measure protocols. The savings for the residential low income programs for PPL and PECO are covered in a SWE approved custom measure protocol. The database quality review includes checking a random selection of invoices, rebate applications and work orders against database entries for accuracy.

Currently, the following residential programs are under on-going review by the SWE team: efficient equipment programs, CFL lighting programs, appliance recycling programs and residential low income programs.

For more information on the outcome of these reviews, please see Section 6.2.1 of this report.

#### *2.2.8.2 Low-Income Programs*

The SWE commenced Low-Income Program participant site-visits for PY2. Low-Income site-visits were conducted at Duquesne and Allegheny on November 11-13, 2010. The SWE completed site-visits for PECO on December 16-17, 2010. The SWE focused on the process improvements from the previous PY1 site visits and on the recently initiated Low-Income program at Duquesne. A number of issues were identified that have not been remedied since the Program Year 1 site visits. Duquesne did not participate in site visits in Program Year 1 and a couple of issues were identified that are easily remedied through communication with Program Managers and building maintenance crews/installers. The SWE will continue to plan site-visits for the remaining EDCs (PPL and FirstEnergy) in early 2011 should such site visits be necessary. For more detailed account of the observations made during these site-visits refer to Section 6.3.2 of this report or contact the SWE for copies of the Summary Reports.

#### *2.2.8.3 Non-Residential Programs*

The SWE commenced site inspections for PY2. The majority of remaining site inspections for Q1 projects will primarily take place in February 2011. Most will be ride-along visits with the EDC evaluators,

although independent visits may also be performed. The SWE will focus on post-installation inspections and projects installing custom measures, which have higher uncertainty. As per discussions with the EDCs and the Energy Association of Pennsylvania (EAPA), independent site inspections and resulting impact evaluation analysis may be used by EDC evaluators to increase precision of their evaluation sample.

For more detail on the findings from the site inspections, please see Section 6.3.3.

# 3 EDC Impact Summaries

The following tables present the reported PYTD gross impacts, interim verified impacts and interim net impacts for each EDC. In addition, each EDC impact summary table includes a column that presents the reported impacts as a percentage of the 2011 total EDC savings target.[4]

Program benefits and costs have been waived for this report until resolution of TRC issues is reached during upcoming TWG meetings.

## 3.1 Statewide Summary

| | Statewide | Allegheny | Duquesne | Met-Ed | Penelec | PennPower | PECO | PPL |
|---|---|---|---|---|---|---|---|---|
| PYTD Reported Gross[5] Energy Savings (MWh) | 299,131 | 12,925 | 8,180 | 17,187 | 24,977 | 5,474 | 167,584 | 62,804 |
| PYTD Interim Verified[6] Energy Savings (MWh) | 244,031 | 0 | 8,105 | 15,609 | 23,819 | 5,129 | 127,099 | 64,270 |
| CPITD Reported Gross[7] Energy Savings (MWh) | 656,783 | 18,831 | 46,970 | 31,834 | 38,554 | 11,664 | 364,669 | 144,261 |
| CPITD Interim Verified[8] Energy Savings (MWh) | 565,139 | 2,952 | 11,657 | 27,896 | 36,684 | 10,723 | 327,154 | 148,073 |
| **% of 2011 Energy Savings Target Achieved** | **38.54%** | **1.40%** | **33.00%** | **18.70%** | **25.50%** | **22.50%** | **83.00%** | **39.00%** |
| **% of 2013 Energy Savings Target Achieved** | **12.85%** | **0.50%** | **11.00%** | **6.20%** | **8.50%** | **7.50%** | **28.00%** | **13.00%** |
| PYTD Reported Gross Demand Reduction (MW) | 29.57 | 2.00 | 4.62 | 1.91 | 3.13 | 0.48 | 9.88 | 7.55 |
| PYTD Interim Verified Demand Reduction (MW) | 18.92 | 0.00 | 0.79 | 1.79 | 3.03 | 0.45 | 2.03 | 10.83 |

[4] Note: The "Savings Achieved as a % of 2011 Targets" are based on interim verified savings. Thus, this achievement is subject to change pending results of final impact evaluation activities.

[5] 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.

[6] 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.

[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] 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.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CPITD Reported Gross Demand Reduction (MW) | 51.79 | 3.00 | 4.78 | 3.28 | 4.56 | 0.92 | 21.54 | 13.71 |
| CPITD Interim Verified Demand Reduction (MW) | 34.01 | 0.50 | 0.95 | 3.01 | 4.27 | 0.86 | 13.59 | 10.83 |
| **% of 2013 Demand Reduction Target** | **2.85%** | **0.30%** | **1.00%** | **2.50%** | **3.95%** | **2.00%** | **4.00%** | **4.00%** |

**Cumulative Portfolio Energy Impacts**

- The CPITD reported gross energy savings is 656,783MWh.
- The CPITD interim verified energy savings is 565,139MWh.

**Portfolio Demand Reduction**[9]

- The CPITD reported gross demand reduction is 51.79MW.
- The CPITD interim verified demand reduction is 34.01MW.

**Low Income Sector**

- There are 22,069 measures offered to the Low-Income Sector, comprising 13.59% of the total measures offered.
- The CPITD reported gross energy savings for low-income sector programs is 21,101MWh.
- The CPITD interim verified energy savings for low-income sector programs is 12,173MWh.

**Government and Non-Profit Sector**

- The CPITD reported gross energy savings for government and non-profit sector programs is 20,402MWh.
- The CPITD interim verified energy savings for government and non-profit sector programs is 6,461MWh.

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

- The PYTD reported gross energy savings is 299,131MWh.
- The PYTD interim verified energy savings is 244,031MWh.
- The PYTD reported gross demand reduction is 29.57MW.
- The PYTD interim verified demand reduction is 18.92MW.
- The PYTD reported participation is 190,416 participants.[10]

[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.

[10] 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.

## 3.2 Allegheny Power

**Table 3-1: Summary of Allegheny Power Quarterly Report Impacts WEST PENN POWER COMPANY d/b/a ALLEGHENY POWER**

| | PYTD Reported Gross Impact | Interim PYTD Verified Impact[a] | Interim PYTD Net Impact[b] | Savings Achieved as % of 2011 Targets[f] |
|---|---|---|---|---|
| Total Energy Savings (MWh) | 12,925 | 0 | 0 | 1.41% |
| Total Demand Reduction (MW) | 2.0 | 0 | 0 | 0.32% |
| TRC Benefits ($) [c] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Costs ($) [d] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Benefit-Cost Ratio[e] | Not Reported | Not Reported | Not Reported | Not Reported |
| $CO_2$ Emissions Reduction[g] (Tons) | 10,469 | 0 | 0 | N/A |

**NOTES:**
[a] Adjusted by applying realization rate determined by independent EM&V contractor to the Portfolio PYTD Reported Gross Impact, which is calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates. Interim realization rates for the Program Year and impacts are to be used for quarterly reports, i.e., realization rates are to be calculated with available data. Interim realization rates are used to calculate Interim PYTD Verified Impacts. Interim realization rates are based on realization rate calculations from a portion of the sample anticipated over the entire Program Year.
[b] Adjusted by applying net-to-gross ratio to the Portfolio PYTD Verified Impact, which is calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios. Interim net-to-gross ratios for the Program Year are to be used for quarterly reports, i.e., net-to-gross ratios are to be calculated with available data. Net-to-Gross ratio is 1.0 for Program Year 2.
[c] 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 the 3QPY1 quarterly report.
[d] 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.
[e] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is waived for the 3QPY1 quarterly report.
[f] MWh targets for 2011. MW targets for 2013.
[g] 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).

## 3.3 Metropolitan Edison Company

**Table 3-2: Summary of Met-Ed Quarterly Report Impacts**

| | PYTD Reported Gross Impact | Interim PYTD Verified Impact[a] | Interim PYTD Net Impact[b] | Savings Achieved as % of 2011 Targets[f] |
|---|---|---|---|---|
| Total Energy Savings (MWh) | 17,187 | 15,609 | 15,609 | 18.77% |
| Total Demand Reduction (MW) | 1.91 | 1.79 | 1.79 | 2.53% |
| TRC Benefits ($) [c] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Costs ($) [d] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Benefit-Cost Ratio[e] | Not Reported | Not Reported | Not Reported | Not Reported |

| | | | | |
|---|---|---|---|---|
| $CO_2$ Emissions Reduction[g] (Tons) | 13,921 | 12,643 | 12,643 | N/A |

**NOTES:**

[a] Adjusted by applying realization rate determined by independent EM&V contractor to the Portfolio PYTD Reported Gross Impact, which is calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates. Interim realization rates for the Program Year and impacts are to be used for quarterly reports, i.e., realization rates are to be calculated with available data. Interim realization rates are used to calculate Interim PYTD Verified Impacts. Interim realization rates are based on realization rate calculations from a portion of the sample anticipated over the entire Program Year.

[b] Adjusted by applying net-to-gross ratio to the Portfolio PYTD Verified Impact, which is calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios. Interim net-to-gross ratios for the Program Year are to be used for quarterly reports, i.e., net-to-gross ratios are to be calculated with available data. Net-to-Gross ratio is 1.0 for Program Year 2.

[c] 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 the 3QPY1 quarterly report.

[d] 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.

[e] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is waived for the 3QPY1 quarterly report.

[f] MWh targets for 2011. MW targets for 2013.

[g] 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).

## 3.4 Pennsylvania Power Company

**Table 3-3: Summary of PennPower Quarterly Report Impacts**

| | PYTD Reported Gross Impact | Interim PYTD Verified Impact[a] | Interim PYTD Net Impact[b] | Savings Achieved as % of 2011 Targets[f] |
|---|---|---|---|---|
| Total Energy Savings (MWh) | 5,474 | 5,129 | 5,129 | 22.47% |
| Total Demand Reduction (MW) | 0.48 | 0.45 | 0.45 | 1.95% |
| TRC Benefits ($) [c] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Costs ($) [d] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Benefit-Cost Ratio[e] | Not Reported | Not Reported | Not Reported | Not Reported |
| $CO_2$ Emissions Reduction[g] (Tons) | 4,434 | 4,154 | 4,154 | N/A |

**NOTES:**

[a] Adjusted by applying realization rate determined by independent EM&V contractor to the Portfolio PYTD Reported Gross Impact, which is calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates. Interim realization rates for the Program Year and impacts are to be used for quarterly reports, i.e., realization rates are to be calculated with available data. Interim realization rates are used to calculate Interim PYTD Verified Impacts. Interim realization rates are based on realization rate calculations from a portion of the sample anticipated over the entire Program Year.

[b] Adjusted by applying net-to-gross ratio to the Portfolio PYTD Verified Impact, which is calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios. Interim net-to-gross ratios for the Program Year are to be used for quarterly reports, i.e., net-to-gross ratios are to be calculated with available data. Net-to-Gross ratio is 1.0 for Program Year 2.

[c] 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 the 3QPY1 quarterly report.

[d] 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.

[e] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is waived for the 3QPY1 quarterly report.

[f] MWh targets for 2011. MW targets for 2013.

[g] 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).

## 3.5 Pennsylvania Electric Company

**Table 3-4: Summary of Penelec Quarterly Report Impacts**

| | PYTD Reported Gross Impact | Interim PYTD Verified Impact[a] | Interim PYTD Net Impact[b] | Savings Achieved as % of 2011 Targets [f] |
|---|---|---|---|---|
| Total Energy Savings (MWh) | 24,977 | 23,819 | 23,819 | 25.48% |
| Total Demand Reduction (MW) | 3.13 | 3.03 | 3.03 | 3.95% |
| TRC Benefits ($) [c] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Costs ($) [d] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Benefit-Cost Ratio[e] | Not Reported | Not Reported | Not Reported | Not Reported |
| $CO_2$ Emissions Reduction[g] (Tons) | 20,231 | 19,293 | 19,293 | N/A |

**NOTES:**

[a] Adjusted by applying realization rate determined by independent EM&V contractor to the Portfolio PYTD Reported Gross Impact, which is calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates. Interim realization rates for the Program Year and impacts are to be used for quarterly reports, i.e., realization rates are to be calculated with available data. Interim realization rates are used to calculate Interim PYTD Verified Impacts. Interim realization rates are based on realization rate calculations from a portion of the sample anticipated over the entire Program Year.

[b] Adjusted by applying net-to-gross ratio to the Portfolio PYTD Verified Impact, which is calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios. Interim net-to-gross ratios for the Program Year are to be used for quarterly reports, i.e., net-to-gross ratios are to be calculated with available data. Net-to-Gross ratio is 1.0 for Program Year 2.

[c] 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 the 3QPY1 quarterly report.

[d] 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.

[e] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is waived for the 3QPY1 quarterly report.

[f] MWh targets for 2011. MW targets for 2013.

[g] 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).

## 3.6 PECO Energy Company

**Table 3-5: Summary of PECO Quarterly Report Impacts**

| | PYTD Reported Gross Impact | Interim PYTD Verified Impact[a] | Interim PYTD Net Impact[b] | Savings Achieved as % of 2011 Targets[f] |
|---|---|---|---|---|
| Total Energy Savings (MWh) | 167,584 | 128,617 | 127,099 | 83.07% |
| Total Demand Reduction (MW) | 9.88 | 2.03 | 2.03 | 3.83% |
| TRC Benefits ($) [c] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Costs ($) [d] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Benefit-Cost Ratio[e] | Not Reported | Not Reported | Not Reported | Not Reported |
| $CO_2$ Emissions Reduction[g] (Tons) | 135,743 | 103,856 | 102,950 | N/A |

**NOTES:**

[a] Adjusted by applying realization rate determined by independent EM&V contractor to the Portfolio PYTD Reported Gross Impact, which is calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates. Interim realization rates for the Program Year and impacts are to be used for quarterly reports, i.e., realization rates are to be calculated with available data. Interim realization rates are used to calculate Interim PYTD Verified Impacts. Interim realization rates are based on realization rate calculations from a portion of the sample anticipated over the entire Program Year.

[b] Adjusted by applying net-to-gross ratio to the Portfolio PYTD Verified Impact, which is calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios. Interim net-to-gross ratios for the Program Year are to be used for quarterly reports, i.e., net-to-gross ratios are to be calculated with available data. Net-to-Gross ratio is 1.0 for Program Year 2.

[c] 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 the 3QPY1 quarterly report.

[d] 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.

[e] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is waived for the 3QPY1 quarterly report

[f] MWh targets for 2011. MW targets for 2013.

[g] 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).

## 3.7 PPL Electric Utilities

**Table 3-6: Summary of PPL Quarterly Report Impacts**

| | PYTD Reported Gross Impact | Interim PYTD Verified Impact[a] | Interim PYTD Net Impact[b] | Savings Achieved as % of 2011 Targets[f] |
|---|---|---|---|---|
| Total Energy Savings (MWh) | 62,804 | 64,270 | 41,806 | 38.76% |
| Total Demand Reduction (MW) | 7.55 | 10.83 | 6.40 | 3.65% |
| TRC Benefits ($) [c] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Costs ($) [d] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Benefit-Cost Ratio[e] | Not Reported | Not Reported | Not Reported | Not Reported |
| $CO_2$ Emissions Reduction[g] (Tons) | 50,871 | 52,089 | 33,863 | N/A |

**NOTES:**

[a] Adjusted by applying realization rate determined by independent EM&V contractor to the Portfolio PYTD Reported Gross Impact, which is calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates. Interim realization rates for the Program Year and impacts are to be used for quarterly reports, i.e., realization rates are to be calculated with available data. Interim realization rates are used to calculate Interim PYTD Verified Impacts. Interim realization rates are based on realization rate calculations from a portion of the sample anticipated over the entire Program Year.

[b] Adjusted by applying net-to-gross ratio to the Portfolio PYTD Verified Impact, which is calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios. Interim net-to-gross ratios for the Program Year are to be used for quarterly reports, i.e., net-to-gross ratios are to be calculated with available data. Net-to-Gross ratio is 1.0 for Program Year 2.

[c] 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 the 3QPY1 quarterly report.

[d] 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.

[e] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is waived for the 3QPY1 quarterly report.

[f] MWh targets for 2011. MW targets for 2013.

[g] 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).

### 3.8 Duquesne Light

**Table 3-7: Summary of Duquesne Quarterly Report Impacts**

| | PYTD Reported Gross Impact | Interim PYTD Verified Impact[a] | Interim PYTD Net Impact[b] | Savings Achieved as % of 2011 Targets[f] |
|---|---|---|---|---|
| Total Energy Savings (MWh) | 2,827.1 | 8,104.8 | 8,104.8 | 8.27% |
| Total Demand Reduction (MW) | 0.41 | 0.785 | 0.785 | 0.84% |
| TRC Benefits ($) [c] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Costs ($) [d] | Not Reported | Not Reported | Not Reported | Not Reported |
| TRC Benefit-Cost Ratio[e] | Not Reported | Not Reported | Not Reported | Not Reported |
| $CO_2$ Emissions Reduction[g] (Tons) | 2,290 | 6,565 | 6,565 | N/A |

**NOTES**

[a] Adjusted by applying realization rate determined by independent EM&V contractor to the Portfolio PYTD Reported Gross Impact, which is calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates. Interim realization rates for the Program Year and impacts are to be used for quarterly reports, i.e., realization rates are to be calculated with available data. Interim realization rates are used to calculate Interim PYTD Verified Impacts. Interim realization rates are based on realization rate calculations from a portion of the sample anticipated over the entire Program Year.

[b] Adjusted by applying net-to-gross ratio to the Portfolio PYTD Verified Impact, which is calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios. Interim net-to-gross ratios for the Program Year are to be used for quarterly reports, i.e., net-to-gross ratios are to be calculated with available data. Net-to-Gross ratio is 1.0 for Program Year 2.

[c] 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 the 3QPY1 quarterly report.

[d] 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.

[e] Subject to TRC Order. TRC Benefit-Cost Ratio reporting requirement is waived for the 3QPY1 quarterly report.

[f] MWh targets for 2011. MW targets for 2013.

[g] 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).

## 4 Program Implementation and Evaluation Summary by EDC

The following table contains a summary of programs implemented and evaluated to date by each EDC.

**Table 4-1: Summary of Programs Implemented to Date by Each EDC**

| **Allegheny** |
|---|
| ***Programs Implemented:*** |
| CFL rewards program, Residential Energy Star and High Efficiency Appliance Program, Residential HVAC Efficiency Program, Residential Home Performance Program, Residential Low Income Home Performance Check Up Audit and Appliance Replacement Program, Residential Low Income Joint Utility Usage Management Program, Governmental/Non-Profit Lighting Efficiency Program, Commercial HVAC Program, Commercial Lighting Efficiency Program, Commercial and Industrial Drives Program, |
| ***Programs Evaluated:*** |

| |
|---|
| CFL rewards program, Residential Energy Star and High Efficiency Appliance Program, Residential HVAC Efficiency Program Residential Low Income Home Performance Check Up Audit and Appliance Replacement Program, Governmental/Non-Profit Lighting Efficiency Program, Commercial Lighting Efficiency Program |
| **Duquesne** |
| ***Programs Implemented:*** |
| Residential: EE Program (REEP): Rebate Program, Residential: EE Program (Upstream Lighting), Residential: School Energy Pledge, Residential: Refrigerator Recycling, Residential: Low Income EE, Commercial Sector Umbrella 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 |
| ***Programs Evaluated:*** |
| Residential: EE Program (REEP): Rebate Program, Residential: EE Program (Upstream Lighting), Residential: Refrigerator Recycling, Residential: Low Income EE, Commercial Sector Umbrella EE, Industrial Sector Umbrella EE, Office Building – Large – EE, Office Building – Small EE, Public Agency / Non-Profit, Retail Stores, Small EE, Retail Stores, Large EE |
| **PECO** |
| ***Programs Implemented:*** |
| Low-Income Energy Efficiency Program, Smart Lighting Discounts Program, Smart Appliance Recycling Program, Smart Home, Rebates Program, Smart Equipment Incentives-C&I, Smart Equipment Incentives-Government / Nonprofit, Conservation Voltage Reduction, Residential Direct Load Control, Commercial Direct Load Control |
| ***Programs Evaluated:*** |
| Low-Income Energy Efficiency Program, Smart Lighting Discounts Program, Smart Appliance Recycling Program, Smart Home, Rebates Program, Smart Equipment Incentives-C&I, Smart Equipment Incentives-Government / Nonprofit, Conservation Voltage Reduction, |
| **PPL** |
| ***Programs Implemented:*** |
| Appliance Recycling, Compact Fluorescent Lighting Campaign, Custom Incentive Program, Efficient Equipment Incentive Program, E-Power Wise, Low-Income WRAP, Renewable Energy Program |
| ***Programs Evaluated:*** |
| Appliance Recycling, Compact Fluorescent Lighting Campaign, Custom Incentive Program, Efficient Equipment Incentive Program, E-Power Wise, Low-Income WRAP, Renewable Energy Program |
| **Met-Ed** |
| ***Programs Implemented:*** |
| Home Energy Audits, Appliance Turn-In, EE HVAC, EE Products, WARM Programs, Energy Audit, Assessment and Equipment Rebate¸ C/I Performance Contracting/Equipment, Streetlighting, Non-Profit, Remaining Government/Non-Profit |
| ***Programs Evaluated:*** |
| Home Energy Audits, Appliance Turn-In, EE HVAC, EE Products, WARM Programs, Energy Audit, Assessment and Equipment Rebate¸ C/I Performance Contracting/Equipment, Streetlighting, Non-Profit, Remaining Government/Non-Profit |
| **Penelec** |
| ***Programs Implemented:*** |
| Home Energy Audits, Appliance Turn-In, EE HVAC, EE Products, WARM Programs, Energy Audit, |

| |
|---|
| Assessment and Equipment Rebate, C/I Performance Contracting/Equipment, Streetlighting, Non-Profit, Remaining Government/Non-Profit |
| ***Programs Evaluated:*** |
| Home Energy Audits, Appliance Turn-In, EE HVAC, EE Products, WARM Programs, Energy Audit, Assessment and Equipment Rebate, C/I Performance Contracting/Equipment, Streetlighting, Non-Profit, Remaining Government/Non-Profit |
| **PennPower** |
| ***Programs Implemented:*** |
| Home Energy Audits, Appliance Turn-In, EE HVAC, EE Products, WARM Programs, Energy Audit, Assessment and Equipment Rebate, C/I Performance Contracting/Equipment, Streetlighting |
| ***Programs Evaluated:*** |
| Home Energy Audits, Appliance Turn-In, EE HVAC, EE Products, WARM Programs, Energy Audit, Assessment and Equipment Rebate, C/I Performance Contracting/Equipment, Streetlighting |

# 5 Status of EDC EM&V Activities

This section briefly addresses the activities undertaken by the EDCs in terms of developing and implementing EM&V plans and protocols.

## 5.1 Status of EM&V Plans

As per the guidelines outlined in the *Audit Plan,* the SWE team has reviewed EM&V Plans submitted by the EDCs to verify that the plans comply with the TRM and TRC Orders and meet the minimum evaluation requirements set forth in the *Audit Plan*. The *Audit Plan* provided an outline for the evaluation framework expectations and guidelines necessary to address the following research objectives:

- Determine Realization Rates for Gross Savings;
- Determine Net to Gross (NTG) Ratios[11];
- Determine Method for Calculating Savings; and
- Set acceptable levels of Rigor, Precision and Bias for M&V activities.

During PY1, the SWE team approved EM&V Plans for all of the seven EDCs. Several of the EM&V Plans submitted covered evaluation, measurement and verification activities planned for PY1 and beyond. Currently, PECO is the only EDC that has submitted a revised EM&V plan for review. However, several EDCs may resubmit revised EM&V Plans based upon new programs implemented in PY2, pending updates to the TRM, and upcoming revisions to the *Audit Plan*, which are to be completed in yearly. Currently the SWE team is in the final stages of approving PECO's revised EM&V Plan.

## 5.2 Status of EDC M&V Activities

The following sections provide a summary of M&V activities by EDC based upon the details provided in each EDC's quarterly report and from information gathered through SWE data requests and audits.

[11] Note: Currently, the NTG Ratio is set at 1.0 until further direction by the Commission.

### 5.2.1 Allegheny

Allegheny has retained TetraTech to perform an independent evaluation of Allegheny's programs. For the commercial sector, TetraTech has not completed any site inspections to date. According to the Allegheny's EDC site meeting and subsequent conversations, the sample has already been selected and Q1 and Q2 site inspections will commence in February. The timing has largely been influenced by the number of participants with completed projects.

### 5.2.2 Duquesne

Duquesne has retained MCR Performance to perform evaluation activities for the first two quarters of PY2 and is finalizing a contract with another company that will be able to perform an independent evaluation of Duquesne's programs. For the commercial sector, the EDC evaluator is performing verification activities on a quarterly basis. Samples have been selected for Q1 and Q2 of PY2 and verified savings are being reported in the quarterly reports. Duquesne is the only EDC to have demonstrated the ability to complete their evaluation in 45 days following the quarter close.

### 5.2.3 PECO

PECO has retained Navigant to perform an independent evaluation of PECO's programs. For the commercial sector, the EDC evaluator has not completed any site inspections to date. According to PECO's EDC site meeting and subsequent conversations, the sample will be selected by the end of January and Q1 and Q2 site inspections will commence in February. The timing has largely been influenced by discussions revolving around sampling design specific to PECO's circumstances.

### 5.2.4 PPL

PPL has retained Cadmus to perform an independent evaluation of PPL's programs. For the commercial sector, the EDC evaluator has completed site inspections for Q1. According to PPL's EDC site meeting and subsequent conversations, Q2 site inspections will commence by the end of January 2011. In addition to typical post-installation inspections, Cadmus has been performing pre-installation inspections for lighting projects with connected load savings over 50 kW and for custom projects as required by the CMP. The majority of these facilities will also receive post-installation inspections and metering and monitoring as needed.

### 5.2.5 Met-Ed

Met-Ed has retained ADM to perform an independent evaluation of Met-Ed's programs. For the commercial sector, the EDC evaluator has completed site inspections for Q1. According to Met-Ed's EDC site meeting and subsequent conversations, the Q2 sample has been selected and Q2 site inspections will commence by the end of January 2011.

### 5.2.6 Penelec

Penelec has retained ADM to perform an independent evaluation of Penelec's programs. For the commercial sector, the EDC evaluator has completed site inspections for Q1. According to Penelec's EDC site meeting and subsequent conversations, the Q2 sample has been selected and Q2 site inspections will commence by the end of January.

### 5.2.7 PennPower

PennPower has retained ADM to perform an independent evaluation of PennPower's programs. For the commercial sector, the EDC evaluator has completed site inspections for Q1. According to PennPower's EDC site meeting and subsequent conversations, the Q2 sample has been selected and Q2 site inspections will commence by the end of January.

# 6 Statewide Evaluator Audit Activities

As part of the SWE audit activities, the members of the SWE team will 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 will travel to each EDC and to specific project sites to conduct on-site audits of the various programs implemented in PY2. 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.

## 6.1 EDC Meetings

The SWE team attended meetings in person at each of the EDC's offices during the second and third week of December 2010 to discuss results from PY2Q1. The primary objectives of these meetings were to review savings calculations and database quality. Evaluation plans and activities were reviewed, including sampling issues and feedback from the November 16, 2010 workshop. Custom measure protocols and the new CMP procedures were discussed and feedback was solicited. Site inspection plans were discussed with a focus on coordination between the various parties (SWE, implementers, and evaluators). Finally, the status of the EDC's demand response programs and the associated EM&V plans were reviewed.

One key issue common to all EDCs revolved around consistency in reporting. The SWE found that the EDCs used different approaches when considering post-report modifications, i.e. changes to projects completed in a particular quarter or year after the report for that particular quarter or year has already been submitted. These changes may occur for a variety of reasons including but not limited to data entry errors, clerical errors, savings adjustments, and other QA/QC related issues captured by the evaluator (as opposed to the implementer's internal QA/QC processes). The SWE recommended the addition of tables within the reports to track these post-report modifications to ensure consistency from report to report.

Another similar issue addressed the classification of errors captured by the EDC evaluators as "ex-ante adjustments" versus "ex-post adjustments". Ex-ante adjustments describe internal errors that occur at the implementation level, comprising mostly of data entry and clerical errors. Ex-post adjustments describe external errors that occur at the participant level, comprising mostly of discrepancies between provided information and field verified information. Improperly classifying these adjustments will lead to a mischaracterization of realization rates reported by EDC evaluators. The SWE instructed EDCs to

identify and quantify all ex-ante adjustments captured by EDC evaluators as appropriate in quarterly and annual reports.

A summary of each meeting is detailed in the following sections.

#### *6.1.1.1 Allegheny Power*

The December 15, 2010 site meeting addressed the following items:

- The incremental quarterly savings values were not consistent with Allegheny Power's database due to adjustments made after PY1 was completed. The SWE requested that an adjustment column be added to all future reports.
- Allegheny Power will determine how much of the total reported savings in the Commercial Lighting Program are associated with projects pre-approved prior to July 1, 2010.
- A large CFL installation project with a connected load savings over 50 kW was discussed. Allegheny Power asked if operating hour measurements are required. The SWE will review the issue and respond.
- TetraTech will begin audit activities in January 2011. Coordination with the SWE was discussed. EM&V plans will require revision due to program participation rates. Samples will be drawn by program. For the Commercial Lighting Efficiency Program, the sample will include PY1 and PY2 projects.
- TetraTech will perform a desk audit of the Commercial HVAC Efficiency Program, which had only one participant at the time of the meeting.
- Allegheny Power will revise and resubmit two SSMVPs reviewed by the SWE (PPG and Latrobe).
- A conference call is planned in January 2011 to discuss demand response issues.

#### *6.1.1.2 Duquesne*

The December 14, 2010 site meeting addressed the following items:

- Some reporting issues were identified that prevented exact matches between the Quarterly Report and Duquesne's database (PMRS). Duquesne agreed to revise the tables in future reports so that the "participants" field includes only completed projects as opposed to completed projects in addition to projects in progress.
- The SWE will issue guidance on the need for on-site inspections when residential measures are installed at commercial sites.
- Duquesne will provide a project list that matches the claimed savings values in the Quarterly Report for future audits.
- For one of the lighting projects reviewed, the EFLH found in the PMRS database did not match the associated TRM values. The SWE requested that the TRM EFLH be used, unless proved otherwise by logging, and that claimed savings be tracked to establish an audit trail.
- Possible changes to the TRM for lighting projects in multi-functional facilities were discussed.

- Issues raised for future discussion include participants that change or stop operation, and lighting projects that result in increased light levels.
- The EM&V sampling plan was reviewed.
- Procedures for all types of site visits were discussed.
- Five CMPs were discussed (air compressors, commercial programmable thermostats, chiller VFDs, 11 Stanwix, and regenerative elevator motors).
- Duquesne has issue a RFP for demand response CSPs.

#### *6.1.1.3 FirstEnergy*

The December 7, 2010 site meeting addressed the following items:

- FirstEnergy will use sector names rather than program names in future Quarterly Reports to minimize confusion.
- FirstEnergy will provide a flowchart illustrating how QA/QC adjustments affect ex-ante and ex-post results.
- FirstEnergy will identify the reason for a discrepancy noted in the number of projects for Penelec's Small C&I Program.
- FirstEnergy reported that the tracking database was recently completed for "first-launch" programs and that the new tracking system will be web-based.
- FirstEnergy will submit an interim TRM measure for refrigerant charge correction.
- FirstEnergy will use TRM operating hour values for motors and drives projects.
- Site visits were discussed. The evaluator has completed all site inspections for Q1. Q2 inspections will start in January 2011. The SWE will perform a mix of ride-along and independent visits for both custom and prescriptive projects.
- Six CMPs were discussed (refrigeration charge, small drives & motors, economizer, commercial refrigeration controls, EMS, and laser welder).
- For demand response, FirstEnergy plans to release an RFP for Demand Response Aggregator in January 2011.

#### *6.1.1.4 PECO*

The December 9, 2010 site meeting addressed the following items:

- The SWE requested that PECO track database adjustments in future Quarterly Reports.
- Some discrepancies in the number of participants were noted between the Quarterly Report and the tracking database extract (CANDI).
- PECO currently uses KEMA's invoice date, which represents the date when KEMA submits an invoice of completed projects to PECO, as a cut-off for reporting projects. The SWE will discuss this issue with the PUC and issue a guidance memo.
- Some savings discrepancies were found for the three projects reviewed. KEMA and PECO will work to resolve the issues noted.
- PECO indicated that the timing of the Annual Report will impact sampling. The SWE will follow-up with the PUC.

- PECO is assuming an error ratio of 0.4 for PY2, which was accepted by the SWE. The SWE will clarify the intent of the 1.0 coefficient of variation (cv) for large custom projects in the sampling document.
- The evaluator will perform sampling quarterly. The evaluation activities for PY2Q1 and Q2 will be combined. The next round of inspections will begin in January 2011.
- The SWE will comment on Navigant's EM&V plan submitted on December 7, 2010.
- The SWE will release a small measures white paper.
- PECO reported that 2011 will be a building year for their demand response programs (DR Aggregator, Distributed Generation, and Peak Load Reduction).

#### *6.1.1.5 PPL*

The December 8, 2010 site meeting addressed the following items:

- PPL will add a TRM adjustments column to future Quarterly Report tables to distinguish between database savings and final claimed savings. Also, PPL will add a discrepancies column to track changes between quarters due to QA/QC adjustments identified after the report was issued.
- PPL requested guidance from the SWE and PUC on cut-off dates associated with reporting savings and TRM updates.
- PPL identified approximately 100 lighting projects with no reported savings since the baseline condition could not be identified. The SWE requested that the baseline condition be extrapolated using a sampling approach.
- A double counting issue was identified for some lighting projects. PPL is correcting this internally and will identify any QA/QC changes in the following report.
- Cadmus, the evaluation contractor, had not completed verification activities for Q1, so the evaluation plans for the upcoming year were discussed.
- For C&I, Cadmus noted that the survey and site inspection samples are selected independently, and there may be a slight overlap in the sample populations.
- The dynamic sampling for surveys and site inspections was discussed. The SWE agreed that surveys for the Efficient Equipment Program can be completed in one or two stages, and requested that inspections for the Efficient Equipment and Custom Programs be done in quarterly batches.
- The SWE requested that all sites receiving pre-installation inspections should also receive a post-installation inspection.
- Cadmus will distribute comments on the custom measure protocol (CMP) review process to the SWE.
- The following CMPs were discussed: HVAC Tune-up, EPowerWise, EMS, GREM, Chiller Optimization, Commercial Thermostats, Custom LED, Industrial Process, and Compressed Air.
- The SWE agreed to draft a memo to address the treatment of measures in the TRM when the stated assumptions are not applicable.

- Three demand response programs were discussed (Residential Direct Load Control, C&I DR Aggregator, and Time of Use).

## 6.2 Desktop Audits

The desktop audit of PY2Q1 programs typically includes a review of the following: savings calculations and database quality. The information required to conduct these reviews was provided in response to the SWE data request issued October 28, 2010 or in response to individual requests made by the various SWE team members. An update on these audits, by customer sector, is provided in the following sections. The SWE Team plans to send a memo to each EDC that summarizes any calculations or database issues identified in this report that need to be corrected or clarified.

### 6.2.1 Residential Programs

#### *6.2.1.1 Efficient Equipment Programs*

##### 6.2.1.1.1 Allegheny

For PY2Q1, the SWE requested 10 rebate applications and the corresponding data entries for those applications from Allegheny's Efficient Equipment Program. The SWE then checked for consistency between the rebate applications and submitted receipts, invoices and *EnergyGuides* and also against the entries for the rebate applications in Allegheny's database. In this check the SWE found no QC errors.

##### 6.2.1.1.2 Met-Ed

For PY2Q1, the SWE requested 10 rebate applications per each FirstEnergy EDC and the corresponding data entries for those applications. FirstEnergy was able to upload 15 rebate applications as requested but at the time of reporting, had only uploaded a database sample of 10 entries which did not correspond to the applications submitted. To keep consistency between the reviews of all EDC's, the SWE chose 10 applications out of those submitted. In the SWE's review of Met-Ed's rebate applications the SWE found one application that did not have any attached receipt/invoice or evidence of the product's installation. There were two instances where the price on the application did not match the price on the receipt. The SWE team reported these discrepancies to Met-Ed.

##### 6.2.1.1.3 PennPower

For PY2Q1, the SWE requested 10 rebate applications per each FirstEnergy EDC and the corresponding data entries for those applications. FirstEnergy was able to upload 15 rebate applications as requested but at the time of reporting, had only uploaded a database sample of 10 entries which did not correspond to the applications submitted. To keep consistency between the reviews of all EDC's, the SWE chose 10 applications out of those submitted. In the SWE's review of PennPower's rebate applications the SWE found three instances where the price on the rebate application did not match the price listed for the rebated product on the receipt. One reviewed application did not have an account number listed but did have all of the customer's information recorded so it could be found. The SWE team reported these discrepancies to PennPower

#### 6.2.1.1.4 Penelec

For PY2Q1, the SWE requested 10 rebate applications per each FirstEnergy EDC and the corresponding data entries for those applications. FirstEnergy was able to upload 15 rebate applications as requested but at the time of reporting, had only uploaded a database sample of 10 entries which did not correspond to the applications submitted. To keep consistency between the reviews of all EDC's the SWE chose 10 applications out of those submitted. The SWE did not find any QC errors in the rebate applications submitted by Penelec.

#### 6.2.1.1.5 PECO

For PY2Q1, the SWE reviewed 10 rebate applications and their corresponding database entries for PECO's Efficient Equipment program. In this review the SWE found that an error had been previously corrected by PECO staff where a customer had originally submitted a proposal rather than a receipt for the installation of an EnergyStar Central AC. The PECO staff member requested the receipt for this work to finish the rebate application and the customer complied. The receipt has been attached to the rebate application.

#### 6.2.1.1.6 PPL

For PY2Q1, the SWE requested that each EDC upload 10 random rebate applications from their Efficient Products program and the corresponding database entries for these applications. The Pennsylvania Power and Light company uploaded all rebate applications submitted by 10 customers (in many cases the random customers selected had submitted more than one application for the program) resulting in much more than the 10 applications required. To keep consistency between the reviews of all EDC's the SWE chose 10 applications out of those submitted. In the review of these applications the SWE found only one QC issue where a customer's application denoted a different address than that found in the PPL program database. The SWE team reported this discrepancy to PPL.

#### 6.2.1.1.7 Duquesne

For PY2Q1, the SWE reviewed 10 rebate applications and their corresponding database entries for the Efficient Equipment rebates program. In this review the SWE found that three out of the ten applications reviewed had a different price listed for the product than that which was on the attached receipt for the product. Another issue was found where the rebate application for a programmable thermostat had only receipts attached for the installation of a furnace. The SWE team reported these discrepancies to Duquesne

### *6.2.1.2 Appliance Recycling Programs*

The SWE Team reviewed the estimates of kWh and kW savings reported by each EDC for their appliance recycling programs. The SWE Team found that all of the EDCs did correctly use the annual deemed savings value of 1,728 kWh for each refrigerator or freezer removed. None of the EDC's however, made any adjustments to unit kWh savings for the high percentage of removed appliances that were subsequently replaced with a new unit. According to data supplied by the EDCs for Program year 2, Quarter 1, 30 percent of removed appliances were subsequently replaced with new units. The SWE Team recommends that the annual kWh savings for these units be lowered to a value of 1,205 kWh

annually. If savings are not adjusted to reflect actual savings when a removed appliance is replaced, savings for this program will be grossly overstated.

The table below shows data by EDC for PY2Q1, for appliances removed, and the percentage of removed appliances subsequently replaced with a new appliance.

**Table 6-1: Percentage of Removed Appliances Subsequently Replaced with a New Appliance**

| | Allegheny | Duquesne | FirstEnergy | PECO | PPL | All EDCs |
|---|---|---|---|---|---|---|
| **Total Number of Refrigerators** | 1,067 | | 2,388 | 4,152 | 1,067 | 8,674 |
| **Number of Replaced Refrigerators** | 422 | | 770 | 1,161 | 422 | 2,775 |
| **Total Number of Freezers** | 289 | | 586 | 1,049 | 289 | 2,213 |
| **Number of Replaced Freezers** | 68 | | 128 | 157 | 68 | 421 |
| **Percent of Refrigerators Replaced** | 40% | 22% | 32% | 28% | 40% | 32% |
| **Percent of Freezers Replaced** | 24% | 15% | 22% | 15% | 24% | 19% |

#### 6.2.1.2.1 Allegheny

In response to the SWE's data request, Allegheny uploaded a sample of 10 random JACO work orders from PY2Q1. The SWE checked the information presented on these work orders against the uploaded Allegheny Appliance Recycling database. This sample contained 7 refrigerators, 2 room air conditioners and 1 freezer. Two of the refrigerators sampled claimed to be "Part Frost Free" which was the first time the SWE observed this on any refrigerators sample in PY1 of PY2 from any of the utilities. One refrigerator sampled did not select a defrost type on the JACO invoice but the Allegheny database shows it as having an automatic defrost. One of the Room Air Conditioners collected information on the proposed "Replacement AC" but the database shows that the AC would not be replaced. The SWE team reported these discrepancies to Allegheny.

#### 6.2.1.2.2 Met-Ed

In response to the SWE's data request, Met-Ed uploaded a sample of 10 random JACO work orders from PY2Q1. The SWE checked the information presented on these work orders against the FirstEnergy Appliance Recycling database. The sample contained 10 refrigerators and 1 freezer. For two of the refrigerators sampled there was no "defrost type" selected on the JACO work order but the field in the FirstEnergy database for these refrigerators reads "Auto." The freezer in the sample was on the same JACO work order as a refrigerator recycled at the same residence. On the work order, there was very little information taken on the recycled freezer, however much more information on this freezer is included in the FirstEnergy database. The SWE team reported these discrepancies to Met-Ed.

#### 6.2.1.2.3 PennPower

In response to the SWE's data request, PennPower uploaded a sample of 10 random JACO work orders from PY2Q1. The SWE checked the information presented on these work orders against the FirstEnergy Appliance Recycling database. The sampled contained 9 refrigerators, 4 freezers and 2 Room Air Conditioners. One of the freezers from the sample that was recycled at the same time as a second freezer from the same residence has very little information recorded on the JACO work order. However, much more information on this freezer is included in the FirstEnergy database. Another set of two

refrigerators recycled from the same residence are both marked as "primary" refrigerators. There was one refrigerator for which the JACO work order denoted no defrost type but the FirstEnergy database denoted it has an auto defrost. The SWE team reported these discrepancies to PennPower.

#### 6.2.1.2.4 Penelec

In response to the SWE's data request, Penelec uploaded a sample of 10 random JACO work orders from PY2Q1. The SWE checked the information presented on these work orders against the FirstEnergy Appliance Recycling database. The sampled contained 10 refrigerators. Five refrigerators in the sample had no defrost type selected on the work order but were recorded as "auto defrost" in the database. The SWE team reported these discrepancies to Penelec.

#### 6.2.1.2.5 PECO

In response to the SWE's data request, PECO uploaded a sample of 10 random JACO work orders from PY2Q1. The SWE checked the information presented on these work orders against the PECO Appliance Recycling database. There were 8 refrigerators, 3 freezers and 2 room air conditioners in this sample. The SWE found no QC issues or inconsistencies between the JACO orders sampled and the PECO database.

#### 6.2.1.2.6 PPL

In response to the SWE's data request, PPL uploaded a sample of 10 random JACO work orders from PY2Q1. The SWE checked the information presented on these work orders against the PPL Appliance Recycling database. There were 10 refrigerators and 3 freezers in this sample. One customer in the sample had the rebate paid to a different name and address than the customer who applied for the rebate, no record of this is found on the JACO work order. One refrigerator is recorded on the invoice as 18 cubic feet, in the PPL database it is recorded at 20 cubic feet. The SWE team reported these discrepancies to PPL.

#### 6.2.1.2.7 Duquesne

At the time of reporting (November 23, 2010) the SWE had received Duquesne's Appliance Recycling database but has not yet received a sample of 10 JACO work orders.

### *6.2.1.3 Lighting Programs*

For PY2Q1 the SWE team has completed the review of the savings calculations and has completed a quality review of the database entries for PY2Q1 residential lighting projects. As part of the data request issued October 28, 2010, the SWE team requested the complete databases for each EDC's CFL lighting programs – rebates programs, give-away events, and buy-down programs. Additionally, invoices for all PY2Q1 CFL distributed were requested. As of November 18, 2010 all of this information has been provided and uploaded onto the SWE Act 129 SharePoint Site. In summary, the SWE team did identify several minor issues with the EDC's savings calculations or database entries that many of the EDCs will need to address on a going forward basis.

Below is a summary of the savings reported for each EDC's residential lighting program. The tables include the gross and verified savings, where applicable, as well as the percent of PY2 savings attributed

to the program. As indicated in the tables below, the savings associated with the residential lighting programs in PY2 constitute a large portion of the reported PY2 savings (e.g., 56% for Duquesne).

**Table 6-2: PYTD Gross and Verified MWh Savings**

| EDC | Program | PYTD Reported Gross Impacts (MWh) | Realization Rate | Preliminary PYTD Verified Impact (MWh) | % of PY1 Verified MWh Savings |
|---|---|---|---|---|---|
| **Allegheny** | CFL Rewards Program | 1,491 | - | - | - |
| **Duquesne** | Residential: EE Program (Upstream Lighting) | 4,548.1 | 1.0 | 4,548.1 | 56.1% |
| **PECO** | Smart Lighting Discounts Program | 36,951 | 1.0 | 36,951 | 29.1% |
| **PPL** | CFL Campaign | 24,860 | 1.0 | 24,830 | 38.6% |
| **Met-Ed** | EE Product Program[12] | 3,620 | 1.0 | 3,620 | 23.2% |
| **Penelec** | EE Product Program[13] | 4,160 | 1.0 | 4,160 | 17.5% |
| **PennPower** | EE Product Program[14] | 3,028 | 1.0 | 3,028 | 59.0% |

**Table 6-3: PYTD Gross and Verified MW Savings**

| EDC | Program | PYTD Reported Gross Impacts (MW) | Realization Rate | Preliminary PYTD Verified Impact (MW) | % of PY1 Verified MW Savings |
|---|---|---|---|---|---|
| **Allegheny** | CFL Rewards Program | 0.1 | - | - | - |
| **Duquesne** | Residential: EE Program (Upstream Lighting) | 0.2386 | 1.0 | 0.2386 | 30.4% |
| **PECO** | Smart Lighting Discounts Program | 2.03 | 1.0 | 2.03 | 100% |
| **PPL** | CFL Campaign | 1.48 | 1.0 | 1.48 | 13.7% |
| **Met-Ed** | EE Product Program[15] | 0.22 | 1.0 | 0.22 | 12.5% |
| **Penelec** | EE Product Program[16] | 0.25 | 1.0 | 0.25 | 8.3% |
| **PennPower** | EE Product Program[17] | 0.18 | 1.0 | 0.18 | 40.0% |

#### 6.2.1.3.1 Allegheny

- Total Participants Reported in PY2Q1 Report:
  - Allegheny reported 6,851 Q1 program participants and 7,111 since CPITD. The CPITD participant numbers match the participant number in Allegheny's savings calculator. Allegheny's Q1 participant numbers were calculated by subtracting the PY1 participant numbers reported in their PY1 Annual Report, which were 260.
  - It is unclear at this time how the database entries for bulb sales and rebates were translated to the bulb counts used in the savings calculator. The savings calculator

[12] CFL measures and savings are included as part of the EE Products Program. The data presented in this table pertains to the EE Products Program in its entirety and is not specific to the CFL portion.
[13] *Ibid.*
[14] *Ibid.*
[15] *Ibid.*
[16] *Ibid.*
[17] *Ibid.*

classifies 7 different CFL types, while the POS database has 15 different CFL types. The SWE team will follow-up with Allegheny to address this issue in future program audits.

- Total Savings Reported in PY2Q1 Report:
  - Energy Savings: The values reported in the PY2Q1 report for CPITD Reported Gross Impact (MWh) match the savings values in Allegheny's energy savings calculator (File: "PA PY2010 Q1 ESC" provide by Lisa Wolfe on January 11, 2011).
  - Demand Savings: The values reported in the PY2Q1 report for CPITD Reported Gross Impact (MW) match the savings values in Allegheny's energy savings calculator (File: "PA PY2010 Q1 ESC" provide by Lisa Wolfe on January 11, 2011).
- Use of 2010 TRM Savings Protocols:
  - Energy Savings: Allegheny utilizes the proper protocols as defined in the TRM for determining the per bulb energy savings.
  - Demand Savings: Allegheny utilizes the proper protocols as defined in the TRM for determining the per bulb demand reductions.
- Baseline Assumptions:
  - The SWE team reviewed the baseline assumptions used in the savings calculator to estimate the per bulb kWh and kW savings. The CFL wattages of each bulb were mapped to an ENERGY STAR incandescent equivalency map to verify that the Allegheny assumed base fell within the recommended range. All bulb baseline assumptions fell within the recommend ENERGY STAR equivalency ranges.
- Invoice Review:
  - Rebate Datasets:
    - At least 8% of bulb entries have undocumented wattages.[18]
    - For undocumented wattages or counts by bulb-type, Allegheny assumes 13W CFLs and 2 bulbs per pack.[19]
    - Database inconsistent on the wattage values tracked – CFL or base. This issue was identified in the SWE team's PY1 Annual Report and has not yet been resolved.
    - Rebate Application Review: The SWE team reviewed 5 rebate forms. The quantities of bulbs distributed by type per rebate application were not consistent for 4 of the 5 rebate applications; however, the total bulb counts by were correct. The SWE team addressed this issue during our PY1 audit. These types of database errors can lead to both over and under estimates of savings due to uncertainties with specific bulb counts by type.
  - POS Datasets: No issues identified.

[18] This estimate only account for the first CFL type entered in the database. The accuracy of the database for entries where the customer received rebates for more than one bulb-type is unknown.

[19] Any potential savings associated with discrepancies due to unknown wattage types or multi-pack bulb counts is unknown as Allegheny assumes a 13W CFL bulb and 2 bulbs per multi-pack when specific wattages and counts unknown. The SWE acknowledges these assumptions and, although it prefers accurate counts and wattages, understands that Allegheny is taking a reasonably conservative approach in their assumptions.

#### 6.2.1.3.2 Duquesne

- Total Participants Reported in PY2Q1 Report:
  - Duquesne reported 96,589 lamp sales; the SWE team calculated 96,586 lamp sales in the database. No issues were identified.
- Total Savings Reported in PY2Q1 Report:
  - Energy Savings: Duquesne reported 4,548.1MWh savings, which matched the database estimates. No issues were identified.
  - Demand Reductions: Duquesne reported 0.2386MW reductions, which matched the database estimates. No issues were identified.
- Use of 2010 TRM Savings Protocols:
  - Energy Savings: Duquesne utilizes the proper protocols as defined in the TRM for determining the per bulb energy savings.
  - Demand Savings: Duquesne utilizes the proper protocols as defined in the TRM for determining the per bulb demand reductions.
- Baseline Assumptions:
  - The SWE team reviewed 20 baseline assumptions used in Duquesne's database to estimate the per bulb kWh and kW savings. The CFL wattages of each bulb were mapped to an ENERGY STAR incandescent equivalency map to verify that the Duquesne assumed base fell within the recommended range. All bulb baseline assumptions fell within the recommend ENERGY STAR equivalency ranges.
- Invoice Review:
  - The SWE team reviewed three invoices; no issues were identified.

#### 6.2.1.3.3 PECO

- Total Participants Reported in PY2Q1 Report:
  - PECO reported 768,033 lamp sales; the SWE team calculated 768,166. This includes lamp sales and giveaways.
- Total Savings Reported in PY2Q1 Report:
  - Energy Savings: PECO reports IQ/PYTD MWh savings of 36,951. Their database calculates savings at 36,951 MWh. There is no difference between the reported savings and savings tracked in the database.
  - Demand Savings: PECO reports IQ/PYTD MW savings of 2.03. Their database calculates savings at 2.03 MW. There is no difference between the reported savings and the savings tracked in the database.
- Use of 2010 TRM Savings Protocols:
  - Energy Savings: The database reported savings entries fall within 5% of the SWE calculated savings. The actual discrepancies amount to a -0.03%% difference between total kWh reported and total kWh SWE calculated.
  - Demand Savings: The database reported savings entries fall within 5% of the SWE calculated savings. The actual discrepancies amount to a 1.01% difference between total kW reported and total kW SWE calculated.

  - Note: The discrepancies are likely the result of rounding errors as the values compared were for total lamp sales of each particular database line.
- Baseline Assumptions:
  - A sample of 20 bulbs was selected for review. The CFL wattages of each bulb were mapped to an ENERGY STAR incandescent equivalency map to verify that the PECO assumed base fell within the recommended range. Three bulbs did not fall within the ENERGY STAR equivalency estimates; however, upon further review, PECO's assumptions fell within the recommended manufacturers equivalency ranges for each bulb.
- Invoice Review:
  - Five invoices were compared to PECO's database for a quality review.
  - Invoice 5500: No issues were identified.
  - Invoice 5501: No issues were identified.
  - Invoice 7628: No issues were identified.
  - Invoice 5503: No issues were found for total reimbursements. However, when reviewing the actual bulb sales for GE bulbs invoiced, PECO appears to be missing the first page of a GE receipt dated 7/30/2010. Thus, the SWE team was unable to verify the bulb count for 567 bulbs; however, PECO paid for them as indicated by page two of the receipt.
  - Invoice 5504: NO issues were identified.

#### 6.2.1.3.4 PPL

- Total Participants Reported in PY2Q1 Report:
  - CFL participants estimated in PPL's PY2Q1 report by dividing the total sales in Q1 of PY2 by 6.96. The total sales reported in the PY2Q1 report matches the database (526,296 bulbs); however, the CFL participants reported is different from the estimate calculated by the SWE team. PPL reported 75,566 participants; the SWE team calculated 75,617.
  - Note that these numbers for PPL's CFL Campaign reflect projects with reported "INSTALLDATES" from 03/31/2010 – 08/13/2010, which includes bulbs sold outside of the current quarter. The sales with INSTALLDATES that fall within PY2Q1 total 338,050 (estimated 48,750 participants). This number should be reported as the IQ and PYTD participation estimates for this quarterly report. If there is reason for including sales outside of the current quarter, PPL should indicate as such. If the reason is that these sales were not approved by PPL until the current quarter, as indicated by "WORKPACKAGEAPPROVALDATE;" PPL should provide this as clarification. This same logic, regarding sales falling inside and outside of the quarter, should be applied to IQ and PYTD MWh and MW savings as well.
- Total Savings Reported in PY2Q1 Report:
  - Energy Savings: PPL reports IQ/PYTD MWh savings of 24,830. Their database calculates savings at 24,830 MWh. There is no difference between the reported savings and savings tracked in the database.

  - Demand Savings: PPL reports IQ/PYTD MW savings of 1.48. Their database calculates savings at 1.34 MW. This is a difference of -9.5%. The SWE team requests that PPL clarify this discrepancy.
- Use of 2010 TRM Savings Protocols (calculations based on PPL database provided for "WORKPACKAGE APPROVALDATE" entries falling within PY2Q1):
  - Energy Savings: 1.09% of the database entries do not match between PPL's reported per bulb kWh savings and the SWE calculated savings. This amounts to a -0.01% difference between total kWh reported and total kWh SWE calculated.
  - Demand Savings: 1.09% of the database entries do not match between PPL's reported per bulb kW savings and the SWE calculated savings. This amounts to a -0.01% difference between total kW reported and total kW SWE calculated.
- Baseline Assumptions:
  - A sample of 20 bulbs was selected for review. The CFL wattages of each bulb were mapped to an ENERGY STAR incandescent equivalency map to verify that the PPL assumed base fell within the recommended range. Three bulbs did not fall within the ENERGY STAR equivalency estimates; however, upon further review, PPL's assumptions fell within the recommended manufacturers equivalency ranges for each bulb.
- Invoice Review:
  - Buy-down Channel:
    - Two retailer invoices from each work order packed were reviewed for accuracy.
    - Work Order 86: The SWE team identified a discrepancy between the invoice from Giant Food Stores and the database. The total rebate amount was correct; however it is unclear how the bulb totals were calculated in the database. The invoice is for 2,635 packages; the database tracks 3,073 bulbs. The SWE team requests that PPL clarify this issue.
    - Work Order 103: No issues identified.
    - Work Order 130: The SWE team identified a discrepancy between the invoice from Sam's Club and the database. The total rebate amount was correct; however it is unclear how the bulb totals were calculated in the database. The invoice is for 2,607 packages; the database tracks 15,534 bulbs. The SWE team requests that PPL clarify this issue.
  - Giveaway Events:
    - There are two entries with negative bulb counts for event dates 7/30/2010 and 7/10/2010. The SWE team requests that PPL clarify what the negative bulb counts represent.
    - The SWE team reviewed bulb counts distributed for 5 event giveaway dates; no issues were identified.

#### 6.2.1.3.5 FirstEnergy

- Total Participants Reported in PY2Q1 Report:

  - The FirstEnergy companies reported participant counts in Table 1-3 of their respective quarterly reports.
  - PYTD participant counts matched for Met-Ed and Penelec.
  - The SWE team identified and issue with PennPower's reported PYTD participant numbers. The report noted 16,193 PYTD participants; however the database only tracked 11,731 participants. The SWE team requests that PennPower clarify this discrepancy.
- Total Savings Reported in PY2Q1 Report:
  - FirstEnergy reports savings of CFL bulbs as part of their EE Products Program.
- Use of 2010 TRM Savings Protocols (calculations based on Met-Ed database filed: "CFL and Other Residential Data for October 29 SWE Request;" spreadsheet "2ci-2ci- CFLs Invoiced"):
  - Met-Ed
    - Energy Savings: According to the database, Met-Ed calculated CFL savings of 7,105MWh; the SWE team calculated savings of 6,600MWh, using the same CFL and baseline assumptions. According to the SWE calculation, Met-Ed over-calculated savings by approximately 505MWh or by 7%.
    - Demand Savings: According to the database, Met-Ed calculated CFL demand reductions of 0.3862MW; the SWE team calculated demand reductions of 0.3588MW, using the same CFL and baseline assumptions. According to the SWE calculation, Met-Ed over-calculated savings by approximately 0.0274MW or by 7%.
  - Penelec
    - Energy Savings: According to the database, Penelec calculated CFL savings of 8,284MWh; the SWE team calculated savings of 7,515MWh, using the same CFL and baseline assumptions. According to the SWE calculation, Penelec over-calculated savings by approximately 768MWh or by 9%.
    - Demand Savings: According to the database, Penelec calculated CFL demand reductions of 0.4503MW; the SWE team calculated demand reductions of 0.4085MW, using the same CFL and baseline assumptions. According to the SWE calculation, Penelec over-calculated savings by approximately 0.0418MW or by 9%.
  - PennPower
    - Energy Savings: According to the database, PennPower calculated CFL savings of 6,545MWh; the SWE team calculated savings of 6,345MWh, using the same CFL and baseline assumptions. According to the SWE calculation, PennPower over-calculated savings by approximately 200MWh or by 3%.
    - Demand Savings: According to the database, PennPower calculated CFL demand reductions of 0.4103MW; the SWE team calculated demand reductions of 0.3449MW, using the same CFL and baseline assumptions. According to the SWE calculation, PennPower over-calculated savings by approximately 0.0654MW or by 16%.

- Baseline Assumptions:
  - The SWE team reviewed the baseline assumption data provided by FIrstEnergy. All the baseline assumptions fell with the ENERGY START Equivalency range estimates and no errors were identified.
- Invoice Review:
  - Four invoices were provided for review. No issues were identified.

### 6.2.2 Low-Income Programs

#### 6.2.2.1.1 Allegheny

The SWE conducted a review of the kWh and kW savings for Allegheny Power's Low-Income program their recent PY2Q1 report. Allegheny provided the recently updated spreadsheet calculator containing the participants and savings for each measure for review by the SWE. Allegheny identified errors in their calculations that are reported in the Quarterly Report. Allegheny corrected the errors and provided the documentation with both pre- and post-correction calculators. The SWE verified the error and confirmed that the Q1 savings for Allegheny's Low-Income Program should be reported as 1,591MWh rather than the current 2,798MWh with the number of participants (718) to remain unchanged.

#### 6.2.2.1.2 PECO

The SWE conducted a review of the savings for PECO's Low-Income program their recent PY2Q1 report. PECO provided the recently updated spreadsheet calculator containing the participants and savings for each measure for review by the SWE. The SWE confirmed that the Q1 savings for PECO's Low-Income Program were correctly calculated and reported as 3,590MWh.

#### 6.2.2.1.3 PPL

The SWE conducted a review of the savings for PPL's Low-Income program their recent PY2Q1 report. PPL provided the participant counts and the deemed savings per job type (low cost, full cost, baseload) used to calculate the reported savings. The SWE confirmed that the Q1 savings for PPL's Low-Income Program were correctly calculated and reported as 272MWh.

#### 6.2.2.1.4 FirstEnergy

FirstEnergy has not been able to provide the supporting data for their reported savings. The SWE Team will continue to contact FirstEnergy to obtain this information.

#### 6.2.2.1.5 Duquesne

The SWE conducted a review of the savings for Duquesne's Low-Income program their recent PY2Q1 report. Duquesne provided the participant counts and the deemed savings in a spreadsheet used to calculate the reported savings. The SWE confirmed that the Q1 savings for Duquesne's Low-Income Program were correctly calculated and reported as 103.3MWh.

### 6.2.3 Non-Residential Programs

The non-residential desk audits were conducted as a part of the EDC site meetings between December 7 and December 15, 2010, with one day allocated to each EDC. For each program of interest, the reported

savings values from the EDC's Quarterly Report were checked for consistency with the EDC's internal tracking database. Several projects were randomly selected to confirm that the savings values recorded in the database were consistent with project documentation. Discrepancies were identified and possible improvements discussed.

Details of each desk audit were documented in meeting minutes distributed by the SWE. Highlights are summarized in Section 6.1.

## 6.3 Site visits to Customer Facilities

The following sections provide an update on activities related to SWE team visits to customer facilities in PY2Q1.

### 6.3.1 Residential Programs

No site visits have been scheduled for the review of residential programs.

### 6.3.2 Low-Income Programs

The SWE has so far completed site-visits of PY2 Residential Low-Income customers for Allegheny, Duquesne and PECO. The SWE noticed a marked improvement in the issues previously identified in PY1 site-visits but some issues still remain. The following sections contain details on the issues identified during these site-visits.

#### *6.3.2.1 Duquesne*

SWE conducted a total 13 site visits on Duquesne's Low Income Energy Efficiency program on November 8, 2010. SWE and Duquesne visited 3 HUD-supported Elderly Housing Development and Operations Corporation (EHDOC) buildings with the intention of conducting 5 inspections at each. 5 visits were conducted at "I.W. Abel", 3 at "Lloyd McBride" and 5 and "Lynn Williams".

Each apartment in the building is identical and has approximately 7 hard-wired fixtures. The maintenance teams at Lynn Williams estimated that 11 bulbs are required for each apartment. The maintenance team at Lloyd McBride estimated 13 bulbs are required for each apartment. The maintenance team at I.W. Abel estimated the number of bulbs required by tallying the number of non hard-wired sockets and adding that number to the 7 standard fixtures.

There are only two major issues that could potentially affect program savings:

1. The first issue is related to the distribution of spare CFLs in the Lynn Williams building. Considering that there are very few sockets in these small apartments (typically between 7-11 sockets), it is highly unlikely that the spare bulbs will ever get installed during the ACT 129 program and thus the savings not realized. There was one other case, at I.W. Abel where the customer received spare CFLs (3). It is recommended that Duquesne take action to eliminate the distribution of large quantities of spare CFLs in similar projects.
2. In 2 of the 5 site-visits at I.W. Abel, the maintenance team would replace the Duquesne 13W CFLs with 23W CFLs where the customer required extra light.

Recommendations for these major issues include:

1. Communicating to future EHDOC (or other) participants that leaving spares with individual customers should not occur. All spares should be consolidated and returned to Duquesne except for a small set-aside to allow maintenance to replace burnt-out or broken bulbs.
    a. Because this issue is isolated to one building and will have a maximum effect of approximately 5,000kWh, no adjustment should be necessary. Duquesne has agreed to address this issue moving forward.
2. Duquesne should consider offering 23W bulbs on an ad hoc basis to customers who request extra light in a particular socket. The quantity of 23W bulbs should be counted and the deemed savings value modified to adjust for the lower energy savings.
3. Each building should keep 1% (an approximate defect rate – change it if necessary) of the total number of bulbs actually installed in the building as spares. This may not end up being many but it represents the approximate number of faulty bulbs. Duquesne would adjust according to experience. A 1% defect rate will not affect savings calculations so long as the bulbs are replaced. It will only have a negligible effect on total program costs.

#### *6.3.2.2 Allegheny*

SWE conducted a total of seven site visits on Allegheny's Low Income Energy Efficiency program on November 8, 2010. SWE and Allegheny inspected a variety of Low Income baseload, LIURP and JUUMP jobs. This summary report is an addendum to the Program Year 1 site visit report.

SWE previously conducted site visits for Program Year 1 in June, 2010 and determined the following major issues.

- Aerators had low installation rates due to incompatibility of the aerator thread
- Kit measures and CFLs were not being installed by the contractor but left for the customer to install.
- Because measures are distributed in "kits", there is no accurate data representing the actual individual unique measure installations.

Allegheny has been working to make program improvements. The following improvements have been made.

- Allegheny is currently researching the possibility of including a universally threaded aerator in the Dollar Energy Fund kits. This requires collaboration with Dollar Energy Fund and their suppliers.
- Allegheny communicated the non-installation issue to the contractors in question. The issue still exists with the contractors for the sites inspected during this round of site-visits.
- Allegheny is working to modify the database to enable records of individual kit measure installations/quantities.

During the site visits SWE identified the following outstanding issues:

- CFLs are being left with the customer and not being installed by the contractor.
- Kitchen and Bathroom Aerators are not being installed by the contractor.
    - No Energy Efficiency kits are being presented to the customer – maybe because they have gas water heating.
    - It appears that the Energy Efficiency Kits are not being provided to customers that have gas water heating systems.

#### *6.3.2.3 PECO*

The Statewide Evaluator (SWE) conducted complete site-visit inspections of 11 Low-Income Energy Efficiency program participants in PECO's Philadelphia service area.

The site-visits took place between Thursday December 16 and Friday December 17, 2010.

This round of site visits had a greater focus on Electric Heating projects with major measures. Six of the 11 wholly completed site visits were Electric Heating jobs. These inspections often included a post-installation blower door test. The SWE also verified the installation of common baseload measures such as CFLs, faucet aerators and showerheads.

SWE previously conducted site visits for Program Year 1 in July, 2010 and determined the following major issues [excerpt from previous report]:

- Some instances where the number of CFLs installed differed from the number recorded in the work order/invoice.
- One case where two faucet aerators were provided and invoiced but only one aerator was actually installed. The contractor left a second aerator with the customer and did not install it.
- For the most part, CFLs are being installed in the correct high-use sockets. In some cases, CFLs provided by the contractor are being installed in low-use sockets including the basements and closets.
    - There are cases where the customer has indicated some high-use sockets in bedrooms or other high-use rooms which did not receive CFLs. It is possible that the contractors did not properly identify <u>all</u> the high-use sockets.
    - In fixtures with multiple sockets (e.g. Dining Room [3 or 4] or Bathroom Vanity [~4] some customers had de-lamped the provided CFLs by twisting them enough to disable them.) This may be an installation rate issue.

PECO has been working to make program improvements. The following improvements have been made:

- Invoiced CFL bulbs were not identified in low-use sockets such as closets or unfinished basements.
- No spare aerators or other measures were left with customers.

During the site visits SWE identified the following outstanding issues:

- Some instances where the number of CFLs installed differed from the number recorded in the work order/invoice.
- There are cases where the customer has indicated some high-use sockets in bedrooms or other high-use rooms which did not receive CFLs. It is possible that the contractors did not properly identify all the medium- to high-use sockets but the SWE understands that the customers' perception of usage may change between visits.

#### 6.3.3 Non-Residential Programs

The SWE site visits for Q1 projects will primarily take place in January and February 2011. Most will be ride-along visits with the EDC evaluators, although independent visits may also be performed. Ten ride-along visits have been completed to date for Duquesne and PPL Q1 projects. Selected findings include:

- Lighting inventory forms are were not completed or contained major inaccuracies.
- Baseline light fixtures were not accurately assessed and reported by the lighting contractor.
- The M&V protocol for determining the demand savings for a custom project was not followed.
- Lighting wattages from TRM Appendix C were not used.
- An Interim Measure Protocol (IMP) was not been formally submitted for various commercial refrigeration measures.
- Lighting measures were only 50% installed for one project classified as completed.

Please note that the inspections were completed as ride-along visits and therefore do not consider impact adjustments made by EDC evaluators. Generally, these errors will be captured by the EDC evaluators and corrected for using a realization rate. However, EDCs should consider corrective action with implementation CSPs to improve correlation between reported savings and verified savings.

Detailed findings and recommendations to address outstanding issues will be provided to the EDCs in inspection reports prepared by the SWE after site visits are completed.

# 7 Status of Key Issues

Below is a summary of the key issues identified to date by the EDCs and the SWE team.

## 7.1 Interim protocols

The SWE, at the request of the EDCs and in concurrence with CEEP, have been collecting and analyzing proposed M&V and savings protocols for measures submitted by the EDCs that are not currently addressed in the TRM but are suitable for deemed or partially deemed savings. To expedite the review process, the EDCs have prioritized the proposed measures based on immediate need with existing and near term program roll-outs. In collaboration with the EDC's, the SWE has identified over 60 measures requested by the EDC's for the development of interim protocols. The SWE convened two working groups, residential TWG and commercial TWG with the EDC's to begin development of the protocols. Over the course of the 1st Quarter, Program year 2, the SWE and the EDC's developed 20 interim residential and commercial protocols.

## 7.2 Custom Measures Protocols

The SWE in collaboration with the EDC's developed and worked on 43 custom measure protocols during 2010, primarily for EDC commercial and industrial programs. As of January 25, 2011, the SWE Team has completed its review of 27 of these CMPs and returned comments to the EDCs.

On November 24, 2010, a new CMP process was implemented by the SWE team to help expedite the CMP review process.

## 7.3 Demand Response Measures

On January 12, 2011 the PA PUC issued a Secretarial Letter stating that "the PJM measurement and verification (PJM M&V) protocols for the PJM economic demand response programs, in effect for the PJM delivery and planning year beginning in June 2012 through May 2013, will be used as a basis for the Act 129 Statewide Evaluator's measurement and verification for Act 129 load curtailment performance." For the summer capability period beginning June 2011 through May 2012, the rules and procedures then in effect by PJM will be used to validate performance.

The DR programs anticipated are of four general types. Key issues for each type of DR program are described below:

1. Direct Load Control. These are the only type of programs implemented as of the end of quarter one of program year two. For these programs, PJM requires an approved Load Research Study documenting the savings that will result from the signal sent by the EDC (or its vendor) to the potential participant. Loads controlled include air conditioning and electric hot waters. Alternately LBLs "Deemed Savings Estimates for Legacy Air Conditioning and Water Heating Direct Load Control Programs in PJM Region" can be used.

   Due diligence required to confirm savings for these programs for Act 129 will include making sure that the Load Research Studies or use of the LBL Legacy Study reasonably conform to PJM procedures and reflect the savings claimed for the technology and market sectors to which they are applied.

2. PJM Economic Programs Aggregated by Curtailment Service Providers. These programs will be implemented by Curtailment Service Providers and measured using PJM approved Customer Baseline (CBL) protocols. Act 129 measurement and verification activities will follow and confirm PJM procedures and quality control processes.

   Due diligence will include confirming that PJM protocols and procedures have been properly applied and that the reconstruction of the peak 100 hours for is reasonable. This will include validating the savings at participants using PJM approved Customer Base Line methods and confirming EDCs, CSPs and PJM have faithfully implemented procedures according to PJM policies.

3. Distributed Resources. These programs rely on distributed generation equipment to provide load reduction on the system.

   Metered net output is the preferred method of verification. If metering of net output is not available PJM approved baseline protocols are to be used.

4. Rate Based Programs. These programs have been proposed by Allegheny Power. According to the Secretarial Letter dated Jan 12, 2011, an appropriate PJM protocol will need to be in place quantifying savings using PJM economic protocols for the Act 129 peak 100 hours. It is unclear how this will be accomplished.

5. The SWE intends to convene a Technical Working Group meeting with the EDCs to review DR programs and confirm the use of PJM protocols for evaluation, measurement and verification of the DR programs.

### 7.4 Status of TRM Update

The SWE in collaboration with the EDC's will continue development of interim protocols that will be added to the 2011 TRM update. In addition to the interim protocols, the SWE has been requested by the EDC's to develop and document definition of terms throughout the TRM to ensure consistency in the application of the TRM protocols.

### 7.5 Net to Gross Issues

No new developments have been made with regards to net to gross issues.

### 7.6 TRC Issues

The SWE team is currently working with the PUC and the EDCs to coordinate a time for a teleconference to begin discussions on the major TRC issues identified by the SWE team and the EDCs.

## 8 Summary and Recommendations

The SWE team, the PA PUC 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 anticipates that improvements will continue to be made to the Statewide Evaluation audit processes and appreciates the support and responsiveness of the EDCs and their evaluation contractors.

Based on the findings from the SWE audit activities conducted in PY2Q1, the SWE team makes the following recommendations to the PA PUC relating to the Act 129 energy efficiency and demand response programs:

- Updating the TRM based on approved interim TRM protocols and evaluation findings.

- The EDCs need to revise their kWh and kW savings estimates for their appliance removal programs to reduce savings in those instances where a removed appliance is replaced with a new unit.
- The EDCs need to review the SWE team's comments in this report on residential lighting savings and provide clarifications and explanations where indicated by the SWE.
- EDCs revisiting their EM&V Plans to verify that their respective plans still comply with the requirements laid out by the SWE team and they address EM&V for new programs.
- Regarding Low Income Programs, a number of issues were identified that have not been remedied since the Program Year 1 site visits; the SWE team recommends that the EDCs revisit these issues and take corrective action.
- Improving consistency in reporting. The SWE found that the EDCs used different approaches when considering post-report modifications, i.e. changes to projects completed in a particular quarter or year after the report for that particular quarter or year has already been submitted. These changes may occur for a variety of reasons including but not limited to data entry errors, clerical errors, savings adjustments, and other QA/QC related issues captured by the evaluator (as opposed to the implementer's internal QA/QC processes). The SWE recommends the addition of tables within the reports to track these post-report modifications to ensure consistency from report to report.
- Improving consistence in the classification of errors captured by the EDC evaluators as "ex-ante adjustments" versus "ex-post adjustments". Ex-ante adjustments describe internal errors that occur at the implementation level, comprising mostly of data entry and clerical errors. Ex-post adjustments describe external errors that occur at the participant level, comprising mostly of discrepancies between provided information and field verified information. Improperly classifying these adjustments will lead to a mischaracterization of realization rates reported by EDC evaluators. The SWE instructed EDCs to identify and quantify all ex-ante adjustments captured by EDC evaluators as appropriate in quarterly and annual reports.
- Addressing issues of cut-off dates for reporting projects in a given time period. The SWE will discuss this issue with the PUC and issue a guidance memo.
- Addressing the timing of the Annual Report and its impact on sampling. The SWE will follow-up with the PUC.
- Addressing issues unique to small measure installations. The SWE will release a small measures white paper.
- Providing guidance on cut-off dates associated with reporting savings and TRM updates.
- Addressing issues related to the treatment of measures in the TRM when the stated assumptions are not applicable. The SWE team will issue a memo on this topic.
- Addressing remaining QC issues identified in the residential program databases.