



An Exelon Company

Richard G. Webster, Jr.
Vice President
Regulatory Policy and Strategy

Telephone 215.841.4000 ext 5777
Fax 215.841.6208
www.peco.com
dick.webster@peco-energy.com

PECO
2301 Market Street, 515
Philadelphia, PA 19103

July 15, 2013

RECEIVED

JUL 15 2013

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Via Federal Express

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Second Floor
Harrisburg, Pennsylvania 17120

Re: PUC Docket No. ~~M-2008-2069887~~ M-2009-2093215
Energy Efficiency and Conservation Program Quarterly Report for
March 1, 2013 through May 31, 2013

Dear Secretary Chiavetta:

In accordance with the Commission's Secretarial Letter dated May 25, 2011, enclosed is PECO's Quarterly Energy Efficiency & Conservation Report for the period March 1, 2013 through May 31, 2013.

PECO is providing a copy of the report to the Act 129 Statewide Evaluator (GDS Associates, Inc.) and is also posting the report on the PECO website.

Please acknowledge receipt of the foregoing on the enclosed copy of this letter.

If you have any further questions regarding this matter, please call me at 215-841-5777.

Sincerely,

Richard G. Webster/AMM

cc: C. Walker-Davis, Director, Office of Special Assistants
P. Diskin, Director, Bureau of Technical Utility Services
M. C. Lesney, Director, Bureau of Audits
J. E. Simms, Director, Bureau of Investigation & Enforcement
Office of Consumer Advocate
Office of Small Business Advocate
McNees, Wallace & Nurick

enclosures

Quarterly Report to the Pennsylvania Public Utility Commission (Preliminary Annual Report)

**For the Period
March 2013 through May 2013
Program Year 4, Quarter 4**

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JUL 15 2013

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

**For Pennsylvania Act 129 of 2008
Energy Efficiency and Conservation Plan**

Prepared by Navigant Consulting, Inc.

For

PECO Energy Company

July 15, 2013

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Acronyms

C & I	Commercial and Industrial
CATI	Computer-Aided Telephone Interview
CF	Coincidence Factor
CFL	Compact Fluorescent Lamp
CPITD	Cumulative Program/Portfolio Inception to Date
CPITD-Q	Cumulative Program/Portfolio Inception through Current Quarter
CVR	Conservation Voltage Reduction
CVRf	Conservation Voltage Reduction factor
DEER	Database for Energy Efficient Resources
DLC	Direct Load Control
EDC	Electric Distribution Company
EE&C	Energy Efficiency and Conservation
EFLH	Effective Full-Load Hours
EM&V	Evaluation, Measurement, and Verification
GNI	Government, Nonprofit and Institutional
HVAC	Heating, Ventilating, and Air Conditioning
IQ	Incremental Quarter
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light Emitting Diode
LEEP	Low-Income Energy Efficiency Program
LIURP	Low-Income Usage Reduction Program
M&V	Measurement and Verification
MW	Megawatt
MWh	Megawatt-hour
NTG	Net-to-Gross
PLR	Permanent Load Reduction
PUC	Public Utility Commission
PY1	Program Year 2009
PY2	Program Year 2010
PY3	Program Year 2011
PYTD	Program/Portfolio Year to Date
PY4	Program Year 2012
SEER	Seasonal Energy Efficiency Rating
SWE	Statewide Evaluator
TRC	Total Resource Cost
TRM	Technical Reference Manual

1 Overview of Portfolio

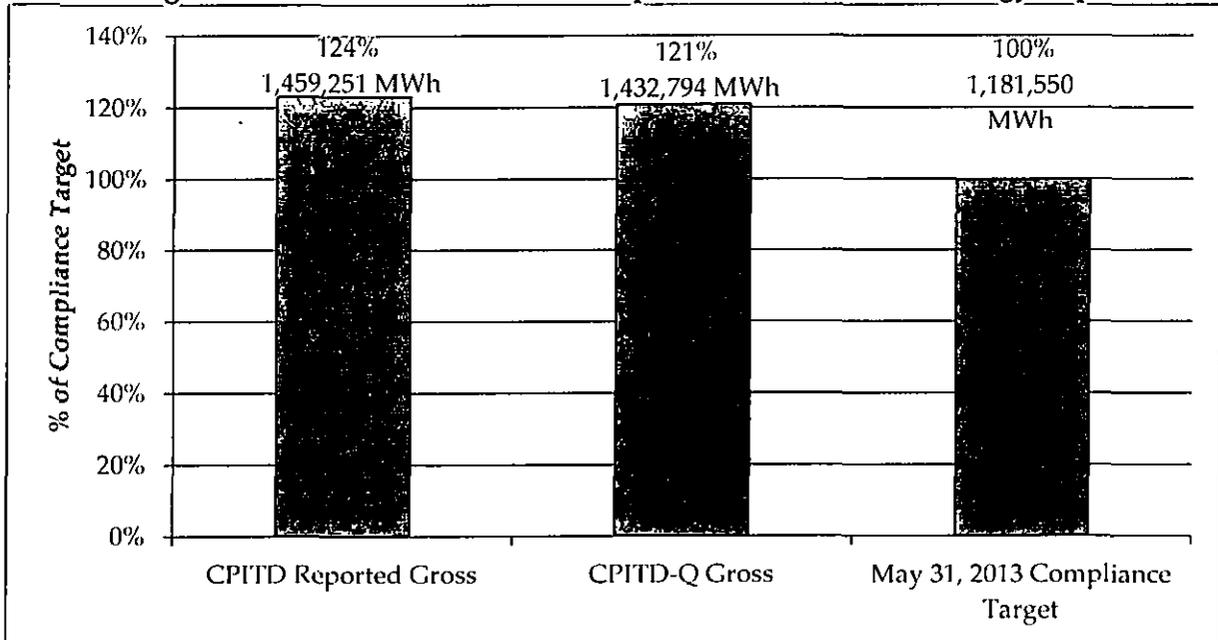
Pennsylvania Act 129 of 2008 signed on October 15, 2008, mandated energy savings and demand reduction goals for the largest electric distribution companies (EDCs) in Pennsylvania. Each EDC submitted energy efficiency and conservation (EE&C) plans—which were approved by the Pennsylvania Public Utility Commission (PUC)—pursuant to these goals. This report documents the progress and effectiveness of the EE&C accomplishments for PECO in the fourth quarter (Q4) of Program Year 4 (PY4), defined as March 1, 2013 through May 31, 2013, as well as the *cumulative accomplishments of the programs since inception*.

Navigant Consulting, Inc. (Navigant), is evaluating the programs, which included measurement and verification of the savings. The verified savings for PY4 will be reported in the annual report, to be filed November 15, 2013.

1.1 Summary of Achievements

PECO has achieved 124 percent of the May 31, 2013, energy savings compliance target, based on cumulative program inception to date (CPITD) reported gross energy savings¹, and 121 percent of the energy savings compliance target, based on CPITD gross energy savings achieved through Q4 (CPITD-Q)², as shown in Figure 1-1.

Figure 1-1: Cumulative Portfolio Inception to Date (CPITD) Energy Impacts

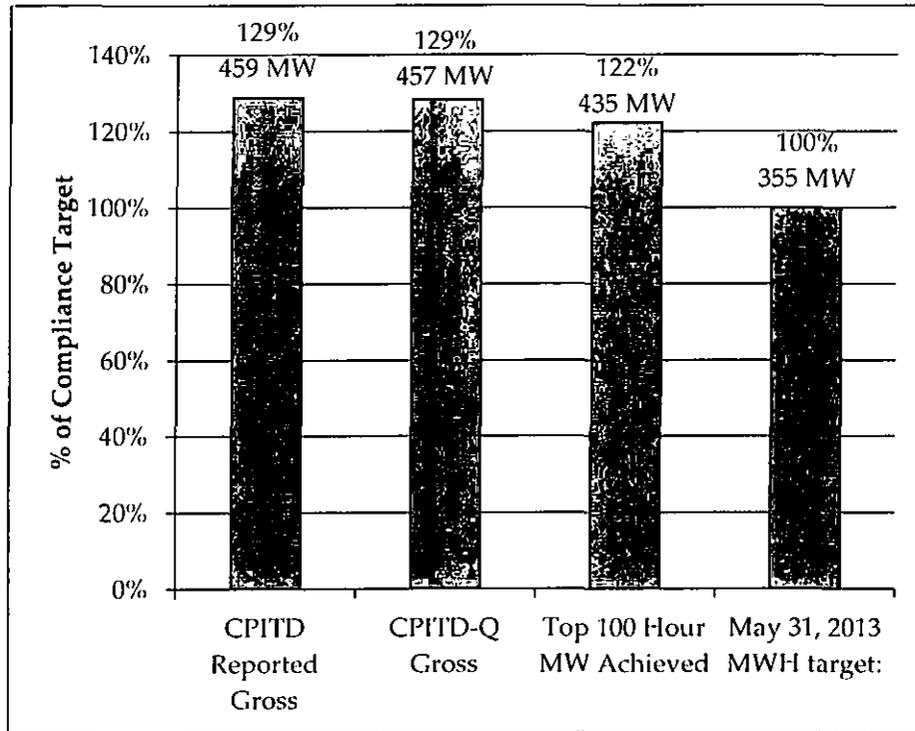


¹ CPITD Reported Gross Savings = CPITD Reported Gross Savings through PY3 + PYTD Reported Gross Savings. All savings reported as CPITD reported gross savings are computed this way.

² CPITD-Q Gross Savings = CPITD Verified Gross Savings through PY3 + PYTD Reported Gross Savings. All savings reported as CPITD-Q gross savings are computed this way. CPITD-Q savings provide the best available estimate of savings achieved through the current quarter. CPITD Verified Gross Savings will be reported in the annual report.

PECO has achieved 122 percent of the May 31, 2013, demand reduction compliance target during the top 100 hours of 2012³ (based only on installations in place and generating demand reductions during those hours). Including demand reductions occurring after the top 100 hours, PECO achieved 129 percent of the demand reduction compliance target based on CPITD gross demand reduction achieved through Q4 (CPITD-Q), as shown in Figure 1-2.

Figure 1-2: CPITD Portfolio Demand Reduction



Note that the reported gross savings values referenced above include three projects in the Smart Equipment Incentives program (one in the Commercial and Industrial sector and two in the Government, Nonprofit, Institutional sector). These three projects have a “commercial date of operation” (CDO) prior to June 1, 2013, but not early enough to be fully verified by Navigant for the final Phase I annual report due to be filed no later than November 15, 2013. As detailed in the May 13th, 2013 memo attached, PECO and Navigant plan to report these projects as “unverified” savings in the November 2013 final Phase I annual report. Once Navigant’s evaluation of these projects is complete, PECO will report the “verified” savings in PY5 Q2

³ The highest 100 load hours during the period June 1, 2012 through August 31, 2012

Report as a separate line as a separate line item showing that the savings are carried over from Phase I.

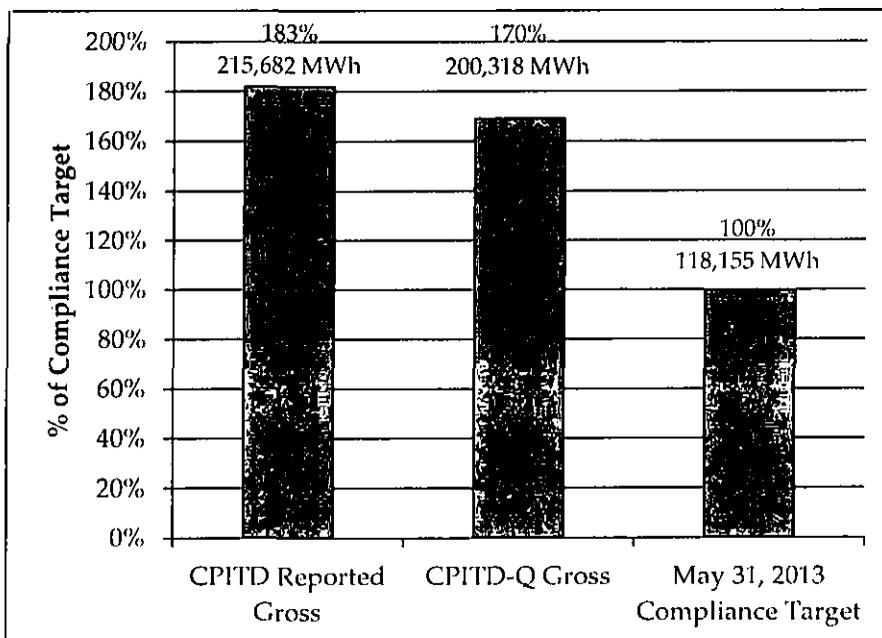
There are 17 measure groups targeted to the low-income sector, and another 27 measure groups offered by other programs in the residential sector (which are also available to low-income customers). These 44 measure groups offered to the low-income sector therefore comprise 35 percent of the total of 124 measure groups offered across PECO's portfolio. As required by Act 129, this exceeds the fraction of electric consumption of the utility's low-income households divided by the total electricity consumption in the PECO service area (3.1 percent).⁴ The CPITD reported gross energy savings achieved in the low-income sector is 108,916 MWh; this is 107,711 percent of the CPITD total portfolio reported gross energy savings.

PECO achieved 183 percent of the May 31, 2013, energy reduction compliance target for government, nonprofit and institutional (GNI) sector, based on CPITD reported gross energy savings, and 170 percent of the target based on CPITD-Q gross energy savings achieved through Q4⁵, as shown in Figure 1-3.

⁴ Act 129 includes a provision requiring electric distribution companies to offer a number of energy efficiency measures to low-income households that are "proportionate to those households' share of the total energy usage in the service territory." 66 Pa.C.S. §2806.1(b)(i)(G). The legislation contains no provisions regarding targets for participation, or energy or demand savings.

⁵ CPITD-Q Gross Savings = CPITD Verified Gross Savings through PY3 + PYTD Reported Gross Savings. All savings reported as CPITD-Q gross savings are computed this way. CPITD-Q savings provide the best available estimate of savings achieved through the current quarter. CPITD Verified Gross Savings will be reported in the annual report.

Figure 1-3: Government, Nonprofit, and Institutional Sectors



1.2 Program Updates and Findings

The following are updates and findings from each program:

- Low-Income Energy Efficiency Program:** There were no significant changes to LEEP in PY4 Q4. Program participation remains steady and the majority of participants continue to receive basic measures and compact fluorescent lamp (CFL) light bulbs. No Component 4 refrigerators were installed in Q4.
- Smart Lighting Discounts:** While the program continues to reflect the large reduction in program size that took place during the end of PY2 and throughout PY3, the average monthly sales for the fourth quarter of PY4 were 17,000 bulbs, compared with 25,000 bulbs per month in PY4 Q3, 23,000 per month in PY4 Q2, 17,800 per month in PY4 Q1 and an average of 13,100 per month across the last nine months of PY3. Thus there has been a moderate decline in monthly program bulb sales since the middle of PY4. Consistent with the change in program strategy from PY2 to PY3, the focus remains exclusively on specialty CFLs.
- Smart Appliance Recycling Program:** There were no significant changes made to the program in PY4 Q4. Participation remains low for PY4 Q4, a trend that started in PY3 Q3 following the significant reduction in the program incentive. There were approximately 517 participants this quarter, which is consistently down from previous quarters (where

participation was between 700 and 1,000 new participants). Overall, participation levels since the incentive was reduced are less than one-third of the level seen prior to this. This is a strong indication of just how sensitive customers in this market are to the program incentive level.

- **Smart Home Rebates:** PECO made no significant programmatic changes in the three quarters of PY4. This program continues to offer ENERGY STAR® Most Efficient, models with the greatest efficiency within each product category. The program also continues to focus on heating, ventilating, and air conditioning (HVAC) equipment. Lighting measures accounted for 1.1 percent of total energy savings and 0.2 percent of total demand savings. In PY4 Q4, the preponderance of (non-lighting) installed measures was air source heat pumps and central air conditioning units. Air source heat pumps constituted 24 percent of overall participation, 44 percent of energy savings, and 30 percent of demand savings. Central air conditioning accounted for 44 percent of participation, 21 percent of energy savings, and 58 percent of demand savings.
- **Smart Equipment Incentives Commercial and Industrial Program:** A total of 498 retrofit projects received rebates from the SEI C&I program in PY4 Q4. This value is higher than previous quarters due to the inclusion of many projects that were completed toward the end of the program year. In addition, the wait list that was in place during previous quarters was lifted in Q4; thus many projects that were previously on the wait list were completed in the program year.
- **Smart Equipment Incentives Government, Nonprofit, and Institutional Program:** A total of 122 projects received rebates from the SEI GNI program in PY4 Q4. This value is higher than previous quarters due to the inclusion of many projects that were completed toward the end of the program year. Additionally, this surge in the number of applications may be attributed to the number of projects that are currently being processed after the EDC's lifting of the incentive waitlist.
- **Smart Construction Incentives Program:** The SCI program finished PY4 with a total of 101 projects. Of these 101, 57 projects were in the C&I sector and 44 were in the GNI sector. Sixty nine percent of the program's PY4 projects (54 percent of PY4 claimed savings) were completed in the fourth quarter (Q4). Many of these projects were submitted to the program through the waitlist. PECO began processing waitlisted applications in Q4. The program claimed a total of 16 whole building projects in PY4, an increase from the 10 paid in PY3.
- **Residential Smart AC Saver Program:** PECO has completed the installation of digital control units and had 76,976 active participants representing 89,407 active devices at the

end of PY4 Q4. The Residential Smart AC Saver Program is complete for PY4. PECO called curtailment events totaling 51.5 hours during PY4 and Navigant has verified savings of 51.3 MW for the program.

- **Commercial Smart AC Saver Program:** PECO has completed installing the new programmable thermostats, which now total 2,169 active participants representing 3,794 active devices at the end of PY4 Q4. The Commercial Smart AC Saver Program is complete for PY4. PECO called curtailment events totaling 51.5 hours during PY4 and Navigant has verified savings of 1.6 MW for the program.
- **Permanent Load Reduction:** There was no activity in the PLR program during the fourth quarter.
- **Demand Response Aggregator:** The Demand Response Aggregator program was dispatched only in PY4 Q1 to assist in PECO's achievement of its PY4 demand reduction compliance target. The program was discontinued at the end of PY4 Q1.
- **Distributed Energy Resources:** Similar to the Demand Response Aggregator program, the Demand Energy Response program was dispatched only in PY4 Q1 to assist in PECO's achievement of its PY4 demand reduction compliance target. The program was discontinued at the end of PY4 Q1.

1.3 Evaluation Updates and Findings

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

Low-Income Energy Efficiency Program: The measurement and verification (M&V) completed for PY4 Q4 consisted of reviewing the tracking data provided to the evaluation team by PECO program staff. For the Q4 report, Components 2 and 3 (lighting) demand savings are reported under the assumed 5 percent coincidence factor from the Technical Reference Manual (TRM) (in Table 3-2) and again applying an 11.7% coincidence factor (

- Table 3-1). The higher coincidence factor was applied to Components 2 and 3 savings from PY1 through PY4. The higher coincidence factor was not applied to extra CFLs in Component 1 due to the complex protocol used to calculate savings and the low impact this change would have on total program savings. This results in a slightly conservative estimate of demand savings. In-depth interviews with utility and implementation contractor staff were completed during Q4. Participant telephone surveys will take place during PY5 Q1.
- **Smart Lighting Discounts:** The M&V completed for the PY4 Q3 report consisted of reviewing the tracking data provided to the evaluation team by PECO program staff, as well as reviewing all manufacturer invoices received and approved by PECO and Ecova through the end of May 2013. After consistency was verified between the manufacturer invoices and the program tracking data, the tracking data were used to verify the reported PY4 Q4, program year-to-date (PYTD), and CPITD savings.
- **Smart Appliance Recycling:** The M&V completed for this quarterly report consisted of reviewing the PY4 Q4 tracking data provided to the evaluation team by PECO program staff. The PY4 PYTD savings in this report were estimated by applying the TRM specified savings algorithm to this quarterly and program year-to-date tracking data provided by PECO, and verified by the evaluation team.
- **Smart Home Rebates:** Starting in PY4 Q4, the evaluation team conducted interviews with PECO staff and the implementation contractor, Ecova. In addition, the evaluation team started telephone interviews with participating HVAC installers and initiated mystery shopping activities with participating retailers. The telephone survey of program participants will begin in July 2013.
- **Smart Equipment Incentives Commercial and Industrial Program⁶:** The evaluation of the SEI C&I program will align closely with the PY3 evaluation in terms of approaches and tasks. The team completed an initial sample design based on Q1, Q2, Q3, and the first two months of Q4 completed projects as well as available pipeline project information. The sample was designed to achieve an 85/15 or better level of confidence

⁶ A total of 657 projects representing a total gross reported savings of 74,360 MWh and 12.3 MW peak load reduction will be verified through the PY4 evaluation. As noted earlier in the “Summary of Achievements” section of this report, one project delivering 12,556 MWh and 1.8 MW will be reported as “unverified” savings in the Final Phase 1 annual report due to be filed no later than November 15, 2013. Once Navigant’s evaluation of this project is complete, PECO will report the “verified” savings in the next in the PY5 Q2 Report as a separate line item showing that the savings are carried over from Phase 1.

and relative precision at the program level. The team requested Q3 and an initial portion of Q4 project files from PECO/KEMA and is in the process of reviewing the files and drafting site-specific M&V plans. The team will also review the sample design with final Q4 data. The team began field verification in March 2013. The team has conducted 5 in depth interviews with PECO / KEMA personnel to assess the effectiveness of the program and to identify any barriers or potential improvements to the program implementation. The participant interview guides have been designed and these surveys are currently being fielded. The contractor surveys will begin in late June or early July.

- **Smart Equipment Incentives Government, Nonprofit, and Institutional⁷:** Consistent with the evaluation of the SEI C&I program, the site level M&V sample was designed to achieve an 85/15 or better level of confidence and relative precision at the program level. The impact evaluation team has requested and received almost all project files (see footnote) from PECO/KEMA and is in the process of reviewing the files and drafting site-specific M&V plans. The evaluation team has also drawn a preliminary sample of the Q4 projects, based on available pipeline data. A total of 29 projects are currently being evaluated for PY4, including 3 preliminary Q4 projects. The team will draw additional evaluation sample points with final Q4 data. The process evaluation team has conducted five in depth interviews with PECO / KEMA personnel to assess the effectiveness of the program and to identify any barriers or potential improvements to the program implementation. The Computer-Aided Telephone Interview (CATI) center has begun fielding the participant surveys. The contractor surveys will begin in late June or early July.
- **Smart Construction Incentives:** Navigant conducted in-depth interviews with program staff during Q3 and provided some initial feedback to the program. During Q4, Navigant conducted the first wave of participant surveys and trade ally interviews. Due to the low participation in the program through Q3, Navigant completed a total of six participant interviews and two trade ally interviews. Navigant also began conducting the impact evaluation during Q4, which will include file reviews and on-site verification of a sample of projects. Navigant may use billing data to calibrate modeled savings from

⁷ A total of 269 projects representing a total gross reported savings of 71,365 MWh and 8.1 MW will be verified through the PY4 evaluation. Two projects delivering a total of 2,374 MWh and 0.3 MW of peak load reduction will be reported as “unverified” savings in the Final Phase 1 annual report due to be filed no later than November 15, 2013. Once Navigant’s evaluation of these projects are complete, PECO will report the “verified” savings in the PY5 Q2 Report as a separate line item showing that the savings are carried over from Phase I.

whole building projects in the sample. Navigant drew an initial sample of 11 projects at the end of Q3 and will draw a final sample of 11 additional projects from Q4 shortly.

- **Residential Smart AC Saver Program:** The Smart AC Saver program is complete for PY4. Utilizing PECO's top 100 hours for PY4 Navigant calculated residential load reductions to be 51.3 MW. A final survey of participants is currently underway to understand customer demographics, how customers learned of the program, satisfaction with the program, how the customers handled their AC on a typical summer day and during heat waves, if they noticed load control events, and how they and their homes responded to these events.
- **Commercial Smart AC Saver Program:** The Smart AC Saver program is complete for PY4. Utilizing PECO's top 100 hours for PY4 Navigant calculated commercial load reductions to be 1.6 MW. A final survey of participants is currently underway to understand customer demographics, how customers learned of the program, satisfaction with the program, how the customers handled their AC on a typical summer day and during heat waves, if they noticed load control events, and how they and their businesses responded to these events.
- **Permanent Load Reduction:** Only one project was completed in the PLR program in PY4. A site-specific M&V plan has been drafted for this site, and an on-site verification visit is planned for July.
- **Demand Response Aggregator:** Navigant evaluated the demand savings for each participant in this program over PECO's top 100 hours during the summer of 2012. The results were reported in PECO's Preliminary Demand Reduction Compliance report, which was submitted to the PUC on March 1, 2013.
- **Distributed Energy Resources:** Navigant evaluated the demand savings for each participant in this program over PECO's top 100 hours during the summer of 2012. The results were reported in PECO's Preliminary Demand Reduction Compliance report, which was submitted to the PUC on March 1, 2013.

2 Summary of Energy Impacts by Program

A summary of the reported energy savings by program is presented in Figure 2-1.

Figure 2-1: CPITD Reported Gross Energy Savings by Program

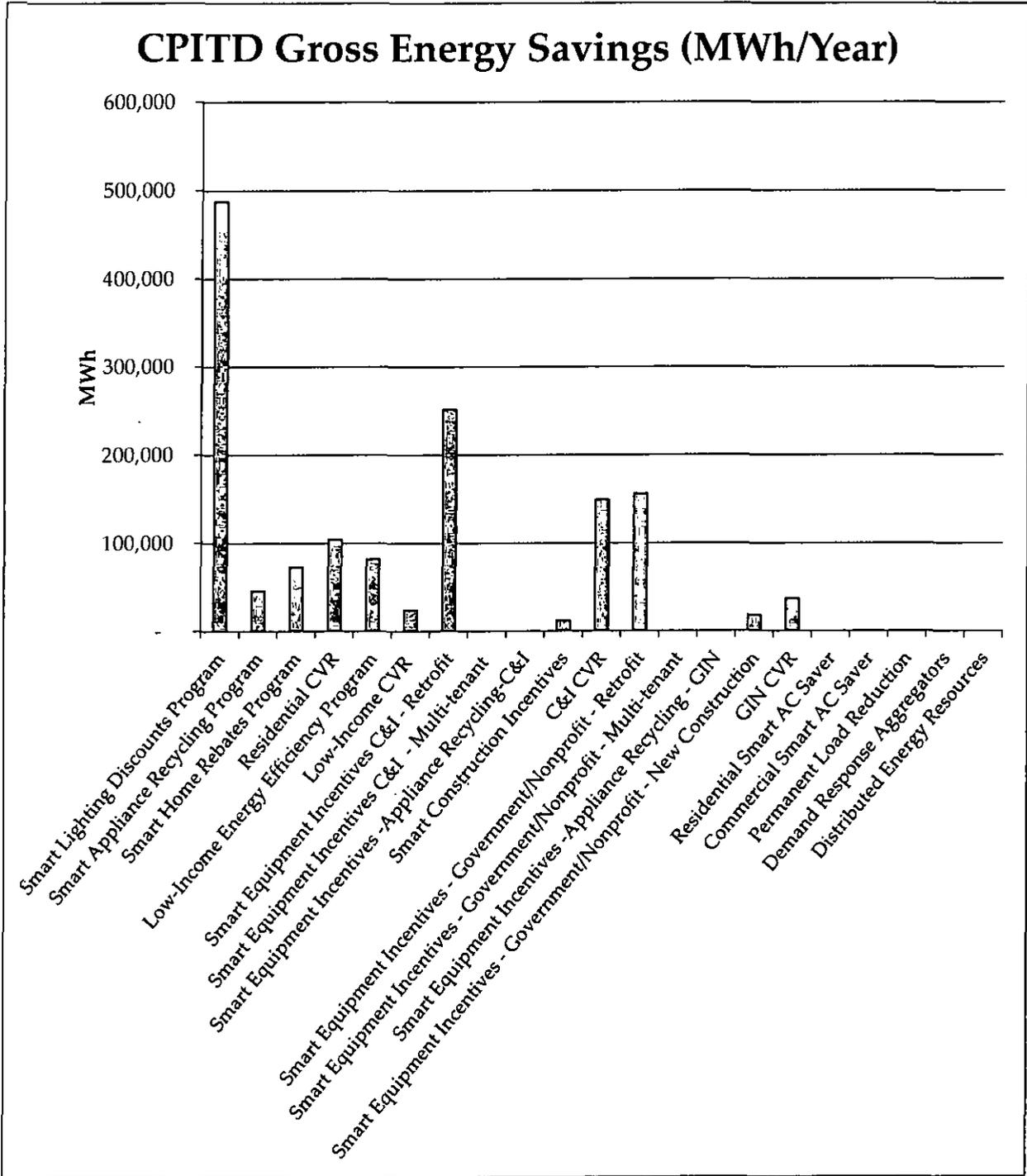
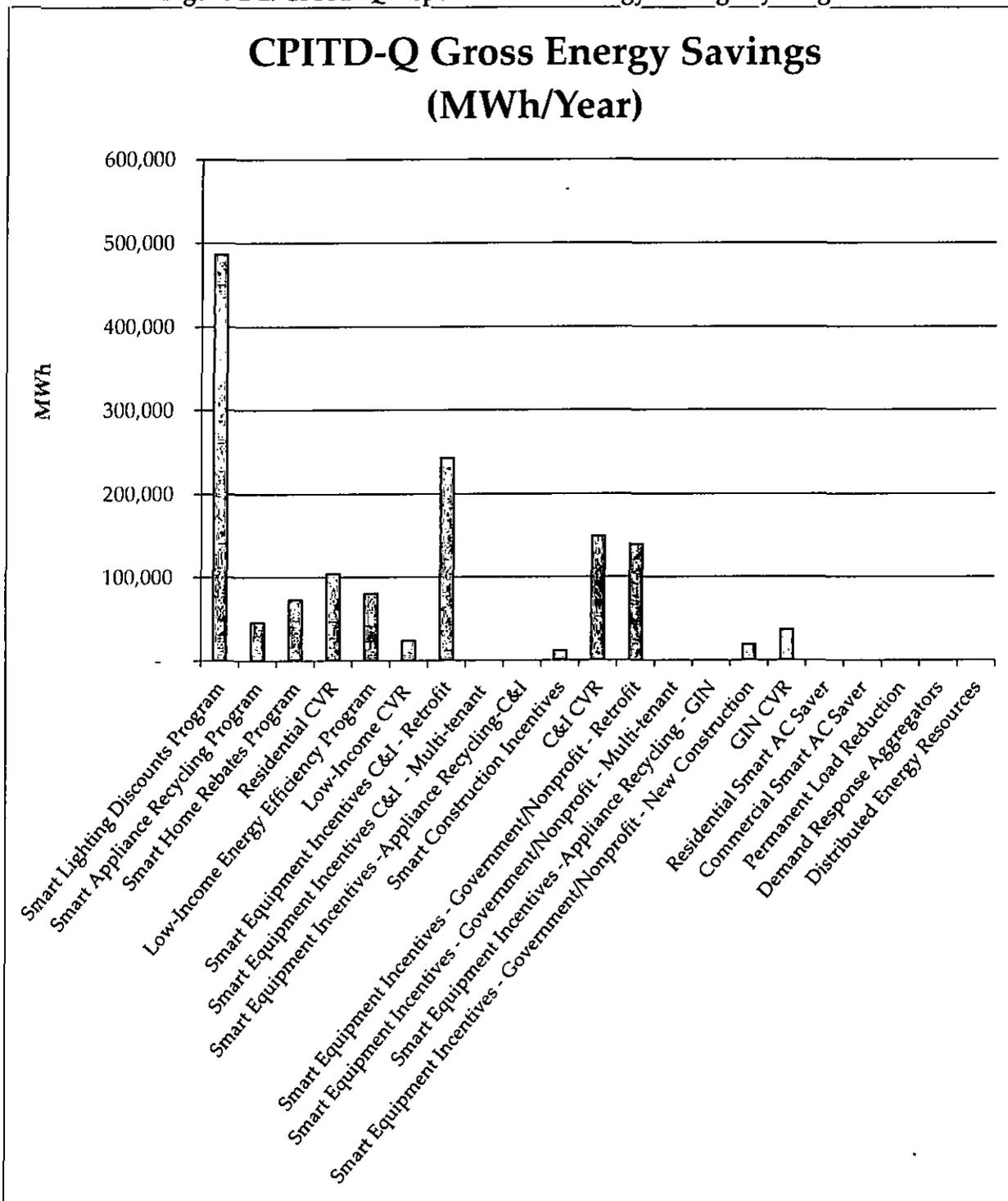


Figure 2-2: CPITD-Q Reported Gross Energy Savings by Program



A summary of energy impacts by program through PY4Q4 is presented in Table 2-1. Note that the energy savings values presented in Table 2-1 for the Smart Lighting Discounts program reflect a conservative estimate of participation in that program by non-residential customers, based on participant survey results. The conservative assumptions and analytical method supporting the impacts of this non-residential participation were first presented in PECO's Preliminary DR Report⁸, and are included here as Appendix B.

⁸ Demand Reduction from Smart Lighting Discount Lamps Installed in Non-Residential Facilities, Navigant Consulting, Inc.

Table 2-1: EDC Reported Participation and Gross Energy Savings by Program

Program	Participants			Reported Gross Impact (MWh/Year)				Preliminary Realization Rate ¹
	IQ	PYTD	CPITD	IQ	PYTD	CPITD	CPITD-Q	PYTD
Residential	2,817	11,919	322,076	6,866	30,182	716,877	715,483	N/A
Smart Lighting Discounts Program ²	50,846	248,548	7,665,087	3,323	16,055	489,106	487,840	1
Smart Appliance Recycling Program	517	2,830	30,573	756	4,138	47,431	47,431	1
Smart Home Rebates Program ³	2,300	9,089	291,503	2,787	9,990	74,617	74,489	N/A
Residential Conservation Voltage Reduction	N/A	N/A	N/A	-	-	105,723	105,723	1
Low-Income Energy Efficiency Program Total⁴	2,844	10,106	32,240	5,632	29,548	108,916	107,711	N/A
Low-Income Energy Efficiency Program	2,844	10,106	32,240	5,632	29,548	83,286	82,081	N/A
Low-Income Conservation Voltage Reduction	N/A	N/A	N/A	-	-	25,630	25,630	1
Non-Residential	713	1,096	5,190	83,985	180,375	633,257	609,399	N/A
Commercial and Industrial Total	570	773	4,063	55,727	95,822	417,575	409,081	N/A
Smart Equipment Incentives - Retrofit	498	658	3,532	48,774	86,916	252,709	244,598	N/A
Smart Equipment Incentives - Multi-tenant ⁵	16	44	405	219	506	645	645	N/A
Smart Equipment Incentives -Appliance Recycling	6	14	23	13	77	93	93	N/A
Smart Construction Incentives	50	57	103	6,721	8,323	13,554	13,171	N/A
C&I Conservation Voltage Reduction	N/A	N/A	N/A	-	-	150,575	150,575	1
Government / Nonprofit Total	143	323	1,127	28,258	84,553	215,682	200,318	N/A
Smart Equipment Incentives - Retrofit	122	271	973	24,619	73,738	157,280	141,158	N/A
Smart Equipment Incentives - Multi-tenant ⁵	1	8	82	10	11	155	155	N/A
Smart Equipment Incentives -Appliance Recycling	-	-	5	-	-	33	32	N/A
Smart Equipment Incentives - New Construction	20	44	67	3,629	10,803	19,769	20,528	N/A
GIN Conservation Voltage Reduction	N/A	N/A	N/A	-	-	38,445	38,445	1

Demand Reduction	(1,134)	(1,951)	79,341	-	201	201	201	N/A
Residential Smart AC Saver	(1,097)	(1,675)	76,976	-	-	-	-	N/A
Commercial Smart AC Saver	(37)	(277)	2,169	-	-	-	-	N/A
Permanent Load Reduction	-	1	1	-	201	201	201	N/A
Demand Response Aggregators	-	-	193	-	-	-	-	N/A
Distributed Energy Resources	-	-	2	-	-	-	-	N/A
Total Portfolio	5,240	21,170	438,847	96,484	240,306	1,459,251	1,432,794	N/A

NOTES:

¹ Preliminary Realization Rates are based on evaluation activities and findings conducted on a partial sample set. These realization rates are not based on a statistically significant sample and are subject to change until the full evaluation is complete at the end of the program year

² Participation numbers shown are the numbers of discounted lamps sold. These are excluded from total portfolio participation numbers. The CPITD participant value reported here includes 17,856 lamps that were inadvertently removed from PY2 cumulative participation values, although their costs and savings were reported correctly in all previous reports.

³ Participant values exclude sales of Energy Star lighting fixtures and LED lamps, for which upstream rebates are provided.

⁴ Act 129 includes a provision requiring electric distribution companies to offer a number of energy efficiency measures to low-income households that are “proportionate to those households’ share of the total energy usage in the service territory.” 66 Pa.C.S. §2806.1(b)(i)(G). The legislation contains no provisions regarding targets for participation, or energy or demand savings. Participation includes only those receiving the Weatherization Audit.

⁵ The participation values shown here reflect the number of project IDs reported in the tracking data, rather than the number of billing account IDs. The values reported here better reflect the number of participating households, rather than the number of multi-family buildings in which the participants live.

3 Summary of Demand Impacts by Program

A summary of the reported demand reduction attributable to the May 31st, 2013 compliance target (occurring within the top 100 hours) by program is presented in Figure 3-1.

Figure 3-1: CPITD Reported Compliance Related Demand Reduction by Program

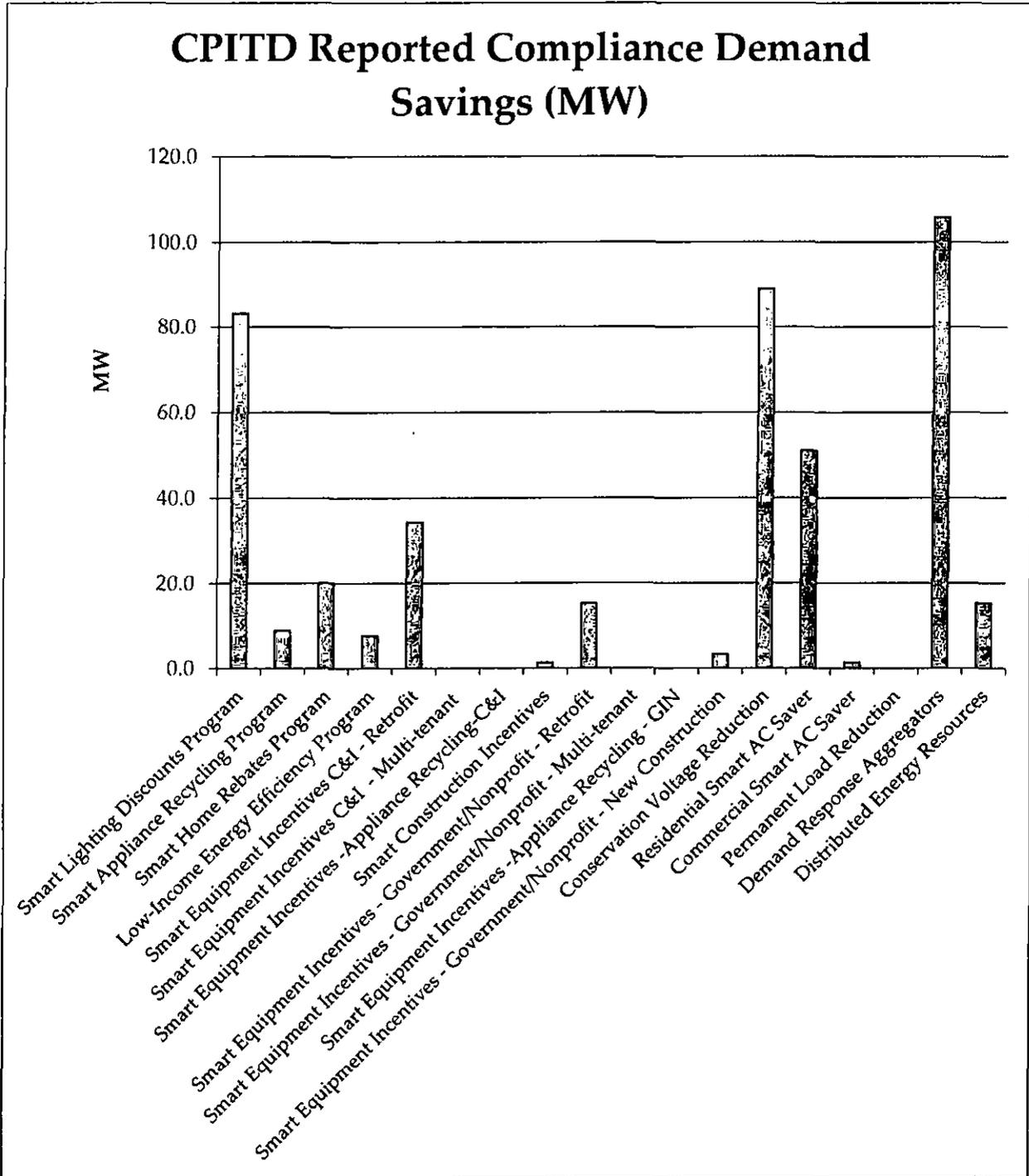


Figure 3-2 presents the sum of verified demand savings through the end of PY3 and gross reported demand savings through the end of PY4.

Table 3-1: Participation and Reported Compliance Gross Demand Reduction by Program

The PYTD MW values shown are the average MW impacts of PY4 activity over PECO's top 100 hours during the summer of 2012. For the DR programs, these values correspond precisely with those reported in PECO's March 1, 2013 Preliminary DR Report. The PYTD MW values for the energy efficiency programs are also averages over PECO's top 100 hours, but in some cases are higher than the values presented in the Preliminary DR Report for two reasons:

- Some programs rebated projects that were in commercial operation at some point during PECO's top 100 hours, but that were not entered into the tracking databases until after the Preliminary DR Report was submitted.
- The coincidence factor (CF) values specified in the TRM since 2009 for residential lighting installations significantly understate peak load impacts for the summer of 2012. The source document referenced as supporting the CF value in the TRM actually supports significantly higher values, apparently an error in the TRM. The referenced table in the source document⁹ shows an average summer CF of 8.8 percent with summer monthly values ranging from 7.5 to 10.4 percent, as opposed to the 5 percent CF used in the TRM. The 8.8% value likely understates top 100 hour impacts due to the difference between the "peak window" used in that study (noon to 5:00 PM) and PECO's actual top 100 hours during the summer of 2012. Forty of PECO's top 100 hours fall outside of that window.

The Statewide Evaluator (SWE) has previously acknowledged that the CF contained in the TRM is in error,¹⁰ and have since been engaged in a discussion with the EDCs about which of several potential residential lighting load shapes and methodologies to use in developing more accurate estimates of demand impacts from programs addressing residential lighting efficiency. For reasons presented in Appendix A to this report, Navigant believes the load shape developed by the 2009 Northeast residential lighting logger study conducted by Nexus Market Research, RLW Analytics, and GDS Associates presents the best match to current Pennsylvania

⁹ RLW Analytics, "Development of Common Demand Impacts for Energy Efficiency Measures/Programs for the ISO Forward Capacity Market (FCM)", prepared for the New England State Program Working Group (SPWG), March 25, 2007, p. IV.

¹⁰ See the minutes of the Program Evaluation Group meeting from March 20, 2013 (forwarded to all EDCs and evaluators on March 29, 2013).

conditions.¹¹ Navigant has used that study to develop an average CF over PECO's top 100 hours during the summer of 2012. Navigant has applied the resulting 11.7 percent CF to all lamps subsidized by PECO's Smart Lighting Discounts program that were installed in residential sockets from PY1 through the day on which the last of PECO's top 100 hours occurred. Navigant has also applied this CF to the CFLs installed through Components 2 and 3 of PECO's Low-Income Energy Efficiency program and lighting measures subsidized by PECO's Smart Home Rebates program over the same period. Navigant applied this coincidence factor adjustment only to the demand values presented in

¹¹ Nexus Market Research, Inc., RLW Analytics, Inc., and GDS Associates, 2009. *Residential Lighting Markdown Impact Evaluation*. Prepared for Markdown and Buydown Program Sponsors in Connecticut, Massachusetts, Rhode Island, and Vermont. January 20, 2009.

Table 3-1 (compliance over the top 100 hours). The demand savings presented in Table 3-2 utilize the 5 percent CF as specified in the TRM.

Note that the demand reduction values presented in **Error! Reference source not found.** and Table 3-2 for the Smart Lighting Discounts program reflect a conservative estimate of participation in that program by non-residential customers, based on participant survey results. The conservative assumptions and analytical method supporting the impacts of this non-residential participation were first presented in PECO's Preliminary DR Report, and are included here as Appendix B.

The combined impact of the more accurate CF and the conservative estimate of non-residential participation in PECO's SLD program adds 60.7 MW of demand reduction over PECO's top 100 hours. The application of the higher CF to LEEP Component 2 and 3 CFLs adds 2.5 MW of demand reduction over PECO's top 100 hours.

Navigant is currently examining the energy impacts of HVAC interactive effects. The Annual Report will include results of this examination.

Table 3-1: Participation and Reported Compliance Gross Demand Reduction by Program

Program	Participants			Reported Gross Impact (MW)				Preliminary Realization Rate ¹
	IQ	PYTD	CPITD	IQ	PYTD	CPITD	CPITD-Q	PYTD
Residential	2,817	11,919	322,076	0.0	1.3	113.0	111.7	N/A
Smart Lighting Discounts Program ²	50,846	248,548	7,665,087	0.0	0.3	83.5	83.6	1
Smart Appliance Recycling Program	517	2,830	30,573	0.0	0.1	9.2	9.0	1
Smart Home Rebates Program ³	2,300	9,089	291,503	0.0	0.9	20.3	19.1	N/A
Low-Income Energy Efficiency Program Total⁴	2,844	10,106	32,240	-0.5	0.4	7.8	4.5	N/A
Low-Income Energy Efficiency Program ³	2,844	10,106	32,240	-0.5	0.4	7.8	4.5	N/A
Non-Residential	713	1,096	5,190	4.0	11.9	55.4	54.6	N/A
Commercial and Industrial Total	570	773	4,063	2	7	36	38.4	N/A
Smart Equipment Incentives - Retrofit	498	658	3,532	2.2	6.3	34.5	35.6	N/A
Smart Equipment Incentives - Multi-tenant ⁶	16	44	405	0.0	0.0	0.2	0.2	N/A
Smart Equipment Incentives -Appliance Recycling	6	14	23	0.0	0.0	0.0	0.0	N/A
Smart Construction Incentives	50	57	103	0.3	0.7	1.6	2.7	N/A
Government / Nonprofit Total	143	323	1127	1	5	19	16.1	N/A
Smart Equipment Incentives - Retrofit	122	271	973	0.4	2.6	15.5	11.8	N/A
Smart Equipment Incentives - Multi-tenant ⁶	1	8	82	0.0	0.0	0.0	0.0	N/A
Smart Equipment Incentives -Appliance Recycling	-	-	5	0.0	0.0	0.0	0.0	N/A
Smart Equipment Incentives - New Construction	20	44	67	1.1	2.3	3.5	4.3	N/A

Demand Reduction	(1,134)	(1,951)	79,341	0	174	263.8	263.8	N/A
Conservation Voltage Reduction	-	-	NA	0.0	0.0	89.3	89.3	N/A
Residential Smart AC Saver	(1,097)	(1,675)	76,976	0.0	51.3	51.3	51.3	N/A
Commercial Smart AC Saver	(37)	(277)	2,169	0.0	1.6	1.6	1.6	N/A
Permanent Load Reduction	-	1	1	0.0	0.1	0.1	0.1	N/A
Demand Response Aggregators	-	-	193	0.0	106.0	106.0	106.0	N/A
Distributed Energy Resources	-	-	2	0.0	15.4	15.4	15.4	N/A
Total Portfolio	5,240	21,170	438,847	3.5	188.1	440.0	434.6	N/A

NOTES:

¹ Preliminary Realization Rates are based on evaluation activities and findings conducted on a partial sample set. These realization rates are not based on a statistically significant sample and are subject to change until the full evaluation is complete at the end of the program year

² Participation numbers shown are the numbers of discounted lamps sold. These are excluded from total portfolio participation numbers. The CPITD participant value reported here includes 17,856 lamps that were inadvertently removed from PY2 cumulative participation values, although their costs and savings were reported correctly in all previous reports.

³ Participant values exclude sales of EnergyStar lighting fixtures and LED lamps, for which upstream rebates are provided.

⁴ Act 129 includes a provision requiring electric distribution companies to offer a number of energy efficiency measures to low-income households that are “proportionate to those households’ share of the total energy usage in the service territory.” 66 Pa.C.S. §2806.1(b)(i)(G). The legislation contains no provisions regarding targets for participation, or energy or demand savings. Participation includes only those receiving the Weatherization Audit.

⁵ Analysis of the impact of a higher coincidence factor for Component 2 and 3 CFLs in the LEEP program revealed double counting of some records in the analysis of top 100 hour demand impacts conducted for the PY4 Q3 report. This finding results in a decrease in top 100 hour impacts, hence the negative IQ value.

⁶ The participation values shown here reflect the number of project IDs reported in the tracking data, rather than the number of billing account IDs. The values reported here better reflect the number of participating households, rather than the number of multi-family buildings in which the participants live.

A summary of the reported demand reduction including demand reductions occurring outside of the top 100 hours is presented in Figure 3-3.

Figure 3-3: CPITD Total Reported Demand Reduction by Program

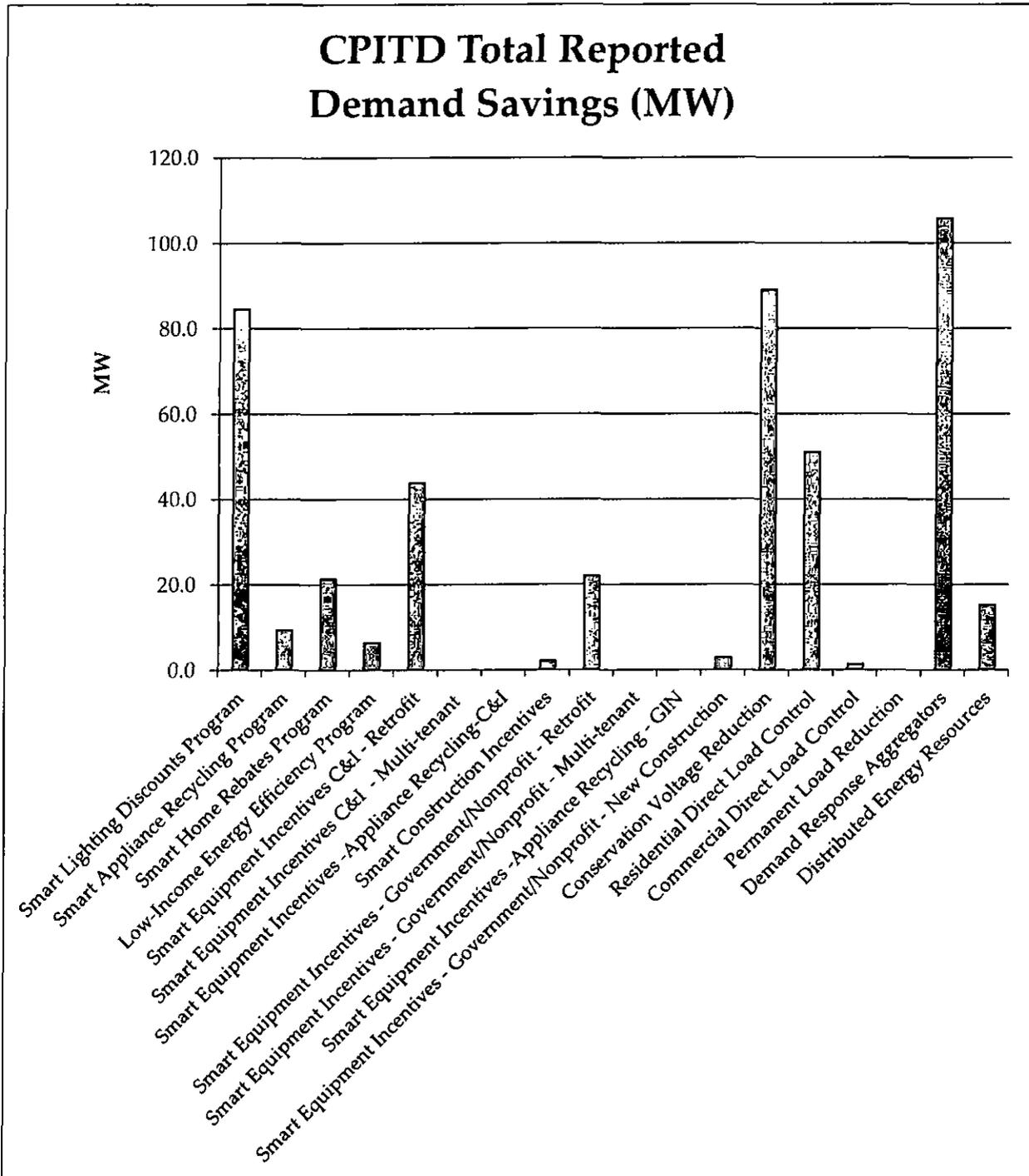
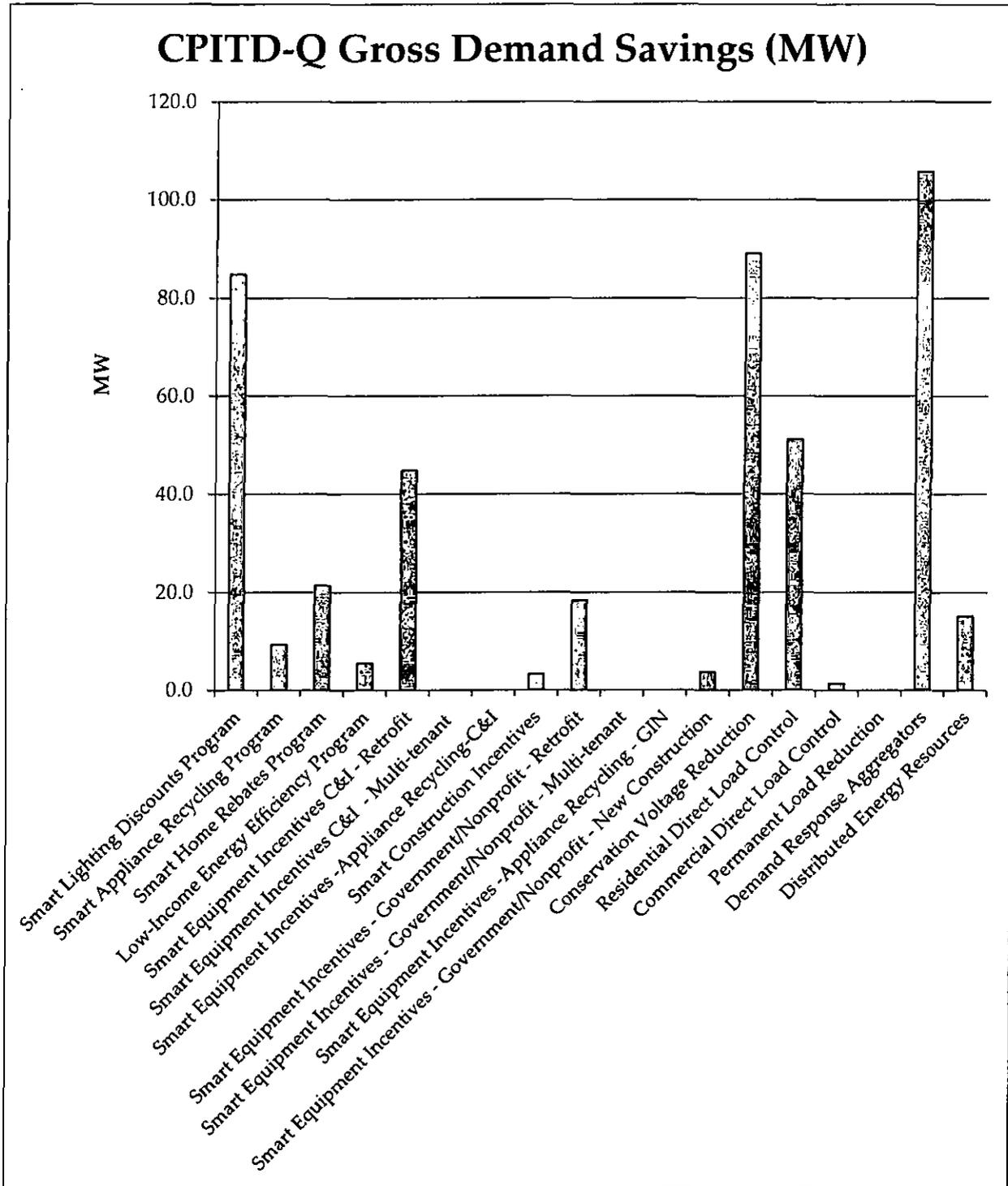


Figure 3-4: CPITD-Q Total Reported Demand Reduction by Program



A summary of total demand reduction impacts by program through the PY4 Q4 is presented in Table 3-2. The demand savings presented in this table include the impacts of all measures installed through the end of PY4 Q4, regardless of whether they contributed demand reduction during PECO's top 100 hours. Although adjustments have been made to the demand savings of the Smart Lighting Discount program to reflect a conservative estimate of non-residential participation in that program, all demand reduction estimates presented in this table are strictly compliant with the TRM (i.e., demand savings from residential lighting in this table use a coincidence factor of 5 percent).

Table 3-2: Participation and Reported Total Gross Demand Reduction by Program

Program	Participants			Reported Gross Impact (MW)				Preliminary Realization Rate ¹
	IQ	PYTD	CPITD	IQ	PYTD	CPITD	CPITD-Q	PYTD
	Residential	2,817	11,919	322,076	1.4	5.8	116.3	116.1
Smart Lighting Discounts Program ²	50,846	248,548	7665087	0.4	1.8	85.0	85.0	1
Smart Appliance Recycling Program	517	2,830	30,573	0.1	0.6	9.7	9.5	1
Smart Home Rebates Program ³	2,300	9,089	291,503	0.9	3.4	21.6	21.6	N/A
Low-Income Energy Efficiency Program Total⁴	2,844	10,106	32,240	0.3	1.6	6.7	5.7	N/A
Low-Income Energy Efficiency Program	2,844	10,106	32,240	0.3	1.6	6.7	5.7	N/A
Non-Residential	713	1,096	5,190	12.9	28.6	72.1	71.3	N/A
Commercial and Industrial Total	570	773	4,063	10.1	17.3	46.6	48.7	N/A
Smart Equipment Incentives - Retrofit	498	658	3,532	8.9	15.7	44.0	45.1	N/A
Smart Equipment Incentives - Multi-tenant ⁵	16	44	405	0.0	0.1	0.2	0.2	N/A
Smart Equipment Incentives -Appliance Recycling	6	14	23	0.0	0.0	0.0	0.0	N/A
Smart Construction Incentives	50	57	103	1.2	1.5	2.4	3.5	N/A
Government / Nonprofit Total	143	323	1127	2.8	11.3	25.4	22.5	N/A
Smart Equipment Incentives - Retrofit	122	271	973	2.0	9.4	22.3	18.6	N/A
Smart Equipment Incentives - Multi-tenant ⁵	1	8	82	0.0	0.0	0.0	0.0	N/A
Smart Equipment Incentives -Appliance Recycling	-	-	5	0.0	0.0	0.0	0.0	N/A
Smart Equipment Incentives - New Construction	20	44	67	0.8	1.9	3.1	3.9	N/A

Demand Reduction	(1,134)	(1,951)	79,341	0	174	263.8	263.8	N/A
Conservation Voltage Reduction	-	-	NA	0.0	0.0	89.3	89.3	N/A
Residential Smart AC Saver	(1,097)	(1,675)	76,976	0.0	51.3	51.3	51.3	N/A
Commercial Smart AC Saver	(37)	(277)	2,169	0.0	1.6	1.6	1.6	N/A
Permanent Load Reduction	-	1	1	0.0	0.1	0.1	0.1	N/A
Demand Response Aggregators	-	-	193	0.0	106.0	106.0	106.0	N/A
Distributed Energy Resources	-	-	2	0.0	15.4	15.4	15.4	N/A
Total Portfolio	5,240	21,170	438,847	14.6	210.4	458.8	456.9	N/A

NOTES:

¹ Preliminary Realization Rates are based on evaluation activities and findings conducted on a partial sample set. These realization rates are not based on a statistically significant sample and are subject to change until the full evaluation is complete at the end of the program year

² Participation numbers shown are the numbers of discounted lamps sold. These are excluded from total portfolio participation numbers. The CPITD participant value reported here includes 17,856 lamps that were inadvertently removed from PY2 cumulative participation values, although their costs and savings were reported correctly in all previous reports.

³ Participant values exclude sales of EnergyStar lighting fixtures and LED lamps, for which upstream rebates are provided.

⁴ Act 129 includes a provision requiring electric distribution companies to offer a number of energy efficiency measures to low-income households that are “proportionate to those households’ share of the total energy usage in the service territory.” 66 Pa.C.S. §2806.1(b)(i)(C). The legislation contains no provisions regarding targets for participation, or energy or demand savings. Participation includes only those receiving the Weatherization Audit.

⁵ The participation values shown here reflect the number of project IDs reported in the tracking data, rather than the number of billing account IDs. The values reported here better reflect the number of participating households, rather than the number of multi-family buildings in which the participants live.

4 Summary of Finances

4.1 Portfolio Level Expenditures

A breakdown of the portfolio finances is presented in Table 4-1.

Table 4-1: Summary of Portfolio Finances

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$9,055	\$30,695	\$82,421
EDC Incentives to Trade Allies	(\$384)	(\$2)	\$8,318
Subtotal EDC Incentive Costs	\$8,670	\$30,693	\$90,739
EDC Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ⁽²⁾	\$4,238	\$21,740	\$67,477
Management ⁽³⁾	\$717	\$3,945	\$27,052
Marketing	\$1,268	\$3,005	\$11,516
Technical Assistance	\$712	\$3,377	\$13,304
Subtotal EDC Implementation Costs	\$6,935	\$32,068	\$119,349
EDC Evaluation Costs			
EDC Evaluation Costs	\$538	\$2,155	\$7,566
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs⁽⁴⁾	N/A	N/A	N/A
Participant Costs⁽⁵⁾	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.			
¹ The negative values in this row reflect a transfer of <u>trade ally</u> incentive costs from the SLD program to <u>participant</u> incentives in the C&I sector. This adjustment appropriately transfers costs from the residential sector to the C&I sector in proportion to C&I participation in the Smart Lighting Discounts program.			
² Implementation contractor costs.			
³ EDC costs other than those identified explicitly.			
⁴ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁵ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

4.2 Program Level Expenditures

Program-specific finances are shown in the following tables.

Table 4-2. Low-Income Energy Efficiency Program

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$0	\$0	\$0
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$0	\$0	\$0
Design & Development	\$0	\$0	\$0
Administration ¹¹	\$215	\$873	\$2,854
Management ²¹	\$76	\$285	\$1,276
Marketing	\$149	\$521	\$893
Technical Assistance	\$712	\$3,377	\$13,304
Subtotal EDC Implementation Costs	\$1,153	\$5,055	\$18,326
EDC Evaluation Costs	\$36	\$143	\$498
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs³¹	N/A	N/A	N/A
Participant Costs⁴¹	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.

¹ Implementation contractor costs.

² EDC costs other than those identified explicitly.

³ Per the 2011 Total Resource Cost Test Order – Total EDC Cost refer to EDC incurred expenses only.

⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.

Table 4-3. Smart Lighting Discounts Program

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$0	\$0	\$0
EDC Incentives to Trade Allies ⁽¹⁾	(\$549)	(\$265)	\$7,841
Subtotal EDC Incentive Costs	(\$549)	(\$265)	\$7,841
Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ⁽²⁾	\$130	\$480	\$2,594
Management ⁽³⁾	\$73	\$302	\$1,084
Marketing	\$400	\$806	\$4,040
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$603	\$1,588	\$7,718
Evaluation and Audit Costs			
EDC Evaluation Costs	\$57	\$256	\$950
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs⁽⁴⁾	N/A	N/A	N/A
Participant Costs⁽⁵⁾	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.			
¹ The negative values presented on this line reflect a transfer of costs from the residential sector to the C&I sector, corresponding with the estimated costs of C&I participation in the Smart Lighting Discounts program.			
² Implementation contractor costs.			
³ EDC costs other than those identified explicitly.			
⁴ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁵ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to, the costs of the end-use customer.			

Table 4-4. Smart Appliance Recycling Program

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$8	\$45	\$1,077
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$8	\$45	\$1,077
EDC Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ⁽¹⁾	\$46	\$253	\$2,788
Management ⁽²⁾	\$44	\$217	\$963
Marketing	\$103	\$182	\$741
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$193	\$652	\$4,492
EDC Evaluation Costs			
EDC Evaluation Costs	\$18	\$77	\$255
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs⁽³⁾	N/A	N/A	N/A
Participant Costs⁽⁴⁾	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order – Net participant costs refer to the costs of the end-use customer.			

Table 4-5. Smart Home Rebates Program

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$617	\$2,213	\$22,623
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$617	\$2,213	\$22,623
EDC Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ^[1]	\$608	\$1,533	\$8,314
Management ^[2]	\$150	\$677	\$2,753
Marketing	\$246	\$640	\$3,057
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$1,004	\$2,850	\$14,124
EDC Evaluation Costs			
EDC Evaluation Costs	\$69	\$292	\$970
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs^[3]	N/A	N/A	N/A
Participant Costs^[4]	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order - Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order -Net participant costs refer to the costs of the end-use customer.			

Table 4-6. Smart Equipment Incentives C&I

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$4,808	\$8,020	\$19,987
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$4,808	\$8,020	\$19,987
Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ^[1]	\$1,460	\$3,578	\$10,244
Management ^[2]	\$97	\$431	\$2,128
Marketing	\$136	\$311	\$1,317
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$1,693	\$4,320	\$13,689
Evaluation and Audit Costs			
EDC Evaluation Costs	\$145	\$634	\$1,989
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs^[3]	N/A	N/A	N/A
Participant Costs^[4]	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
<i>Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.</i>			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

Table 4-7. Smart Equipment Incentives – Government, Non-Profit, and Institutional

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$2,851	\$7,759	\$16,690
EDC Incentives to Trade Allies	\$57	\$131	\$226
Subtotal EDC Incentive Costs	\$2,909	\$7,890	\$16,916
EDC Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ⁽¹⁾	\$783	\$2,451	\$6,135
Management ⁽²⁾	\$71	\$257	\$1,285
Marketing	\$39	\$98	\$486
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$894	\$2,806	\$7,906
EDC Evaluation Costs			
EDC Evaluation Costs	\$74	\$237	\$983
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs⁽³⁾	N/A	N/A	N/A
Participant Costs⁽⁴⁾	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

Table 4-8. Smart Construction Incentives

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$770	\$962	\$1,575
EDC Incentives to Trade Allies	\$107	\$132	\$251
Subtotal EDC Incentive Costs	\$877	\$1,095	\$1,827
Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ⁽¹⁾	\$158	\$300	\$700
Management ⁽²⁾	\$12	\$47	\$160
Marketing	\$0	\$11	\$65
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$170	\$357	\$924
Evaluation and Audit Costs			
EDC Evaluation Costs	\$4	\$13	\$76
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs⁽³⁾	N/A	N/A	N/A
Participant Costs⁽⁴⁾	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

Table 4-9. Conservation Voltage Reduction

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$0	\$0	\$0
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$0	\$0	\$0
EDC Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ⁽¹⁾	\$0	\$239	\$1,950
Management ⁽²⁾	\$5	(\$20)	\$139
Marketing	\$0	\$0	\$0
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$5	\$219	\$2,089
EDC Evaluation Costs			
EDC Evaluation Costs	\$12	\$56	\$196
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs⁽³⁾	N/A	N/A	N/A
Participant Costs⁽⁴⁾	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

Table 4-10. Residential Smart AC Saver

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$0	\$11,156	\$19,784
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$0	\$11,156	\$19,784
Design & Development			
Design & Development	\$0	\$0	\$0
Administration[1]	\$250	\$2,215	\$9,603
Management[2]	\$537	\$1,386	\$13,988
Marketing	\$13	\$150	\$455
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$800	\$3,752	\$24,047
EDC Evaluation Costs			
EDC Evaluation Costs	\$48	\$170	\$594
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs[3]	N/A	N/A	N/A
Participant Costs[4]	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
<i>Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.</i>			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order – Net participant costs refer to the costs of the end-use customer.			

Table 4-11. Commercial Smart AC Saver

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$0	\$504	\$649
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$0	\$504	\$649
EDC Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration[1]	\$66	\$440	\$3,453
Management[2]	\$27	\$141	\$849
Marketing	\$182	\$286	\$462
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$275	\$867	\$4,764
EDC Evaluation Costs			
EDC Evaluation Costs	\$17	\$58	\$221
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs[3]	N/A	N/A	N/A
Participant Costs[4]	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
<i>Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.</i>			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

Table 4-12. Permanent Load Reduction

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$0	\$35	\$35
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$0	\$35	\$35
EDC Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ⁽¹⁾	\$44	\$159	\$465
Management ⁽²⁾	\$7	\$33	\$283
Marketing	\$0	\$0	\$0
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$51	\$192	\$748
EDC Evaluation Costs			
EDC Evaluation Costs	\$8	\$30	\$100
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs⁽³⁾	N/A	N/A	N/A
Participant Costs⁽⁴⁾	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

Table 4-13. Demand Response Aggregators

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$0	\$0	\$0
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$0	\$0	\$0
EDC Implementation Costs			
Design & Development	\$0	\$0	\$0
Administration ^[1]	\$0	\$7,417	\$16,162
Management ^[2]	\$28	\$246	\$1,138
Marketing	\$0	\$0	\$0
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$28	\$7,663	\$17,300
EDC Evaluation Costs			
EDC Evaluation Costs	\$22	\$76	\$347
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs^[3]	N/A	N/A	N/A
Participant Costs ^[4]	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
<i>Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.</i>			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

Table 4-14. Distributed Energy Resources

	Quarter (\$000)	PYTD (\$000)	CPITD (\$000)
EDC Incentives to Participants	\$0	\$0	\$0
EDC Incentives to Trade Allies	\$0	\$0	\$0
Subtotal EDC Incentive Costs	\$0	\$0	\$0
Design & Development			
Design & Development	\$0	\$0	\$0
Administration[1]	\$0	\$1,325	\$1,738
Management[2]	\$48	\$403	\$1,466
Marketing	\$0	\$0	\$0
Technical Assistance	\$0	\$0	\$0
Subtotal EDC Implementation Costs	\$48	\$1,728	\$3,204
EDC Evaluation Costs			
EDC Evaluation Costs	\$28	\$114	\$388
SWE Audit Costs	N/A	N/A	N/A
Total EDC Costs[3]	N/A	N/A	N/A
Participant Costs[4]	N/A	N/A	N/A
Total TRC Costs	N/A	N/A	N/A
NOTES			
<i>Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011.</i>			
¹ Implementation contractor costs.			
² EDC costs other than those identified explicitly.			
³ Per the 2011 Total Resource Cost Test Order – Total EDC Costs refer to EDC incurred expenses only.			
⁴ Per the 2011 Total Resource Cost Test Order –Net participant costs refer to the costs of the end-use customer.			

Appendix A: Selection of Residential Lighting Coincidence Factor

Prior to the PY4 Q3 report, demand reduction impacts for residential lighting measures had been calculated using the peak load coincidence factor of 5 percent in the 2012 Pennsylvania Technical Reference Manual (TRM). This value comes from a 2007 report by RLW Analytics, entitled “Development of Common Demand Impacts for Energy Efficiency Measures/Programs for the ISO Forward Capacity Market (FCM)”.¹² As the 5 percent CF has been acknowledged by both the SWE and the TUS to be erroneous,¹³ Navigant has used a residential lighting load shape developed through the 2009 Northeast residential lighting logger study conducted by Nexus Market Research, RLW Analytics, and GDS Associates (the NMR 2009 study) to calculate a revised CF of 11.7 percent over PECO’s top 100 hours during the summer of 2012.¹⁴ Navigant has used this value to re-calculate CPITD verified demand reduction for all residential lighting measures subsidized through its Smart Lighting Discounts program and Component 1 (installation of “extra CFLs”) of its Low-Income Energy Efficiency Program.

Navigant’s decision to adopt this value comes from a review of lighting logger studies based on sample size, geographic relevance, availability of load shape data for summer peak demand savings calculations, and the date of the study. Specifically, the 2009 Northeast study had a sample size of 657 lighting loggers spread across 157 homes. Homes were randomly selected from among a large recruitment pool, and loggers were all in place for June, July, and August of 2008, as well as spring and fall months. It is noteworthy that this is the study that is cited for annual hours of use in the 2013 PA TRM.

Other lighting logger studies Navigant reviewed for the purpose of updating the peak load coincidence factor included: EmPOWER Maryland 2010-2011, 2006-2008 California Upstream Lighting Program, 2005 California Residential CFL Metering, and the 2008 DEER CFL load shape. The EmPOWER Maryland 2010-2011 study featured fewer loggers than the 2009 Northeast study, with a total of 377 loggers across 131 homes. In the Maryland study, there was not a large pool of recruited homes from which the sample could be selected at random. The Maryland study also yielded a modeled seasonal curve of CF values with distinctly greater

¹² RLW Analytics, “Development of Common Demand Impacts for Energy Efficiency Measures/Programs for the ISO Forward Capacity Market (FCM)”, prepared for the New England State Program Working Group (SPWG), March 25, 2007, p. IV.

¹³ See the minutes of the Program Evaluation Group meeting from March 20, 2013 (forwarded to all EDCs and evaluators on March 29, 2013).

¹⁴ Nexus Market Research, Inc., RLW Analytics, Inc., and GDS Associates, 2009. Residential Lighting Markdown Impact Evaluation. Prepared for Markdown and Buydown Program Sponsors in Connecticut, Massachusetts, Rhode Island, and Vermont. January 20, 2009.

amplitude than that seen in other studies. The 2006-2008 California Upstream Lighting Program study included loggers in over 1200 homes. However, the report does not include an hourly load shape and cannot be adapted for the calculation of demand reduction in the top 100 hours. The 2005 California Residential CFL Metering Study installed meters on 983 CFLs in 375 homes. This study includes a large sample size and excellent study methodology; however, the data are comparatively old and from a geographic location further removed from Pennsylvania than the 2009 Northeast study. The 2008 DEER CFL load shape is based on the same data from the 2005 Residential CFL Metering Study, but also incorporates the impact of lighting-HVAC interactive effects on summer peak load shapes. Because these interactive effects are influenced by climate and other considerations, these adjusted load shapes do not represent a best fit for Pennsylvania.

To create better fitting load shapes, Navigant is undertaking an analysis of HVAC interactive effects. The PY4 Annual Report will include this analysis.

For the foregoing reasons, the 2009 NMR study provides the best match to Pennsylvania conditions of the available residential lighting load studies.

Navigant used the NMR 2009 residential lighting load shape to calculate hourly coincidence factors for every hour of the year. The average of these hourly CFs during PECO's top 100 hours during the summer of 2012 is 11.7 percent.

Appendix B Demand Reduction from Smart Lighting Discount Lamps Installed in Non-residential Facilities

In accordance with the requirements in Section 2.A.11 of Act 129 which precludes cross subsidization of measure incentives across customer classes, the evaluation team recognizes the need to account for the non-residential installations of CFL bulbs rebated through PECO's Smart Lighting Discounts program.

Based on in-store surveys of customers at the time of purchases ('in-store intercepts') during the Program Year 2 (PY2) evaluation, the evaluation determined a significant portion of Smart Lighting Discounts (SLD) bulbs have been installed in commercial and industrial settings. Bulbs used in nonresidential settings have a substantially higher peak load coincidence factor and hours of use than bulbs used in residential settings. CPITD verified peak demand reduction as of the end of PY3 have been adjusted to reflect this fact.

In previous compliance reporting, peak demand reduction from all program bulbs were calculated per the applicable Pennsylvania Technical Reference Manual (TRM) using the deemed residential peak load coincidence factor of 5 percent and demand ISR_{CHL} of 84 percent for PY3. The data collected from the in-store intercept customer surveys in PY2 indicated that approximately 12.2 percent of SLD program bulbs were installed in commercial settings. Note that this 12.2 percent represents the mean estimate of C&I installations using a weighted average of number of bulbs installed in commercial applications and not the percentage of customers purchasing bulbs. This proportion was relatively consistent across standard compact fluorescent lamp (CFL) and specialty CFL installations.

The evaluation team developed verified savings estimates of savings addressing comments by the Pennsylvania Statewide Evaluator (SWE) that using the 12.2 percent mean estimate of the C&I installations could over estimate savings.

Magnitude of Percent of Installation

The estimates of installations in C&I applications are based on findings from the in-store intercept surveys that were completed in PY2. Of the 144 respondents that purchased CFLs and confirmed they would be installed in PECO's service territory, nine indicated they would be installing at least some of them in a commercial application. Of these nine, three indicated that all purchased CFLs would be installed in a commercial facility and six indicated some would be installed in their residence and some in a commercial facility. Of these six customers, for those that purchased up to twice the average number of bulbs purchased by residential customers, calculations assume 50 percent of bulbs would be installed in the commercial facility and 50 percent would be installed in the residence. For the commercial customers purchasing more than twice the average number of CFLs purchased by residential only customers (5.14 CFLs), calculations assume that only 5.14 CFLs would be installed in their residence, and the rest would be installed in the commercial facility. Findings yield an estimated mean installation rate in C&I applications of 12.2 percent.

The SWE noted that other studies have shown a lower percentage of utility upstream buydown program bulbs are installed in commercial or industrial applications. The evaluation team conducted a literature review to compare what the installations in C&I applications are in other jurisdictions. Typical findings showed C&I installation rates closer to 6 percent.

Although it is industry standard practice to apply the mean estimate of evaluation findings to determine verified savings, in this case the evaluation team agrees with the SWE that the 12.2 percent may overestimate the percentage of bulbs being installed in C&I applications. At a 90 percent confidence, the 12.2 percent estimate has an interval of plus or minus 4.5 percent, resulting in a range of 7.7 percent up to 16.7 percent C&I installations. The evaluation team believes the 7.7 percent is likely closer to the real value or at least provides a conservative estimate of the real value. Final verified demand reductions are based on the lower bound of 7.7 percent C&I installation rate.

Determining C&I EFLH and CF

The SWE commented that installation rates and effective full-load hours (EFLH) and CF should be calculated using a weighted average approach. The evaluation team agrees, and this method was used to calculate C&I EFLH and CF values. C&I EFLH and CF were determined using a weighted average based on number of CFL purchases and the stipulated values from the TRM. For the three customers indicating all CFLs would be installed in a commercial facility, the one customer with the largest purchase of these three did not provide a business type that could be easily mapped to the TRM business types. *This customer was included in the calculations for determining total C&I bulb installation percentages, but was excluded from the calculations for average building hours of use and CF so as not to skew the results with information that is based on an unknown building type.* Using peak load coincidence factors for CFLs by commercial building type from the TRM, and weighting these coincidence factors by the reported proportions of installation in restaurants, offices, industrial/agricultural, and health care buildings, yielded a commercial and industrial (C&I) peak load coincidence factor of 79 percent and EFLH of 4532.

Verified Demand Reductions

To provide verified program savings for PECO's SLD program and accounting for all C&I installations while addressing the SWE comments, the evaluation team applied these PY2 findings using the lower bound of 7.7 percent for proportion of bulbs going into C&I facilities and the associated peak load coincidence factor to program bulb sales from PY1-PY3. The residential peak period line loss factor of 1.1916 was applied to the residential proportion of installations, while the small C&I peak line loss factor of 1.111 was applied to the C&I installations. Further, because the C&I algorithms do not include an ISR factor, the evaluation team applied the verified PECO Smart Equipment Incentives (SEI) C&I program realization rates (RR) for each program year to the savings calculations for the C&I portion of the rebated CFLs. This adjusted calculation yields total CPITD peak demand reduction of 83.3 megawatts

(MW) at the end of PY3, with 48.6 MW coming from the residential installations and 34.6 MW coming from the C&I installations. This represents an increase of 60.5 MW over the 22.8 MW that were reported in the PY3 Annual Report, which was based on the assumption of 100 percent residential installation.

Memorandum

To: Darren Gill, TUS, Public Utility Commission
 Dick Spellman, Pennsylvania Statewide Evaluator (SWE)

From: Nicholas DeDominicis, PECO
 Frank Stern, Ryan Del Balso, Navigant

Date: May 13, 2013

Re: Evaluation Plans for Addressing Reporting Lag at end of Phase I

This memo summarizes PECO's and Navigant's plans to address the evaluation and reporting of projects that have a "commercial date of operation" (CDO) prior to June 1, 2013, but not early enough to be fully processed by PECO and verified by Navigant for the final Act 129 Phase I compliance report (PY4 Annual Report).

Application and Reporting Deadlines

In the Act 129 Phase II Implementation Order, the PA Commission made clear that "program measures installed and commercially operable on or before May 31, 2013" must be paid out of Phase I funds and are considered Phase I projects.¹ PECO and Navigant interpret this to also mean that all projects in this category must be reported in PECO's final Act 129 Phase I compliance report due to the Commission on November 15, 2013.

As the SWE has recognized in "GM-006 – Reporting Timing Issues", there is a processing lag from when the project applications are received to the time they are reported. In order for the evaluation to be completed in time for PECO to meet their Act 129 final reporting deadline of November 15, 2013, a program close date of May 15, 2013 was set for PECO's non-residential programs to allow sufficient processing time to submit a final list of PY4 reported projects to Navigant by June 15, 2013. An earlier deadline of April 15, 2013 was set for larger scale projects which require longer metering periods to develop ex ante savings estimates and for evaluation to verify savings (e.g. combined heat and power (CHP), chiller plants, complicated HVAC requiring extensive commissioning). These dates give Navigant sufficient time to complete their evaluation, write a draft report, and allow PECO time to review and comment prior to the final report submittal deadline of November 15, 2013.

For projects unable to meet the application deadlines of April 15 or May 15, 2013, PECO has set a later final application submittal deadline of May 31, 2013, after which PECO will not pay incentives on applications submitted for projects with a CDO prior to June 1, 2013.

¹ Pennsylvania Public Utility Commission (PPUC), "Implementation Order" August 2, 2012, Section K.1.b, page 107.

Evaluation and Reporting Plan

For the small and medium sized projects with a CDO prior to June 1, 2013, and which submit an application between May 16 and May 31, 2013, the evaluation team believes there is likely to be no statistical difference between these projects and those for which applications are submitted on or before May 15, 2013. It is also unlikely that there will be a sufficient enough number of small and medium sized projects in this category such that their exclusion from the evaluation sample would have a significant impact on the program verified savings confidence and precision. Because of this, Navigant plans to pull the final PY4 impact samples in June 2013 without these projects in the list for selection, but we will include these projects in the final program level realization rate analysis in August and September, even though they were not eligible for selection in the sample design.

For large sized projects with a CDO prior to June 1, 2013, and which submit an application between April 16 and May 31, 2013, the evaluation team believes it is possible and may be likely that there will be a statistical difference between these projects and those for which applications are submitted on or before the April 15, 2013 deadline. It would therefore be inappropriate to include them in the analysis without sampling them, or to apply the verified realization rate to them without sampling them. Because of this, PECO and Navigant plans to report these projects as “unverified” savings in the Phase I compliance report. Once Navigant’s evaluation of these projects is complete, PECO will report the “verified” savings in the next quarterly report as a separate line item showing that the savings are carried over from Phase I. This will likely be included in the PY5 Q2 Report.

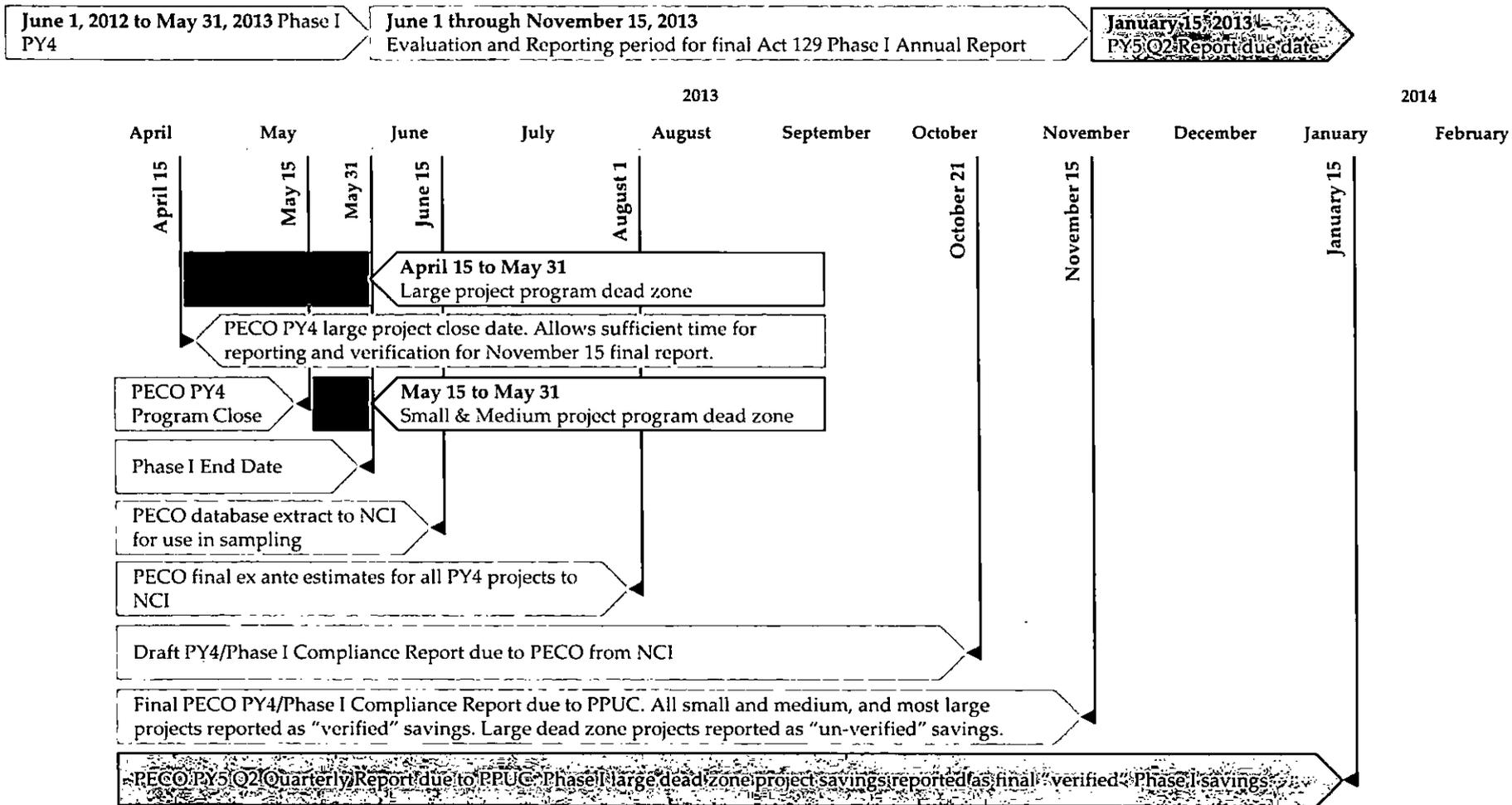
By acknowledging the unique nature of large projects in this way, the PECO’s evaluation team believes this provides the Commission with the information necessary to determine compliance for Phase I, but also properly allocates program costs and savings for Phase I projects. PECO does not expect these unverified savings will be necessary to meet their Phase I targets and therefore reporting them as unverified savings will not have a material impact on determination of Phase I compliance.

A timeline is included as an attachment to this memo showing the key dates discussed above.



PECO PY4 Evaluation
and Reporting Timelin

PECO Act 129 Phase I PY4 Reporting and Evaluation Timeline for Non-Residential Programs



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Anna Migliaccio
Exelon
2301 Market Street S15-2
Philadelphia, PA 19103

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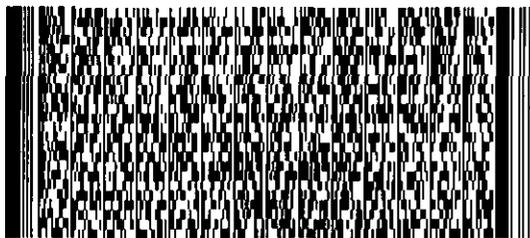


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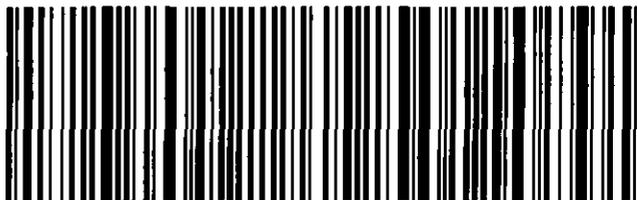
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