

# **Annual Report to the Pennsylvania Public Utility Commission**

**For the period  
June 2010 to May 2011  
Program Year 2**

For Act 129 of 2008  
Energy Efficiency and Conservation Program  
of Pennsylvania Electric Company

Prepared by the Pennsylvania Electric Company  
July 15, 2011

## Table of Contents

<b>1</b>	<b>OVERVIEW OF PORTFOLIO</b> .....	<b>1</b>
1.1	SUMMARY OF PORTFOLIO IMPACTS .....	7
1.2	SUMMARY OF ENERGY IMPACTS BY PROGRAM .....	8
1.3	SUMMARY OF DEMAND IMPACTS BY PROGRAM .....	12
1.4	SUMMARY OF EVALUATION.....	16
1.5	SUMMARY OF FINANCES.....	20
<b>2</b>	<b>PORTFOLIO RESULTS BY SECTOR</b> .....	<b>21</b>
2.1	RESIDENTIAL EE SECTOR.....	23
2.2	RESIDENTIAL LOW-INCOME EE SECTOR .....	25
2.3	SMALL COMMERCIAL & INDUSTRIAL EE SECTOR .....	27
2.4	LARGE COMMERCIAL & INDUSTRIAL EE SECTOR.....	29
2.5	GOVERNMENT & NON-PROFIT EE SECTOR .....	31
<b>3</b>	<b>DEMAND RESPONSE</b> .....	<b>33</b>
<b>4</b>	<b>PORTFOLIO RESULTS BY PROGRAM</b> .....	<b>34</b>
4.1	RESIDENTIAL DEMAND REDUCTION PROGRAM.....	34
4.2	RESIDENTIAL HOME ENERGY AUDIT PROGRAM .....	36
4.3	RESIDENTIAL APPLIANCE TURN-IN PROGRAM .....	40
4.4	RESIDENTIAL ENERGY EFFICIENCY HVAC PROGRAM .....	43
4.5	RESIDENTIAL ENERGY EFFICIENT PRODUCTS PROGRAM.....	46
4.6	RESIDENTIAL NEW CONSTRUCTION PROGRAM .....	49
4.7	RESIDENTIAL WHOLE BUILDING COMPREHENSIVE.....	52
4.8	RESIDENTIAL MULTI-FAMILY PROGRAM .....	55
4.9	RESIDENTIAL LOW-INCOME PROGRAMS .....	58
4.10	COMMERCIAL / INDUSTRIAL SMALL SECTOR ENERGY AUDIT AND TECHNICAL ASSESSMENT PROGRAM .....	63
4.11	COMMERCIAL / INDUSTRIAL SMALL SECTOR EQUIPMENT PROGRAM .....	65
4.12	COMMERCIAL / INDUSTRIAL LARGE SECTOR DEMAND RESPONSE PROGRAM – CSP MANDATORY AND VOLUNTARY CURTAILMENT PROGRAM .....	68
4.13	COMMERCIAL / INDUSTRIAL LARGE SECTOR PERFORMANCE CONTRACTING/EQUIPMENT PROGRAM .....	70
4.14	COMMERCIAL / INDUSTRIAL LARGE SECTOR INDUSTRIAL MOTORS AND VARIABLE SPEED DRIVES PROGRAM .....	73
4.15	GOVERNMENTAL / NON-PROFIT STREET LIGHTING PROGRAM .....	76
4.16	GOVERNMENTAL / NON-PROFIT PROGRAM .....	78
4.17	GOVERNMENTAL / REMAINING NON-PROFIT PROGRAMS .....	80

**Abbreviations (see Glossary for definitions)**

CPITD	Cumulative Program/Portfolio Inception to Date
EM&V	Evaluation Measurement and Verification
IQ	Incremental Quarter
kW	Kilowatt
kWh	Kilowatt-hour
M&V	Measurement and Verification
MW	Megawatt
MWh	Megawatt-hour
NTG	Net-to-Gross
PYTD	Program/Portfolio Year to Date
TRC	Total Resource Cost
VEPS	Verified Ex-Post Savings
UEPS	Unverified Ex-Post Savings

## 1 Overview of Portfolio

Act 129, signed October 15<sup>th</sup>, 2008, mandated energy savings and demand reduction goals for the largest electric distribution companies (EDC) in Pennsylvania. Pursuant to their goals, energy efficiency and conservation (EE&C) plans were submitted by each EDC and approved by the Pennsylvania Public Utility Commission (PUC).

In accordance with the Secretarial Letter issued on May 25, 2011<sup>1</sup>, and the Commission directive requiring EDCs to submit two Act 129 annual reports per program year, Penelec respectfully submits this preliminary annual report documenting the progress and effectiveness of EE&C accomplishments through the end of Program Year 2, Quarter 4. Penelec notes that because this is a preliminary annual report, the verified energy savings numbers to date appear lower because only 3 out of 16 programs have been evaluated for EM&V savings.

As was contemplated by the Commission's directive, Penelec will submit its final report, providing verified savings for the program year for all programs, cost-effectiveness evaluation (Total Resource Cost Test), the process evaluation, as well as items required by Act 129<sup>2</sup> and Commission Orders by November 15, 2011.

### Compliance goal progress as of the end of the reporting period<sup>3</sup>:

#### Cumulative Portfolio Energy Impacts

- The CPITD reported gross energy savings is 196,234 MWh<sup>4</sup>.
- The CPITD preliminary verified energy savings is 91,444 MWh based on preliminary Plan Year 2 results that incorporate 3 of 16 reported programs<sup>5</sup>.
- Achieved 136.3% of the 143,993 MWh May 31st, 2011 energy savings compliance target on a gross basis and 64% on a preliminary verified basis (based on only 3 of 16 programs having verified results as of the date of this preliminary report).
- Achieved 45.4% of the 431,979 MWh May 31st, 2013 energy savings compliance target on a gross basis and 21% on a preliminary verified basis (based on only 3 of 16 programs having verified results as of the date of this preliminary report).

---

<sup>1</sup> See Docket No. M-2008-2069887

<sup>2</sup> See 66 Pa. C.S § 2806.1(i)(1).

<sup>3</sup> Percentage of compliance target achieved calculated using both Gross and Verified (or Preliminary verified value, if not available) Cumulative Program/Portfolio Inception to Date values divided by compliance target value. Note: While Penelec's EM&V activities are on target for Plan Year 2, realization rates are not yet available for all programs. As such, Penelec is reporting percentage of achieved goals using both gross and preliminary verified values in this report.

<sup>4</sup> For purposes of this report, gross energy savings and demand reduction are considered achieved at the point at which a project is considered complete, having met the following criteria, (1) the Energy Conservation Measure (ECM) has been installed, (2) the ECM is commercially operable and (3) the EDC has accrued a liability for rebate payment or other financial incentives.

<sup>5</sup> Formal realization rates are not yet available for all programs in Plan Year 2.

### **Portfolio Demand Reduction<sup>6</sup>**

- The CPITD reported gross demand reduction is 24.76 MW.
- The CPITD preliminary verified demand reduction is 7.07 MW based on preliminary Plan Year 2 results that incorporate 3 of 16 programs.
- Achieved 22.9% of the 108 MW May 31st, 2013 demand reduction compliance target.

### **Low Income Sector<sup>7</sup>**

- There are 113,884 measures offered to the Low-Income Sector, comprising 117.6% of the total measures offered.
- The CPITD reported gross energy savings for low-income sector programs is 52,880 MWh.
- The CPITD preliminary verified energy savings for low-income sector programs is 44,799 MWh.

### **Government and Non-Profit Sector**

- The CPITD reported gross energy savings for government and non-profit sector programs is 29,001 MWh.
- The CPITD preliminary verified energy savings for government and non-profit sector programs is 255 MWh.

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

- The PYTD reported gross energy savings is 187,295 MWh.
- The PYTD preliminary verified energy savings is 78,579 MWh.
- The PYTD reported gross demand reduction is 23.56 MW.
- The PYTD preliminary verified demand reduction is 5.83 MW based on preliminary Plan Year 2 results that incorporate 3 of 16 reported programs.
- The PYTD reported participation is 349,928 participants.<sup>8</sup>

Consistent with the PUC's Opinions and Orders in Docket Nos. M-2009-2092222, M-2009-2112952 and M-2009-2112956, FirstEnergy Corp.'s Pennsylvania EDCs, Pennsylvania Electric Company, Pennsylvania Electric Company and Pennsylvania Power Company (collectively, the Companies) launched all of the programs with the exception of the Commercial/Industrial Demand Response program<sup>9</sup>). CSPs selected by the Companies have been approved by the PUC and placed on its CSP Registry, and the Companies' contracts with the selected CSPs have been approved or are pending approval by the PUC's staff. Penelec's current timeline for program implementation is shown in Section 5 of this report.

The Companies have selected SAIC, Inc. (SAIC) to serve as program manager for commercial/industrial/government programs. The Companies' contract with SAIC to manage the following programs was approved by the PUC's staff on December 18, 2009:

1. lighting;
2. equipment rebates;
3. custom programs;
4. motors and VSD; and,
5. energy audit/technology assessment

---

<sup>6</sup> Demand reduction to include both the demand savings from the installation of energy efficiency measures and the demand reduction associated with demand response programs.

<sup>7</sup> Results reported here are the sum of the impacts of the dedicated low-income programs and the impacts of low-income customers' participation in the general residential programs.

<sup>8</sup> CFL participants comprise 260,635 of the listed participant numbers. CFL participants are defined by the number of CFL packages purchased through Penelec's Energy Efficient Products Program

<sup>9</sup> Contracts supporting launch of the Commercial/Industrial Demand Response program are pending award and approval as of the end of Plan Year 2.

The Companies have selected Honeywell International, Inc. (Honeywell) to serve as program manager for certain residential programs. The Companies' contract with Honeywell to manage the following programs was approved by the PUC's staff on January 7, 2010:

1. on-site home energy audits;
2. energy efficient HVAC;
3. energy efficient products; and,
4. whole building comprehensive.

The Companies have selected JACO Environmental, Inc. (JACO) to manage the residential appliance turn-in program. The PUC's staff approved the Companies' contract with JACO on December 18, 2009.

The Companies have selected Aclara Software, Inc. (Aclara) as the vendor to support the on-line energy audits for both residential and small commercial/industrial/government customers. The PUC's staff approved the Companies' contract with Aclara on February 12, 2010.

The Companies have selected Performance Systems Development of New York, LLC (PSD) to manage the Residential New Home Construction program. The PUC's staff approved the Companies' contract with PSD on September 15, 2010.

The Companies have selected PowerDirect Marketing, LLC. (PD) to manage the Residential Multi-Family program. The PUC's staff approved the Companies' contract with PD on September 29, 2010.

Penelec has selected Honeywell (HW) to manage the Residential Direct Load Control program. The PUC's staff approved Penelec's contract with HW on March 24, 2011.

In addition, the Companies are using the services of Building Performance Institute (BPI) certified contractors to perform measure installation for the low income WARM programs (i.e., WARM Plus, WARM extra measures). Program services are delivered by existing Low Income Usage Reduction Program non-profit agencies, private contractors and subcontractors. Additional private contractors were hired to increase capacity to meet the Companies' EE&C Plans. The Companies' internal staff manages the WARM programs. Agencies and private contractors perform comprehensive whole house energy audits and direct installation of all cost-effective electricity-saving measures. In addition, low income customers are eligible to participate in the Companies' other residential programs.

### **Other Observations and Risks That May Affect Portfolio Success**

Based on reported gross energy savings, Penelec has met its 2011 energy savings targets.

While the Companies have succeeded in meeting its 2011 energy savings target, the Companies did not receive final approval to implement their respective EE&C portfolios of programs and measures, designed to achieve the 2011 and 2013 Act 129 energy efficiency and peak demand reduction targets, until February 25, 2010. After receiving such approval, the Companies immediately began full implementation of these programs and measures – which was over three months later than anticipated. This shortened implementation period, coupled with other factors, including changes and uncertainties associated with Technical Reference Manual (TRM) protocols and measurement & evaluations processes, and a lack of flexibility to shift funds among programs within customer classes without

Commission approval, may adversely affect the Companies' ability to achieve future Act 129 savings targets.

The Companies have already learned much during the first two years of implementation. For example, participation in certain sectors, such as the Small C/I and Government/Non-profit sectors, are lagging expectations, while participation from the Large C/I sector has far exceeded the Companies' initial projections. Additionally, in the Large C/I sector, customers have been especially receptive to the Companies' lighting incentives, but not the Motors and Drives program incentives.

Based on this acquired knowledge, on February 18, 2011, the Companies submitted an expedited petition for approval of certain changes, which the Commission approved on March 17, 2011<sup>10</sup>, and also a First Amended EE&C Plan, which is still pending approval before the Commission. A hearing was held on this First Amended EE&C Plan on June 28, 2011.

Recently, the Commission recognized the need to establish an expedited review process to approve minor EE&C Plan changes which allow EDCs to: i) eliminate a measure that is underperforming; ii) transfer funds from one measure or program within the same customer class; and iii) add or change the conditions of a measure (e.g. eligibility requirements; rebate structure or amount)<sup>11</sup>. Although the Companies appreciate the Commission's efforts to shorten the approval process for changes to EE&C Plans, the Companies still believe that the lack of implementation flexibility to shift funds in a timely manner from under- to over-subscribed, cost-effective programs is adversely impacting the Companies' EE&C strategies for compliance. For example, funds for the Large C/I Equipment program are entirely committed, while funds for the Large C/I Motors and Drives program are largely unsubscribed. Shifting funds during Program Year 2 from the Motors and Drives program to the Large C/I Equipment program would have allowed the Companies to commit further funds to its customers and create energy savings for the Companies' compliance with Act 129 2013 savings targets. However, because the Companies were required to seek formal approval to do so, a number of otherwise eligible applications for incentives were suspended, pending Commission approval of additional funding. With more flexibility, the Companies would have been able to shift funds among programs within the Large C/I sector, thus allowing otherwise eligible projects to be processed in an expeditious manner to contribute to Penelec's energy savings targets.

Additionally, given current economic conditions and their impact on government and institutional budgets, achieving 10% of Act 129 target savings from Federal/State/local/municipal governments, school districts, institutions of higher education, and nonprofit entities may prove challenging.

Notwithstanding these difficulties, the Companies are diligently working with their implementation and evaluation CSPs to evaluate current programs and identify the best approach for achieving future, aggressive Act 129 targets. The empirically-based results from these evaluations form the basis for program design decisions with a goal to cost effectively improve the delivery of energy efficiency and conservation measures to customers.

#### **Portfolio Measurement and Valuation (M&V) Status**

The Companies have selected ADM Associates, Inc. (ADM) as the M&V contractor. ADM concluded the impact evaluation for all programs that were implemented by August 31, 2010. ADM's methods of

---

<sup>10</sup> See Opinion and Order, Docket No. M-2009-2092222, et al.

<sup>11</sup> See Final Order, Docket No. M-2008-2069887, June 9, 2011.

evaluation include physical inspection, on-site data gathering, and monitoring. The M&V efforts for the various measures in Penelec's portfolio are described below.

**Deemed Measures:**

Deemed Measures (measures that have deemed savings in the PA TRM or interim TRM) are subject to the following verifications in order to be included in Penelec's energy savings and demand reduction calculations:

1. Verification that the energy savings are being claimed correctly, using the appropriate protocols in the TRM; and
2. On-site, physical verification that the measures are actually installed and commercially operable, except for the following acceptable alternatives:
  - a. For upstream CFLs, review of invoices and verification of shipment to participating retailers
  - b. For recycled refrigerators and room ACs, verification of pick-up through customer interviews.
  - c. For the low-income weatherization program, statistical analysis of customer billing data. The on-site verification is conducted for quality assurance purposes rather than for impact evaluation.

Deemed measures implemented by Penelec include refrigerator retirement, low-income weatherization, electric water heaters, and upstream rebates on CFLs.

**Partially Deemed Measures:**

Partially Deemed Measures (measures that have partially deemed savings in the PA TRM or interim TRM) are subject to the following verifications in order to be included in Penelec's energy savings and demand reduction calculations:

1. Verification that the energy savings are being claimed correctly, using the appropriate protocols in the TRM;
2. Verification that the measures are actually installed and commercially operable;
3. Data gathering to support the values of variable parameters, such as "in-service rates" for items that are not directly installed, or nameplate capacities and efficiencies of appliances; and
4. Verification of baseline equipment or conditions, either by a pre-retrofit inspection or by review of documentation of pre-retrofit conditions.

Partially deemed measures implemented by Penelec include rebated dehumidifiers, room air conditioners, heat pumps, and refrigerators; conservation kits sent to participants of online audits; and commercial lighting upgrades.

**Custom Measures:**

Custom measures are subject to the following verifications in order to be included in Penelec's energy savings and demand reduction calculations:

1. Drafting and receiving the PA Statewide Evaluator's approval on a custom measure protocol used to estimate ex-ante and ex-post energy impacts<sup>12</sup>.

---

<sup>12</sup> Appropriate pre-existing protocols may be used if they have already been approved by the Statewide Evaluator.

2. Verification that the parameters and data used to design the protocol are accurate and well-founded. Some protocols will require both pre-installation and post-installation monitoring.
3. Verification that the data derived from monitoring or on-site inspections is being used appropriately in the protocols.

## 1.1 Summary of Portfolio Impacts

A summary of the portfolio reported impacts is presented in the following table:

**Table 1-1: EDC Reported Portfolio Impacts through the End of the Reporting Period**

Impact Type	Total Energy Savings (MWh)	Total Demand Reduction (MW)
Reported Gross Impact: Incremental Quarterly	84,050	11.25
Reported Gross Impact: Program Year to Date	187,295	23.56
Reported Gross Impact: Cumulative Portfolio Inception to Date	196,234	24.76
Unverified Ex-Post Savings	0	0.00
Estimated Impact: Projects in Progress	69,645	10.19
Estimated Impact: PYTD Total Committed	256,940	33.75
Preliminary PYTD Verified Impact <sup>[a]</sup>	78,579	5.83
Preliminary PYTD Net Impact <sup>[b]</sup>	78,579	5.83
<b>NOTES:</b>		
[a] Portfolio Verified Impact calculated by aggregating Program PYTD Verified Impacts. Program PYTD Verified Impacts are calculated by multiplying Program PYTD Reported Gross Impacts by program realization rates.		
[b] Portfolio Net Impact calculated by aggregating Program Net Impacts. Program Net Impacts are calculated by multiplying Program PYTD Verified Impacts by program Net-to-Gross ratios.		

A summary of total evaluation adjusted impacts for the portfolio is presented in the following table<sup>13</sup>:

**Table 1-2: Verified Preliminary Portfolio Total Evaluation Adjusted Impacts through the End of the Reporting Period**

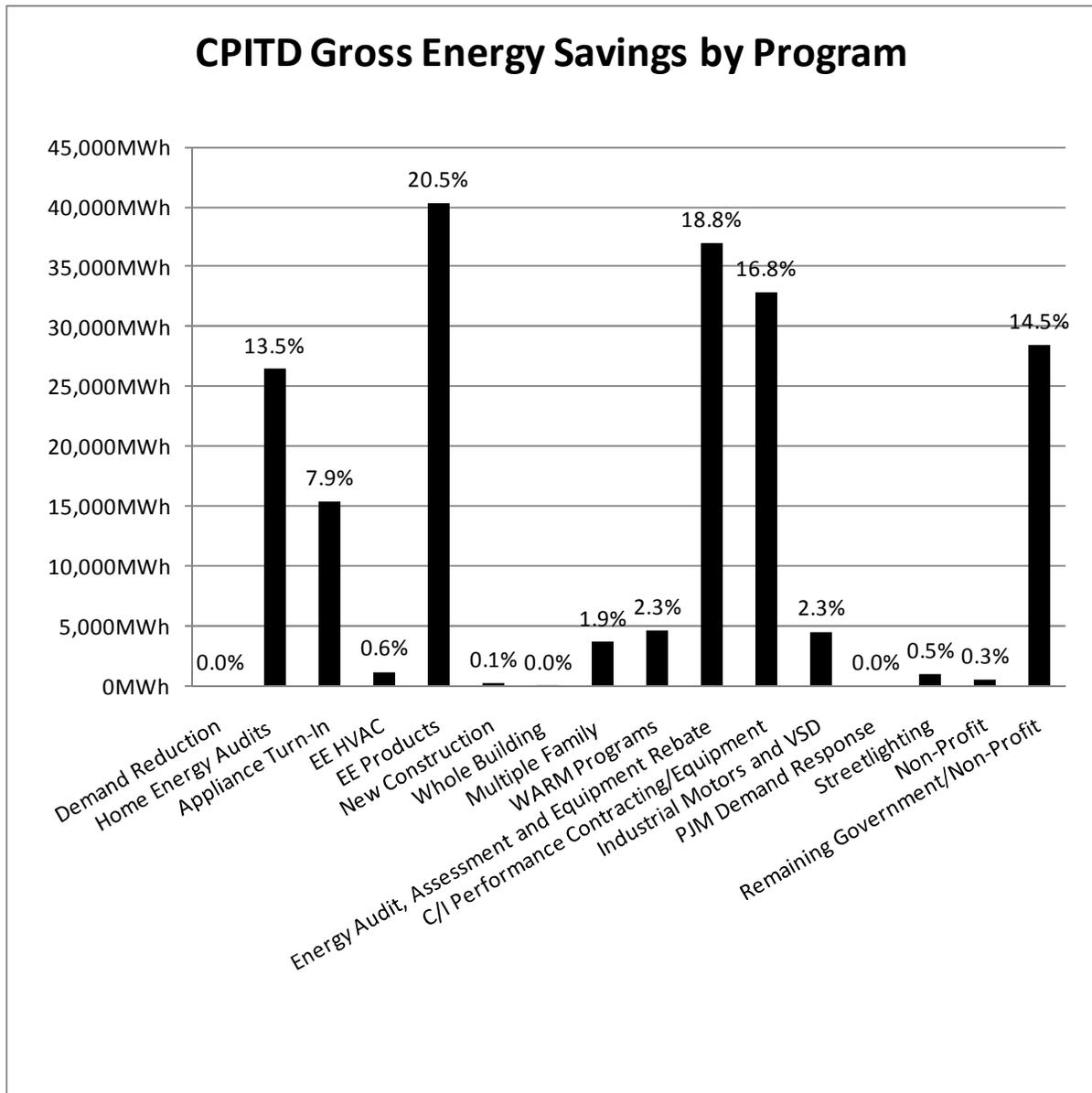
TRC Category	IQ <sup>[a]</sup>	PYTD <sup>[b]</sup>	CPITD
TRC Benefits (\$)	N/A	N/A	N/A
TRC Costs (\$)	N/A	N/A	N/A
TRC Benefit-Cost Ratio			N/A
<b>NOTES:</b>			
[a] Based on reported gross savings.			
[b] Based on reported gross savings.			

<sup>13</sup> Consistent with prior guidance from PUC Staff, this Report will not include information related to TRC Benefit-to-Cost Ratios.

## 1.2 Summary of Energy Impacts by Program

A summary of the reported energy savings by program is presented in the following figure:

Figure 1-1: CPITD Reported Gross Energy Savings by Program through the End of the Reporting Period



A summary of energy impacts by program through the end of the reporting period is presented in the following tables:

**Table 1-3: EDC Reported Participation and Gross Energy Savings by Program through the End of the Reporting Period**

Program	Participants			Reported Gross Impact (MWh)		
	IQ	PYTD	CPITD	IQ	PYTD	CPITD
Demand Reduction	0	0	0	0	0	0
Home Energy Audits	23,333	42,309	50,057	11,731	22,522	26,436
Appliance Turn-In	2,415	7,663	8,471	4,326	13,866	15,406
EE HVAC	547	1,816	1,816	417	1,210	1,210
EE Products	156,734	271,948	292,720	18,587	40,298	40,305
New Construction	25	36	36	149	217	217
Whole Building	8	8	8	13	14	14
Multiple Family	2,934	9,627	9,627	1,118	3,668	3,668
WARM Programs	684	15,190	15,487	577	4,531	4,608
Energy Audit, Assessment and Equipment Rebate	326	739	739	18,357	36,958	36,958
C/I Performance Contracting/Equipment	24	60	120	6,543	29,856	32,895
Industrial Motors and VSD	4	5	6	1,574	4,422	4,540
PJM Demand Response	0	0	0	0	0	0
Streetlighting	59	184	184	391	977	977
Non-Profit	20	36	37	363	463	529
Remaining Government/Non-Profit	126	307	315	19,903	28,294	28,471
<b>TOTAL PORTFOLIO</b>	<b>187,239</b>	<b>349,928</b>	<b>379,623</b>	<b>84,050</b>	<b>187,295</b>	<b>196,234</b>
<b>NOTES:</b>						
(a) Participation in the EE Products Program attributable to CFL Participation is 153,473 for IQ, 260,635 for PYTD, and 281,351 CPITD periods						

**Table 1-4: EDC Reported Gross Energy Savings by Program through the End of the Reporting Period**

<b>Program</b>	<b>Unverified Ex Post Savings (MWh)</b>	<b>Projects In Progress (MWh)</b>	<b>PYTD Total Committed (MWh)</b>	<b>EE&amp;C Plan Estimate for Program Year (MWh)</b>	<b>Percent of Estimate Committed (%)</b>
Demand Reduction	0	0	0	654	0%
Home Energy Audits	0	0	22,522	16,933	133%
Appliance Turn-In	0	1,019	14,884	14,925	100%
EE HVAC	0	185	1,395	1,686	83%
EE Products	0	4,864	45,162	29,330	154%
New Construction	0	0	217	4,730	5%
Whole Building	0	2	16	1,099	1%
Multiple Family	0	0	3,668	440	833%
WARM Programs	0	0	4,531	1,720	263%
Energy Audit, Assessment and Equipment Rebate	0	26,456	63,414	40,194	158%
C/I Performance Contracting/Equipment	0	7,518	37,374	8,749	427%
Industrial Motors and VSD	0	4,183	8,605	3,440	250%
PJM Demand Response	0	0	0	0	N/A
Streetlighting	0	0	977	1,647	59%
Non-Profit	0	1,238	1,702	956	178%
Remaining Government/Non-Profit	0	24,180	52,475	17,107	307%
<b>TOTAL PORTFOLIO</b>	0	69,645	256,940	143,609	179%
<b>NOTES:</b>					
"Unverified Ex Post Savings" are unverified savings pending approval of a TRM or Custom Measure Protocol by the Commission. Note: The Home Energy Audit savings are shifted from unverified to verified because they are based on "interim TRMs" that are now assumed to be approved because they appear in the draft PY3 TRM.					

A summary of evaluation verified energy impacts by program is presented in the following table:

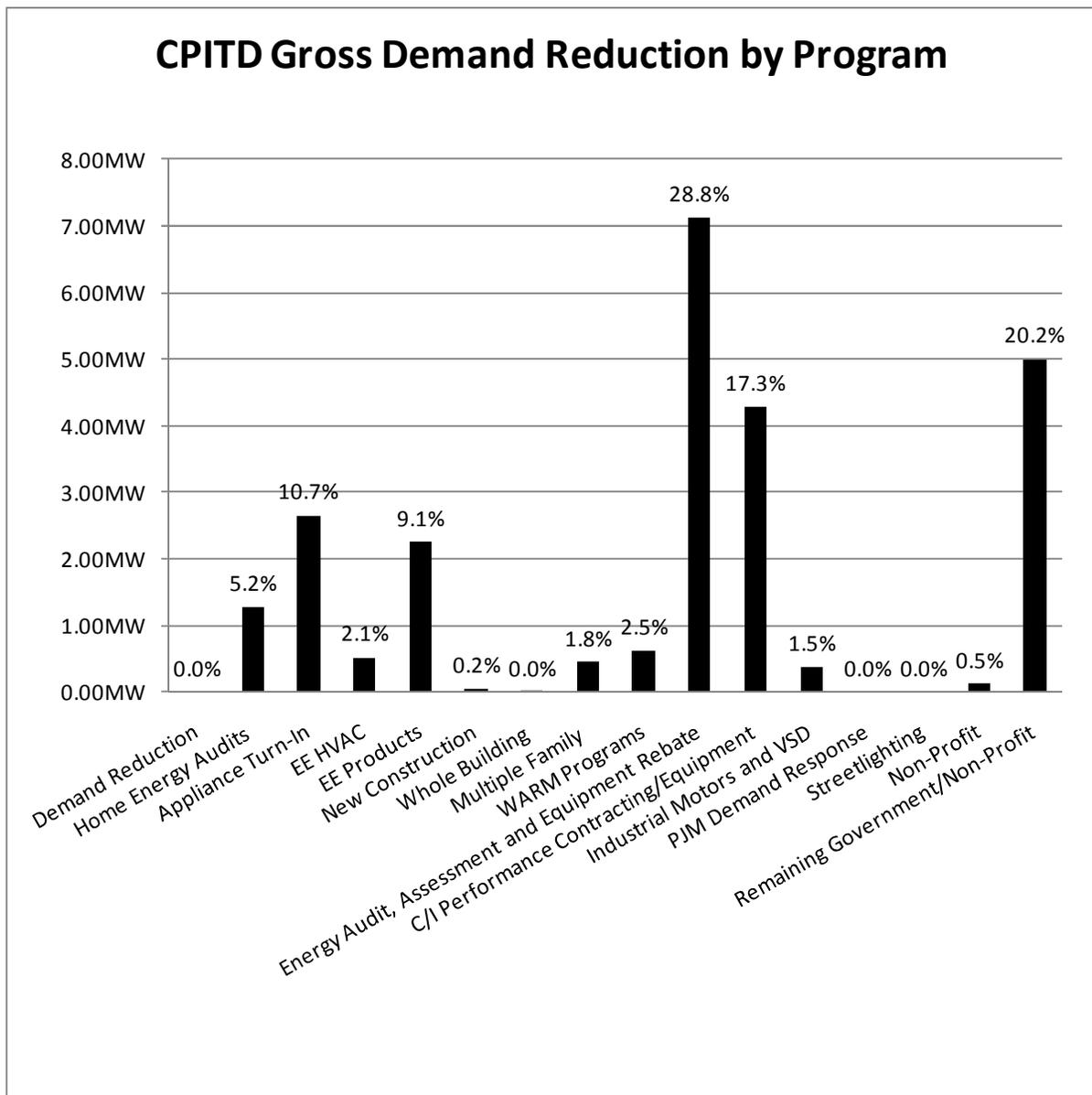
**Table 1-5: Preliminary Energy Savings by Program through the End of the Reporting Period**

Program	PYTD Reported Gross Impact (MWh)	Preliminary Realization Rate	Preliminary PYTD Verified Impact (MWh)	Net-to-Gross Ratio	PYTD Net Impact (MWh)
Demand Reduction	0	N/A		100.0%	
Home Energy Audits	22,522	110.2%	24,829	100.0%	24,829
Appliance Turn-In	13,866	99.8%	13,826	100.0%	13,826
EE HVAC	1,210	N/A		100.0%	
EE Products	40,298	99.1%	39,924	100.0%	39,924
New Construction	217	N/A		100.0%	
Whole Building	14	N/A		100.0%	
Multiple Family	3,668	N/A		100.0%	
WARM Programs	4,531	N/A		100.0%	
Energy Audit, Assessment and Equipment Rebate	36,958	N/A		100.0%	
C/I Performance Contracting/Equipment	29,856	N/A		100.0%	
Industrial Motors and VSD	4,422	N/A		100.0%	
PJM Demand Response	0	N/A		100.0%	
Streetlighting	977	N/A		100.0%	
Non-Profit	463	N/A		100.0%	
Remaining Government/Non-Profit	28,294	N/A		100.0%	
<b>TOTAL PORTFOLIO</b>	<b>187,295</b>	<b>N/A</b>	<b>78,579</b>	<b>100.0%</b>	<b>78,579</b>
<b>NOTES: Realization rates for most programs are pending upon completion of data analysis of Q2 on-site visits.</b>					

### 1.3 Summary of Demand Impacts by Program

A summary of the reported demand reduction by program is presented in the following figure:

Figure 1-2: Reported Demand Reduction by Program through the End of the Reporting Period



A summary of demand reduction impacts by program through the end of the reporting period is presented in the following tables:

**Table 1-6: Participation and Reported Gross Demand Reduction by Program through the End of the Reporting Period**

Program	Participants			Reported Gross Impact (MW)		
	IQ	PYTD	CPITD	IQ	PYTD	CPITD
Demand Reduction	0	0	0	0.00	0.00	0.00
Home Energy Audits	23,333	42,309	50,057	0.46	1.01	1.28
Appliance Turn-In	2,415	7,663	8,471	0.74	2.41	2.65
EE HVAC	547	1,816	1,816	0.15	0.52	0.52
EE Products	156,734	271,948	292,720	1.01	2.25	2.25
New Construction	25	36	36	0.04	0.05	0.05
Whole Building	8	8	8	0.00	0.00	0.00
Multiple Family	2,934	9,627	9,627	0.13	0.45	0.45
WARM Programs	684	15,190	15,487	0.12	0.62	0.63
Energy Audit, Assessment and Equipment Rebate	326	739	739	3.73	7.13	7.13
C/I Performance Contracting/Equipment	24	60	120	0.76	3.73	4.28
Industrial Motors and VSD	4	5	6	0.16	0.30	0.38
PJM Demand Response	0	0	0	0.00	0.00	0.00
Streetlighting	59	184	184	0.00	0.00	0.00
Non-Profit	20	36	37	0.08	0.11	0.12
Remaining Government/Non-Profit	126	307	315	3.87	4.96	5.00
<b>TOTAL PORTFOLIO</b>	<b>187,239</b>	<b>349,928</b>	<b>379,623</b>	<b>11.25</b>	<b>23.56</b>	<b>24.76</b>
<b>NOTES:</b>						
(a) Participation in the EE Products Program attributable to CFL Participation is 153,473 for IQ, 260,635 for PYTD, and 281,351 CPITD periods						

**Table 1-7: Reported Gross Demand Reduction by Program through the End of the Reporting Period**

<b>Program</b>	<b>Unverified Ex-Post Savings (MW)</b>	<b>Projects In Progress (MW)</b>	<b>PYTD Total Committed (MW)</b>	<b>EE&amp;C Plan Estimate for Program Year (MW)</b>	<b>Percent of Estimate Committed (%)</b>
Demand Reduction	0.00	0.00	0.00	13.68	0%
Home Energy Audits	0.00	0.00	1.01	1.65	61%
Appliance Turn-In	0.00	0.19	2.60	2.16	121%
EE HVAC	0.00	0.12	0.65	1.51	43%
EE Products	0.00	0.26	2.51	3.25	77%
New Construction	0.00	0.00	0.05	3.56	1%
Whole Building	0.00	0.00	0.00	0.28	0%
Multiple Family	0.00	0.00	0.45	0.04	1256%
WARM Programs	0.00	0.00	0.62	0.18	346%
Energy Audit, Assessment and Equipment Rebate	0.00	3.74	10.87	12.89	84%
C/I Performance Contracting/Equipment	0.00	2.21	5.94	2.93	203%
Industrial Motors and VSD	0.00	0.29	0.59	0.10	575%
PJM Demand Response	0.00	0.00	0.00	0.00	N/A
Streetlighting	0.00	0.00	0.00	0.00	N/A
Non-Profit	0.00	0.25	0.36	0.23	157%
Remaining Government/Non-Profit	0.00	3.13	8.10	4.09	198%
<b>TOTAL PORTFOLIO</b>	0.00	10.19	33.75	46.54	73%
<b>NOTES:</b>					
"Unverified Ex Post Savings" are unverified savings pending approval of a TRM or Custom Measure Protocol by the Commission					

A summary of evaluation adjusted demand impacts by program is presented in the following table:

**Table 1-8: Verified Demand Reduction by Program through the End of the Reporting Period**

<b>Program</b>	<b>PYTD Reported Gross Impact (MW)</b>	<b>Preliminary Realization Rate</b>	<b>Preliminary PYTD Verified Impact (MW)</b>	<b>Net-to-Gross Ratio</b>	<b>PYTD Net Impact (MW)</b>
Demand Reduction	0.00	N/A		100.0%	
Home Energy Audits	1.01	118.0%	1.19	100.0%	1.19
Appliance Turn-In	2.41	99.9%	2.41	100.0%	2.41
EE HVAC	0.52	N/A		100.0%	
EE Products	2.25	99.1%	2.23	100.0%	2.23
New Construction	0.05	N/A		100.0%	
Whole Building	0.00	N/A		100.0%	
Multiple Family	0.45	N/A		100.0%	
WARM Programs	0.62	N/A		100.0%	
Energy Audit, Assessment and Equipment Rebate	7.13	N/A		100.0%	
C/I Performance Contracting/Equipment	3.73	N/A		100.0%	
Industrial Motors and VSD	0.30	N/A		100.0%	
PJM Demand Response	0.00	N/A		100.0%	
Streetlighting	0.00	N/A		100.0%	
Non-Profit	0.11	N/A		100.0%	
Remaining Government/Non-Profit	4.96	N/A		100.0%	
<b>TOTAL PORTFOLIO</b>	<b>23.56</b>	<b>0.0%</b>	<b>5.83</b>	<b>100.0%</b>	<b>5.83</b>
<b>NOTES:</b>					

## 1.4 Summary of Evaluation

Realization rates are calculated to adjust reported savings based on statistically significant verified savings measured by independent evaluators. The realization rate is defined as the percentage of reported savings that is achieved, as determined through the independent evaluation review. A realization rate of 1 or 100% indicates no difference between the reported and achieved savings. Realization rates are determined by certain attributes relative to one of three protocol types. Fully deemed TRM measure realization rates are driven by differences in the number of installed measures. Partially deemed TRM measure<sup>14</sup> realization rates are driven by: (1) differences in the number of installed measures; and (2) differences in the variables. Custom measure realization rates are driven by differences in the energy savings determined by approved protocols. The protocol type determines the data type that is sampled.

### 1.4.1 Impact Evaluation

ADM is conducting the impact evaluation for all programs that were implemented by August 31, 2010. ADM is employing batch-wise stratified sampling for the C/I Equipment and Government/Non-Profit programs, stratified sampling for the residential “Warm Extra Measures” program, and simple random sampling for all other programs. In accordance with the PA Statewide Evaluator’s recent updates to the Audit Plan, the sample sizes will be sufficient to report verified savings with  $\pm 15\%$  relative precision at the 85% confidence level for all programs. Verified savings will be reported with  $\pm 10\%$  precision at the 90% confidence level for the residential and non-residential sectors respectively, and the government/non-profit sectors will be treated as independent programs with 85/15 confidence/precision if their savings comprise at least 20% of the sector-level savings.

In order to conduct the impact evaluation for Penelec’s energy efficiency and conservation programs, ADM employs the following measures:

- Review of ex-ante calculations, assumptions and evaluation protocols in the TRM;
- Participation in technical working groups regarding the addition of new evaluation protocols to the TRM;
- Drafting, peer-review, and submittal of evaluation protocols for the interim TRM;
- Review of the Statewide Evaluator’s Audit Plan;
- Drafting of impact evaluation plans for all programs;
- Review of rebate forms and data collection requirements for programs;
- Review of energy efficiency program tracking protocols and systems;
- Review of ex-ante calculations associated with rebates, and pertinent feedback to the Companies;
- Drawing of samples for impact evaluation;
- Site visits, monitoring, and other data gathering;
- Analysis of data collected on-site;
- Determination of verified energy savings and demand reductions; and
- Determination of the verified energy savings and demand reductions attributable to the low-income residential sector.

---

<sup>14</sup> TRM measures with stipulated values and variables.

The current program year (Year 2), beginning June 1, 2010, will be the first year of full-scale portfolio implementation. ADM has drafted revised evaluation plans for Penelec's portfolio for the current program year. The main changes to the evaluation plans include:

1. Consolidation of certain non-residential programs that share the same management, CSPs, and rebated measures; and,
2. The separation of the categories of rebates into two categories: custom measures or prescriptive measures.

The realization rates for each program are presented in the following table:

Table 1-9: Summary of Realization Rates and Confidence Intervals (CI) for kWh

Program	PYTD Sample Participants	Program Year Sample Participant Target	Preliminary Realization Rate for kWh	Confidence and Precision for kWh	Preliminary Realization Rate for kW	Confidence and Precision for kW
Demand Reduction	N/A	75	N/A	N/A	N/A	N/A
Home Energy Audits	297	320 online surveys, 20 on-sites	110.2%	85% +/- 4%	118.0%	85% +/- 4%
Appliance Turn-In	32	70	99.8%	85% +/- 13%	99.9%	85% +/- 13%
EE HVAC	10	23	N/A	85% +/- 23%	N/A	85% +/- 23%
EE Products	CFL: Census; Appliances: 10	CFL: Census; Appliances: 30 on-site, 100s for documentation review	99.1%	N/A	99.1%	N/A
New Construction	0	23	N/A	N/A	N/A	N/A
Whole Building	0	23	N/A	N/A	N/A	N/A
Multiple Family	0	23	N/A	N/A	N/A	N/A
WARM Programs	8	23 on-site for low-income low-use kits; 23 desk review / 8 on-site for Warm Extra Measures Direct Install; 23 desk review for Warm Plus Direct Install	N/A	85% +/- 25%	N/A	85% +/- 25%
Energy Audit, Assessment and Equipment Rebate	15	23	N/A	85% +/- 19%	N/A	85% +/- 19%
C/I Performance Contracting/Equipment	9	19	N/A	85% +/- 24%	N/A	85% +/- 24%
Industrial Motors and VSD	0	9	N/A	N/A	N/A	N/A
PJM Demand Response	Census	Census	N/A	N/A	N/A	N/A
Streetlighting	0	23	N/A	N/A	N/A	N/A
Non-Profit	5	18	N/A	85% +/- 32%	N/A	85% +/- 32%
Remaining Government/Non-Profit	8	12	N/A	85% +/- 25%	N/A	85% +/- 25%
<b>PORTFOLIO</b>	N/A	N/A	N/A	N/A	N/A	N/A

**NOTES:** Realization rates for most programs are pending upon completion of data analysis of Q2 on-site visits.

### **1.4.2 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, ADM, the Companies' internal staff and contractors drafted, for each program, a process evaluation plan and a program logic model which will serve as a visual representation for the program processes.

The process evaluation effort includes the following initiatives:

- Review of the measures and program delivery mechanisms in the Companies' plan portfolios;
- Interviews with the Companies' internal staff and CSP staff;
- Drafting of process evaluation plans for all programs;
- Creation of logic models for each program; and,
- Identification of researchable issues for each program.

The process evaluation has also resulted in immediate feedback to the Companies' regarding the following items:

- Review of rebate forms to ensure that proper data fields are collected and documented;
- Review of various program tracking systems;
- Review of program evaluability, with specific suggestions to Penelec and each Company that will increase the evaluability of certain programs; and,
- Projections of energy savings achievements by May 31 2011 for key programs, and projections of potential energy savings under alternate scenarios that involve program modifications.

As of this writing, most programs in Penelec's portfolio are online and actively adding participants. ADM is prepared to begin interviews with program participants and non-participants to evaluate the process.

## 1.5 Summary of Finances

The Total Resource Cost Test (TRC) demonstrates the cost-effectiveness of a program by comparing the total economic benefits to the total costs. Consistent with prior guidance from PUC Staff, this Report will not include information related to TRC Benefit-to-Cost Ratios. A breakdown of the portfolio finances is presented in the following table:

**Table 1-10: Summary of Portfolio Finances: TRC Test<sup>15</sup>**

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$7,601,277	\$16,870,604	\$18,337,492
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$7,601,277</b>	<b>\$16,870,604</b>	<b>\$18,337,492</b>
B.1	Design & Development <sup>1</sup>	\$28,347	\$67,665	\$450,660
B.2	Administration <sup>2</sup>	\$2,362,375	\$5,466,832	\$6,672,400
B.3	Management <sup>3</sup>	\$224,815	\$830,103	\$1,095,986
B.4	Marketing <sup>4</sup>	\$156,681	\$476,401	\$479,463
B.5	Technical Assistance <sup>5</sup>	\$66,224	\$252,939	\$280,265
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$2,838,443</b>	<b>\$7,093,941</b>	<b>\$8,978,775</b>
C	<b>EDC Evaluation Costs</b>	\$133,175	\$480,974	\$583,459
D	<b>SWE Audit Costs</b>	\$0	\$215,071	\$342,218
E	<b>Participant Costs</b>	\$0	\$0	\$0
	<b>Total Costs</b>	<b>\$10,572,895</b>	<b>\$24,660,589</b>	<b>\$28,241,944</b>
F	<b>Annualized Avoided Supply Costs</b>	\$0	\$0	\$0
G	<b>Lifetime Avoided Supply Costs</b>	\$0	\$0	\$0
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Note				
S:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

<sup>15</sup> Definitions for terms in following table are subject to TRC Order. Various cost and benefit categories are subject to change pending the outcome of TRC Technical Working Group discussions.

## 2 Portfolio Results by Sector

Page 11 of the EE&C Implementation Order issued on January 15, 2009 provides requirements for specific sectors. In order to comply with these requirements, each program has been categorized into one of the following sectors:

1. Residential EE (excluding Low-Income)
2. Residential Low-Income EE
3. Small Commercial & Industrial EE
4. Large Commercial & Industrial EE
5. Government & Non-Profit EE

A summary of portfolio gross energy savings and gross demand reduction by sector is presented in the following figures:

Figure 2-1: PYTD Reported Gross Energy Savings by Sector

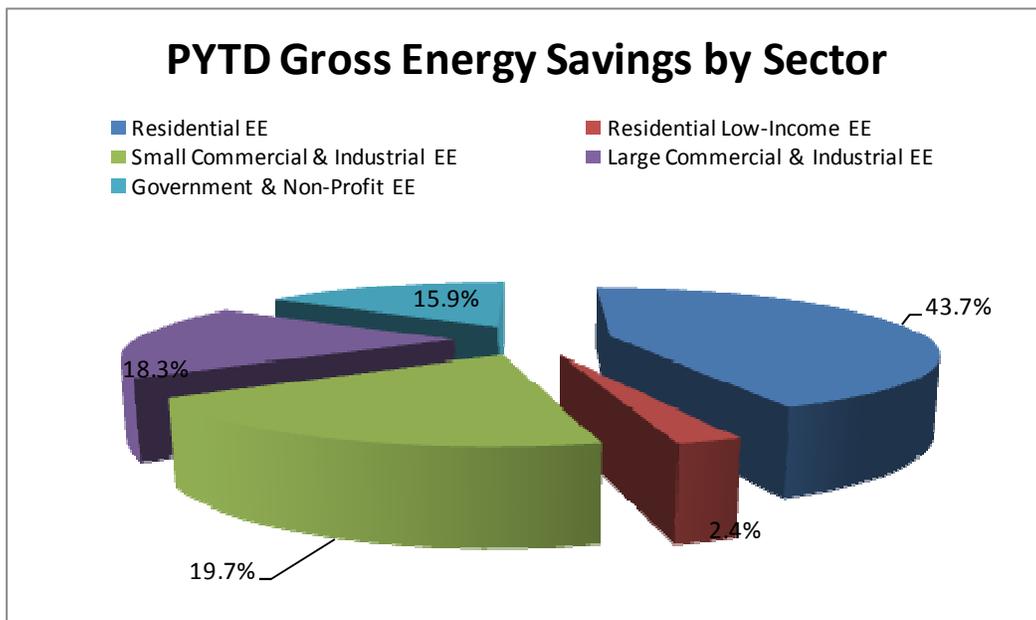


Figure 2-2: PYTD Reported Gross Demand Reduction by Sector

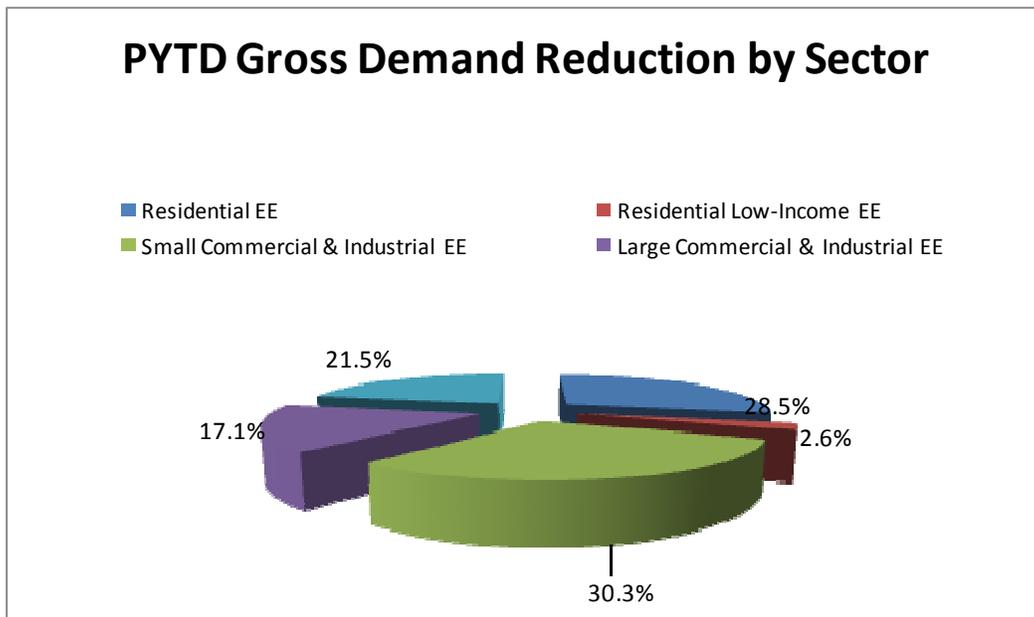


Table 2-1: Reported Gross Energy Savings by Sector through the End of the Reporting Period

Market Sector	Reported Gross Impact (MWh)			Projects in Progress	Total Committed	Unverified Ex Post Savings
	IQ	PYTD	CPITD			
Residential EE	36,341	81,794	87,256	6,069	87,863	0
Residential Low-Income EE	577	4,531	4,608	0	4,531	0
Small Commercial & Industrial EE	18,357	36,958	36,958	26,456	63,414	0
Large Commercial & Industrial EE	8,117	34,277	37,435	11,701	45,978	0
Government & Non-Profit EE	20,657	29,734	29,977	25,419	55,153	0
<b>TOTAL PORTFOLIO</b>	<b>84,050</b>	<b>187,295</b>	<b>196,234</b>	<b>69,645</b>	<b>256,940</b>	<b>0</b>

Notes:  
Unverified Ex Post Savings” are unverified savings pending approval of a TRM or Custom Measure Protocol by the Commission

Table 2-2: Reported Gross Demand Reduction by Sector through the End of the Reporting Period

Market Sector	Reported Gross Impact (MW)			Projects in Progress	Total Committed	Unverified Ex Post Savings
	IQ	PYTD	CPITD			
Residential EE	2.52	6.70	7.21	0.57	7.27	0.00
Residential Low-Income EE	0.12	0.62	0.63	0.00	0.62	0.00
Small Commercial & Industrial EE	3.73	7.13	7.13	3.74	10.87	0.00
Large Commercial & Industrial EE	0.92	4.03	4.66	2.50	6.53	0.00
Government & Non-Profit EE	3.95	5.07	5.12	3.38	8.46	0.00
<b>TOTAL PORTFOLIO</b>	<b>11.25</b>	<b>23.56</b>	<b>24.76</b>	<b>10.19</b>	<b>33.75</b>	<b>0.00</b>

Notes:  
Unverified Ex Post Savings” are unverified savings pending approval of a TRM or Custom Measure Protocol by the Commission

## 2.1 Residential EE Sector

The sector target for annual energy savings is 69,797 MWh and the sector target for annual peak demand reduction is 26.12 MW.

A sector summary of results by program is presented in the following tables:

**Table 2-3: Summary of Residential EE Sector Incremental Impacts by Program through the End of the Reporting Period**

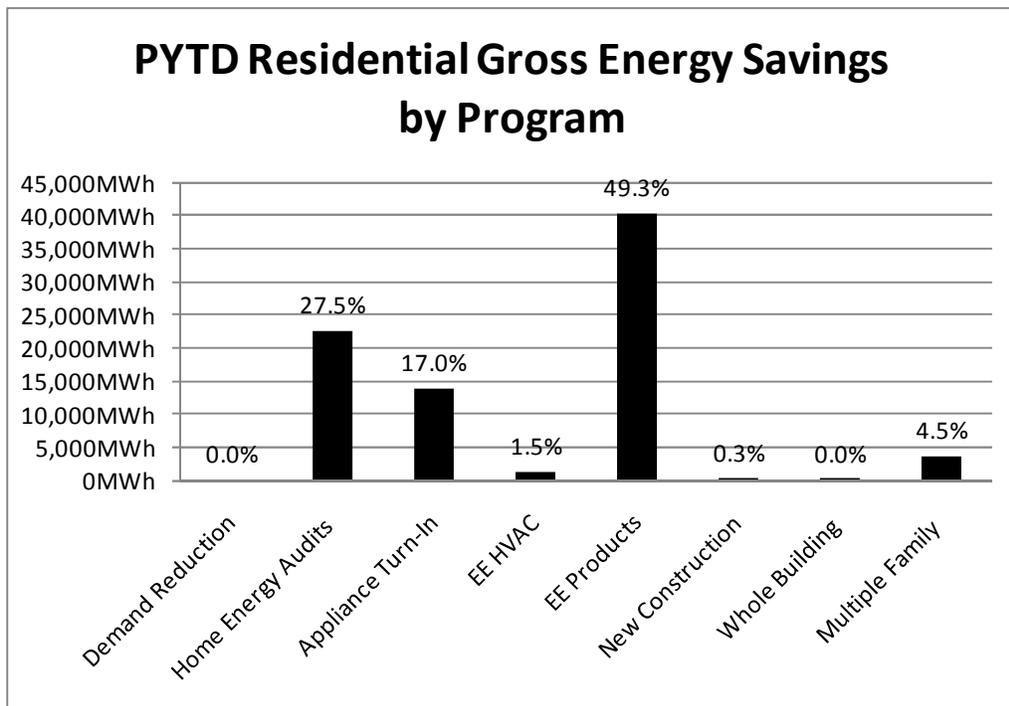
Residential EE Sector	IQ Participants	IQ Reported Gross Energy Savings (MWH)	IQ Reported Gross Demand Reduction (MW)
Demand Reduction	0	0	0.00
Home Energy Audits	23,333	11,731	0.46
Appliance Turn-In	2,415	4,326	0.74
EE HVAC	547	417	0.15
EE Products	156,734	18,587	1.01
New Construction	25	149	0.04
Whole Building	8	13	0.00
Multiple Family	2,934	1,118	0.13
<b>Sector Total</b>	<b>185,996</b>	<b>36,341</b>	<b>2.52</b>
<b>NOTES:</b>			
(a) Participation in the EE Products Program attributable to CFL Participation is 153,473 for IQ, 260,635 for PYTD, and 281,351 CPITD periods			

**Table 2-4: Summary of Residential EE Sector PYTD Impacts by Program through the End of the Reporting Period**

Residential EE Sector	PYTD Participants	PYTD Reported Gross Energy Savings (MWH)	PYTD Reported Gross Demand Reduction (MW)
Demand Reduction	0	0	0.00
Home Energy Audits	42,309	22,522	1.01
Appliance Turn-In	7,663	13,866	2.41
EE HVAC	1,816	1,210	0.52
EE Products	271,948	40,298	2.25
New Construction	36	217	0.05
Whole Building	8	14	0.00
Multiple Family	9,627	3,668	0.45
<b>Sector Total</b>	<b>333,407</b>	<b>81,794</b>	<b>6.70</b>
<b>NOTES:</b>			
(a) Participation in the EE Products Program attributable to CFL Participation is 153,473 for IQ, 260,635 for PYTD, and 281,351 CPITD periods			

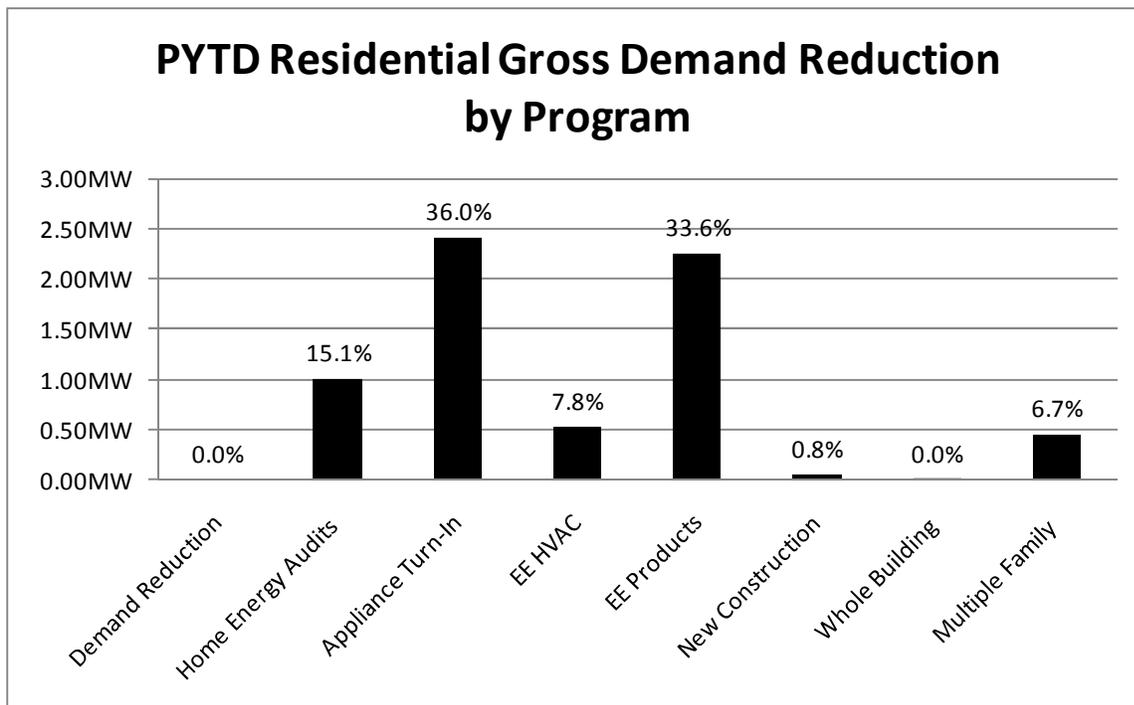
A summary of the sector energy savings by program is presented in the following figure:

Figure 2-3: Summary of Residential EE Sector PYTD Reported Gross Energy Savings by Program



A summary of the sector demand reduction by program is presented in the following figure:

Figure 2-4: Summary of Residential EE Sector PYTD Reported Demand Reduction by Program



## 2.2 Residential Low-Income EE Sector

The sector target for annual energy savings is 1,720 MWh and the sector target for annual peak demand reduction is 0.18 MW.

A sector summary of results by program is presented in the following tables:

**Table 2-5: Summary of Residential Low-Income EE Sector Incremental Impacts by Program through the End of the Reporting Period**

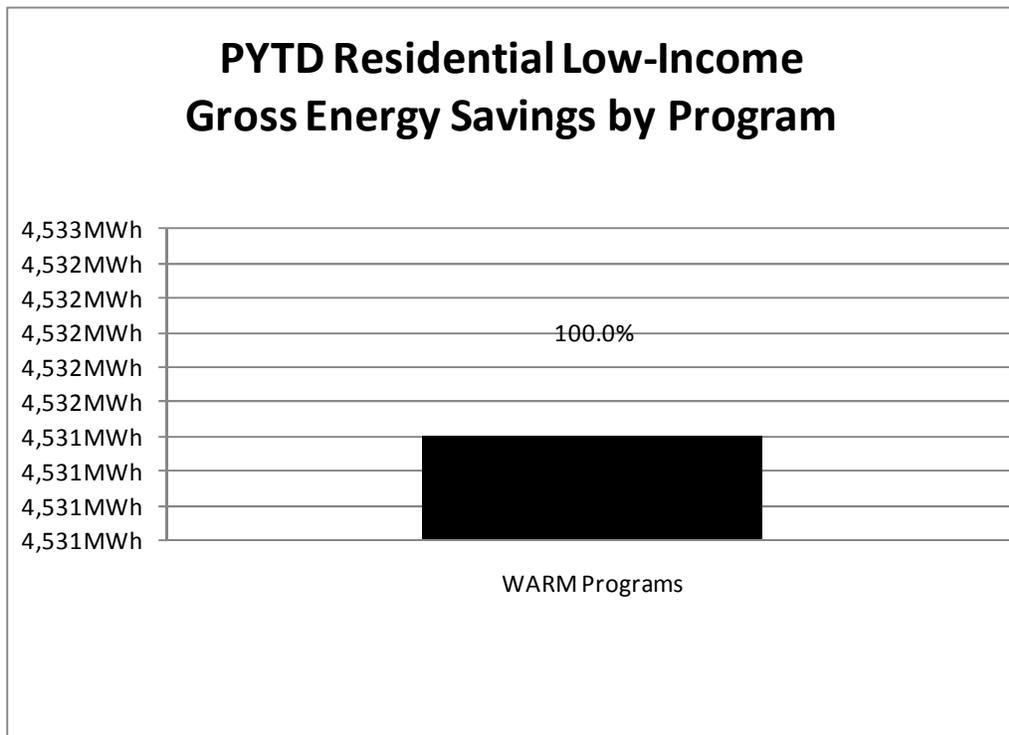
Residential Low-Income EE Sector	IQ Participants	IQ Reported Gross Energy Savings (MWH)	IQ Reported Gross Demand Reduction (MW)
WARM Programs	684	577	0.12
<b>Sector Total</b>	684	577	0.12
NOTES:			

**Table 2-6: Summary of Residential Low-Income EE Sector PYTD Impacts by Program through the End of the Reporting Period**

Residential Low-Income EE Sector	PYTD Participants	PYTD Reported Gross Energy Savings (MWH)	PYTD Reported Gross Demand Reduction (MW)
WARM Programs	15,190	4,531	0.62
<b>Sector Total</b>	15,190	4,531	0.62
NOTES:			

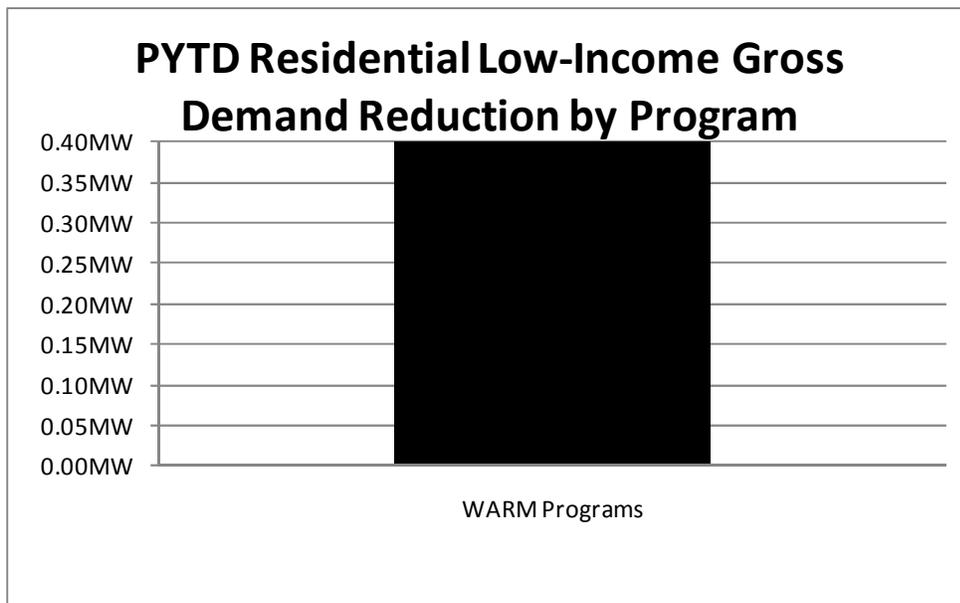
A summary of the sector energy savings by program is presented in the following figure:

Figure 2.5: Summary of Residential Low-Income EE Sector PYTD Reported Gross Energy Savings by Program



A summary of the sector demand reduction by program is presented in the following figure:

Figure 2.6: Summary of Residential Low-Income EE Sector PYTD Reported Demand Reduction by Program



### 2.3 Small Commercial & Industrial EE Sector

The sector target for annual energy savings is 40,194 MWh and the sector target for annual peak demand reduction is 12.89 MW.

A sector summary of results by program is presented in the following tables. As noted in Section 4.10, energy efficiency and peak demand reduction savings for the Small Commercial and Industrial Sector Energy Audit & Assessment, and Equipment Rebate Programs have been combined for purposes of this report.

**Table 2-7: Summary of Small Commercial/Industrial EE Sector Incremental Impacts by Program through the End of the Reporting Period**

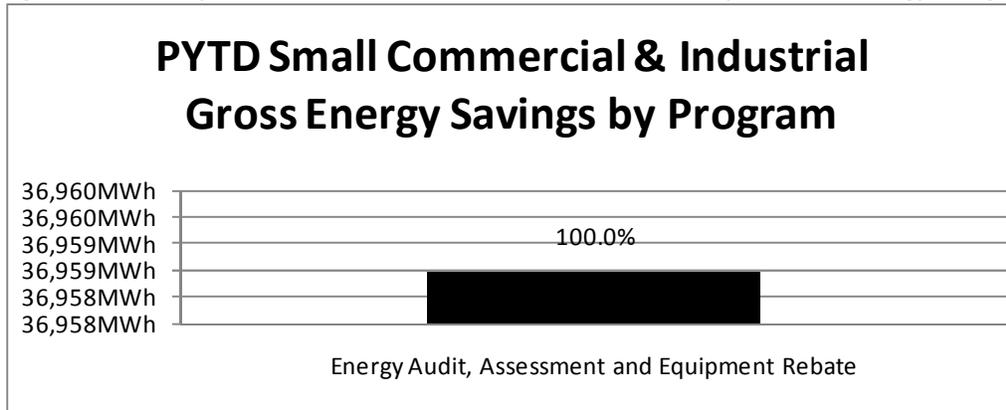
Small Commercial/Industrial EE Sector	IQ Participants	IQ Reported Gross Energy Savings (MWH)	IQ Reported Gross Demand Reduction (MW)
Energy Audit, Assessment and Equipment Rebate	326	18,357	3.73
<b>Sector Total</b>	326	18,357	3.73
<b>NOTES:</b>			

**Table 2-8: Summary of Small Commercial/Industrial EE Sector PYTD Impacts by Program through the End of the Reporting Period**

Small Commercial/Industrial EE Sector	PYTD Participants	PYTD Reported Gross Energy Savings (MWH)	PYTD Reported Gross Demand Reduction (MW)
Energy Audit, Assessment and Equipment Rebate	739	36,958	7.13
<b>Sector Total</b>	739	36,958	7.13
<b>NOTES:</b>			

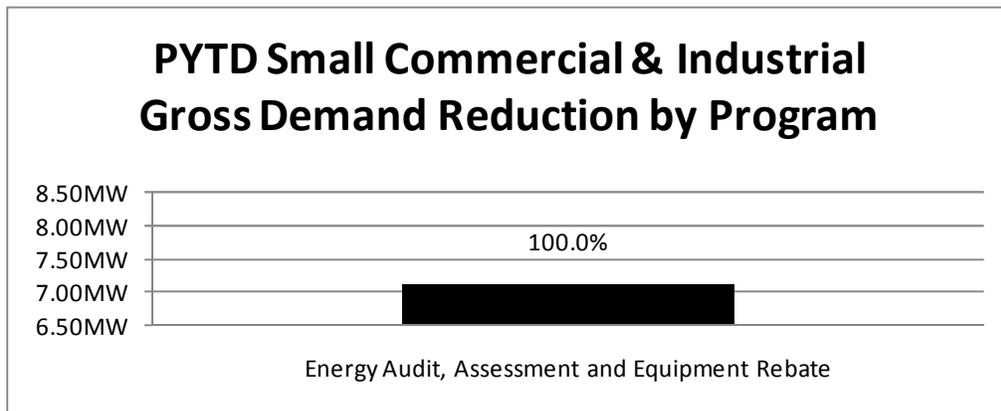
A summary of the sector energy savings by program is presented in the following figure:

Figure 2.7: Summary of Small Commercial & Industrial EE Sector PYTD Reported Gross Energy Savings by Program



A summary of the sector demand reduction by program is presented in the following figure:

Figure 2.8: Summary of Small Commercial & Industrial EE Sector PYTD Reported Demand Reduction by Program



## 2.4 Large Commercial & Industrial EE Sector

The sector target for annual energy savings is 12,189 MWh and the sector target for annual peak demand reduction is 3.03 MW.

A sector summary of results by program is presented in the following tables:

**Table 2-9: Summary of Large Commercial/Industrial EE Sector Incremental Impacts by Program through the End of the Reporting Period**

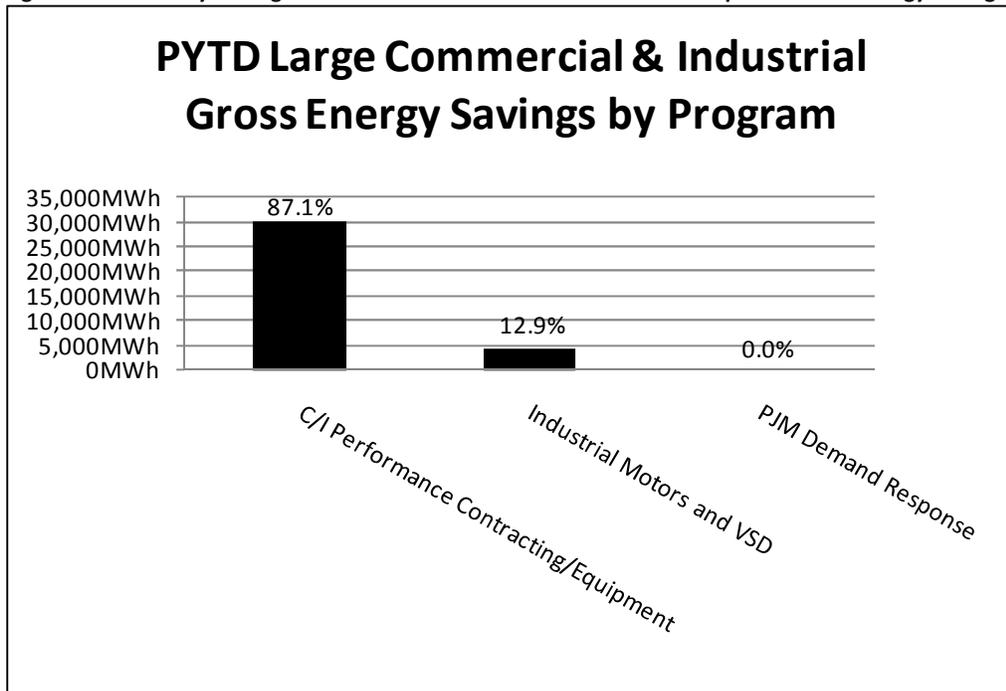
Large Commercial/Industrial EE Sector	IQ Participants	IQ Reported Gross Energy Savings (MWH)	IQ Reported Gross Demand Reduction (MW)
C/I Performance Contracting/Equipment	24	6,543	0.76
Industrial Motors and VSD	4	1,574	0.16
PJM Demand Response	0	0	0.00
<b>Sector Total</b>	<b>28</b>	<b>8,117</b>	<b>0.92</b>
<b>NOTES:</b>			

**Table 2-10: Summary of Large Commercial/Industrial EE Sector PYTD Impacts by Program through the End of the Reporting Period**

Large Commercial/Industrial EE Sector	PYTD Participants	PYTD Reported Gross Energy Savings (MWH)	PYTD Reported Gross Demand Reduction (MW)
C/I Performance Contracting/Equipment	60	29,856	3.73
Industrial Motors and VSD	5	4,422	0.30
PJM Demand Response	0	0	0.00
<b>Sector Total</b>	<b>65</b>	<b>34,277</b>	<b>4.03</b>
<b>NOTES:</b>			

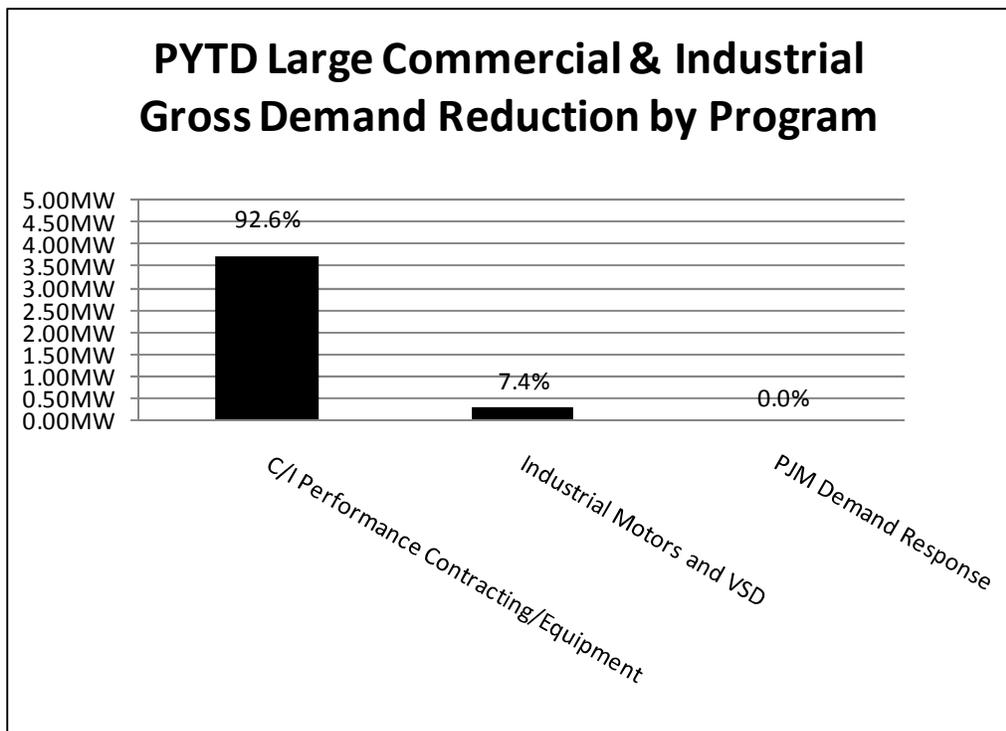
A summary of the sector energy savings by program is presented in the following figure:

Figure 2.9: Summary of Large Commercial & Industrial EE Sector PYTD Reported Gross Energy Savings by Program



A summary of the sector demand reduction by program is presented in the following figure:

Figure 2.10: Summary of Large Commercial & Industrial EE Sector PYTD Reported Demand Reduction by Program



## 2.5 Government & Non-Profit EE Sector

The sector target for annual energy savings is 19,709 MWh and the sector target for annual peak demand reduction is 4.32 MW.

A sector summary of results by program is presented in the following tables:

**Table 2-11: Summary of Governmental EE Sector Incremental Impacts by Program through the End of the Reporting Period**

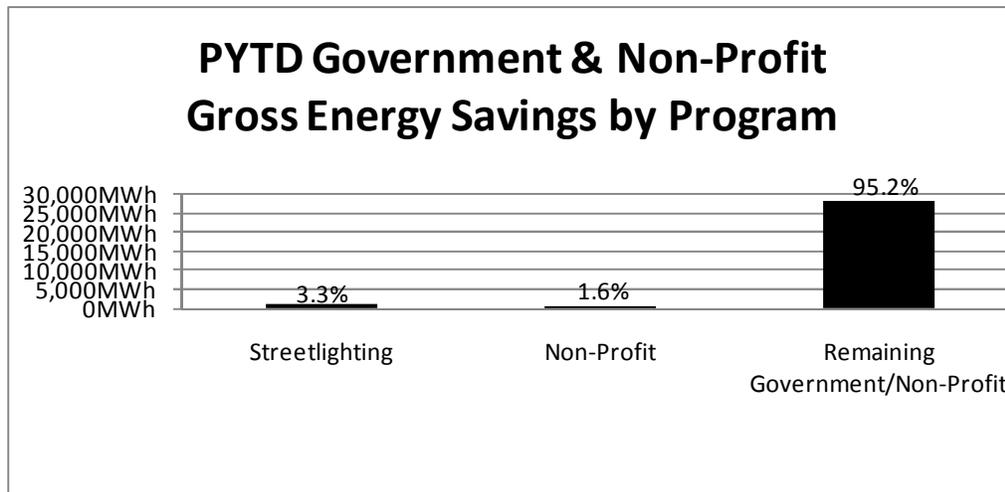
Governmental EE Sector	IQ Participants	IQ Reported Gross Energy Savings (MWH)	IQ Reported Gross Demand Reduction (MW)
Streetlighting	59	391	0.00
Non-Profit	20	363	0.08
Remaining Government/Non-Profit	126	19,903	3.87
<b>Sector Total</b>	<b>205</b>	<b>20,657</b>	<b>3.95</b>
<b>NOTES:</b>			

**Table 2-12: Summary of Governmental EE Sector PYTD Impacts by Program through the End of the Reporting Period**

Governmental EE Sector	PYTD Participants	PYTD Reported Gross Energy Savings (MWH)	PYTD Reported Gross Demand Reduction (MW)
Streetlighting	184	977	0.00
Non-Profit	36	463	0.11
Remaining Government/Non-Profit	307	28,294	4.96
<b>Sector Total</b>	<b>527</b>	<b>29,734</b>	<b>5.07</b>
<b>NOTES:</b>			

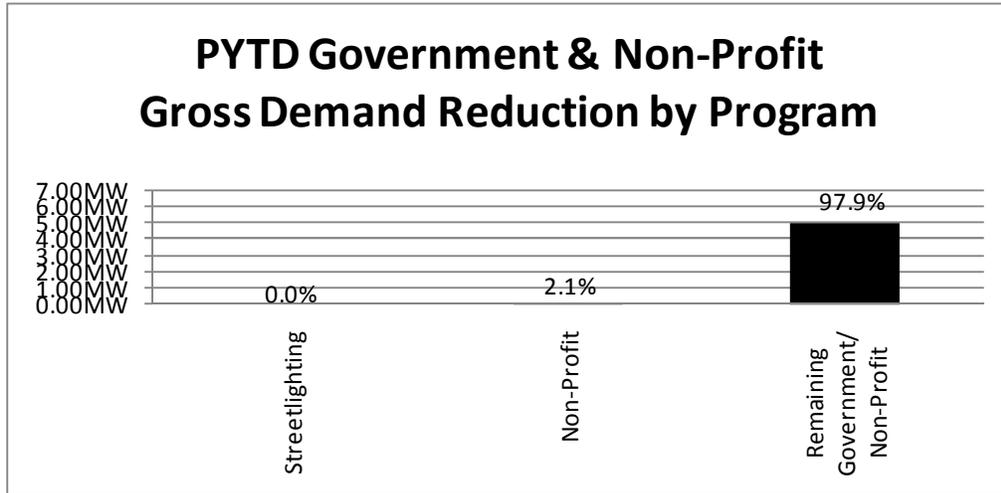
A summary of the sector energy savings by program is presented in the following figure:

**Figure 2.11: Summary of Government & Non-Profit EE Sector PYTD Reported Gross Energy Savings by Program**



A summary of the sector demand reduction by program is presented in the following figure:

**Figure 2.12: Summary of Government & Non-Profit EE Sector PYTD Reported Demand Reduction by Program**



### **3 Demand Response**

Demand response programs specifically target the reduction of peak demand through various demand-side management strategies. Penelec currently does not have any Demand Reduction savings to report in its 100 peak hours as interpreted by the PUC under Act 129<sup>16</sup>.

---

<sup>16</sup> The Commission's Implementation Order in Docket No. M-2008-2069887 sets forth that by May 31, 2013, peak demand is to be reduced by a minimum of four-and-a-half percent (4.5%) of the EDC's annual system peak demand in the 100 hours of highest demand, measured against the EDC's peak demand during the period of June 1, 2007 through May 31, 2008. The Commission defined the summer months of June through September 2012 as the appropriate time to reduce annual system peak demand in the 100 hours of highest demand.

## **4 Portfolio Results by Program**

### **4.1 Residential Demand Reduction Program**

This program will pay an incentive to participants who agree to have controls installed on their Central Air Conditioning (CAC) systems that enable Penelec to limit CAC operation during peak load periods. Once such devices are installed, the utility will have the ability to cycle air conditioning compressors or reset temperatures for the duration of the load control event. It is anticipated that this program will be activated over Penelec's top 100 load hours, typically from noon – 7 pm on selected weekdays.

#### **4.1.1 Program Logic**

Initially, the program will target customers located in major load areas with higher customer density to minimize risks associated with communications coverage. Customers will receive a one time cash payment of up to \$75 in the first year as an enrollment incentive. In each following year, customers will receive up to \$15 per summer month for participation (as will be determined in consultation with the CSP).

In order to gain more robust, longer term program participation, direct load control switches will be chosen that will have the capability to utilize multiple communication protocols to facilitate the eventual migration of this program and leverage the communication investment from an Advanced Metering Infrastructure (AMI) solution.

Opportunities for expansion will be examined as technology options improve over time. The Companies will bid its Residential Direct Load Control programs into the PJM Reliability Pricing Model (RPM). The revenues received by the Companies, if any, from bidding and clearing residential Direct Load Control programs into the applicable RPM auctions, will be netted against the program costs, including but not limited to: administration, contracted services, credits provided to customers, and PJM penalties for underperformance.

#### **4.1.2 Program M&V Methodology**

Penelec will verify that demand reduction targets are being achieved consistent with requirements defined in PJM Manual 19, Attachment B. Penelec has selected technology using two-way communications that supports robust measurement and verification, and is currently in the process of working with the selected CSP to develop an M&V methodology specific to that technology for review by PJM and the SWE.

#### **4.1.3 Program Sampling**

The sampling will be sufficient to determine this program's gross impact with 10% relative precision at the 90% confidence level<sup>17</sup>. Sampling methodology is currently under development.

#### **4.1.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the ADM, internal staff and contractors drafted a program logic model

---

<sup>17</sup> The confidence/precision requirements for this program exceed the 85/15 minimum requirement because this program is expected to comprise the majority of the demand reduction in the residential sector.

which will serve as a visual representation for the program processes. As the programs near launch, additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Once the program is launched, participant surveys, non-participant surveys, and drop-out surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. If the goals are appropriate, the process evaluation will identify specific best practices that may help the Companies reach the program goals.

#### **4.1.5 Program Partners and Trade Allies**

Penelec selected Honeywell for the management of the Direct Load Control program.

#### 4.1.6 Program Finances

A summary of the project finances are presented in the following table:

**Table 4-1: Summary of Program Finances:**

		<b>IQ</b>	<b>PYTD</b>	<b>CPITD</b>
A.1	EDC Incentives to Participants	\$1,606	\$1,606	\$1,606
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
<b>A</b>	<b>Subtotal EDC Incentive Costs</b>	<b>\$1,606</b>	<b>\$1,606</b>	<b>\$1,606</b>
B.1	Design & Development <sup>1</sup>	\$6,456	\$15,411	\$46,703
B.2	Administration <sup>2</sup>	\$1,393,970	\$1,478,970	\$1,478,970
B.3	Management <sup>3</sup>	\$44,323	\$151,866	\$171,851
B.4	Marketing <sup>4</sup>	\$17,085	\$38,358	\$38,519
B.5	Technical Assistance <sup>5</sup>	\$6,235	\$36,638	\$38,496
<b>B</b>	<b>Subtotal EDC Implementation Costs</b>	<b>\$1,468,069</b>	<b>\$1,721,243</b>	<b>\$1,774,539</b>
<b>C</b>	<b>EDC Evaluation Costs</b>	<b>\$11,190</b>	<b>\$31,842</b>	<b>\$35,023</b>
<b>D</b>	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$48,982</b>	<b>\$59,371</b>
<b>E</b>	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$1,480,866</b>	<b>\$1,803,673</b>	<b>\$1,870,539</b>
<b>F</b>	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G</b>	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes				
:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

## 4.2 Residential Home Energy Audit Program

Households will be able to identify energy saving opportunities through two levels of home energy audits: 1) a self-administered on-line audit that analyzes historic energy use, and calculates energy savings based on customer responses to a series of questions (customers without internet access can

complete the audit over the phone with a Company representative); and, 2) a walk-through on-site audit administered by a trained professional auditor. The purpose of the audits is to: 1) identify energy savings opportunities; 2) install basic low-cost measures; and 3) make customers aware of other programs offered by Penelec. Customers who complete the on-line audit are eligible to receive an energy conservation kit. Customers who participate in the walk-through on-site audit will benefit from direct-installed low-cost energy savings measures selected by the trained auditor based on the needs of the home.

#### **4.2.1 Program Logic**

This program involves consumer education through generic energy savings recommendations combined with information customized to a specific dwelling based on either self-reported information or input by a trained auditor. This program serves as a portal to other programs by informing customers about additional energy-saving solutions.

Estimates of low-income participation by county and census are included in Penelec's annual report to the PUC.

There is no additional charge to complete the on-line audit. Customers are eligible to receive an energy conservation kit valued at up to \$104 once the audit is complete and uploaded.

Customers pay a fee of \$50 for the on-site audit and will receive customized energy efficiency recommendations and direct installed energy savings measures of an equal value.

#### **4.2.2 Program M&V Methodology**

This program has two components: online audits and walk-through audits. While the online audits component began in Q4 PY01, the walk-through component of the program began implementation in the Q1 PY02. The evaluation process used a combination of on-site visits and an online survey data collection system. The findings are being used to fine-tune the measures for this program as well as other residential programs that use the same measures.

#### **Gross Impact Analysis for the Energy Conservation Kit Contents**

Customers will receive one of two separate energy conservation kits based on their hot water fuel source. The kit provided to customers with electric water heating consists of CFLs, LED night lights, aerators and aerator adapters, a furnace whistle, "smart" power strips, and a low flow showerhead. The kit provided to customers with non-electric water heating consists of CFLs, specialty dimmable CFLs, LED night lights, a furnace whistle, and "smart" power strips.

In evaluating the gross impact analysis for the energy conservation kits, two items must be determined:

1. The average energy savings and demand reduction for the kit elements that are installed; and,
2. The installation rate for the various kit elements.

The first item has been determined through participation in technical working groups held by the PA Statewide Evaluator. The expected energy savings and demand reduction for each kit element has been established through a combination of engineering calculations and literature review. The partially deemed savings protocols for the kit contents are expected to be incorporated into the PA TRM.

The second item, installation rates, are determined through a combination of on-site visits and online surveys, except for CFLs which are given a "deemed" installation rate of 0.84. For a particular site in a sample, the installation rate for each kit element takes on a binary value of 1, if the element is installed

in accordance to the principles that define that element as an energy efficiency measure, and 0 otherwise. In particular, faucet aerators are only counted as “installed” if they are installed in a home that has electric water heating. Smart power strips are counted as “installed” if: (1) there are appliances plugged into the “controlled” sockets that are turned on and off by the smart strip; and (2) an appliance that is not uniformly on is installed in the “master” socket.

The energy conservation kits are mailed to the Pennsylvania address on record for those ratepayers who complete the on-line energy audit questionnaire. Shipment tracking logs are used to verify the quantity of the kits mailed and “returns” due to wrong address that are sent back to the warehouse are not counted. Duplicate shipments to the same account number are also not counted. The online survey instrument that was used to verify that the shipped energy conservation kits were actually installed asks a series of questions that determine how many of each item was installed and where each item was installed. The accuracy of the online survey instrument was verified through on-site data collection activities of a separate sample of the online kit recipients.

#### **Gross Impact Analysis for the Walk-Through Audits**

The items that are installed during the walk-through visits include a variable quantity of conservation kit items, and other low-cost measures to be determined or judged as appropriate by the auditor. Most of the energy efficiency measures distributed in the walk-through audits have energy savings protocols that are in the PA TRM. The energy savings are determined by counting the number of each item installed by each contractor. These counts are checked for those measures which only have savings in homes with electric water heating. During the remaining implementation period, the savings will be further verified through a telephone survey effort focusing on the installation rates. A sub-sample of the survey respondents will be selected for on-site data verification activities.

#### **4.2.3 Program Sampling**

The two program components - online and walk-through audits - are treated as separate programs, each with distinct populations, samples, and realization rates.

##### *Online Audits*

There are expected to be approximately 30,000 conservation kits sent to participants of the online audits in the second program year. The sampling approach for the online audit program component is batch-wise simple random sampling on a quarterly basis. Three tiers of sampling involved.

1. A census of the energy and demand savings calculations in the program tracking data are reviewed to ensure that the energy savings and demand reductions are claimed according to the protocols in the PA TRM.
2. The sample size for online and telephone surveys will be sufficient to determine gross impact with  $\pm 5\%$  relative precision at the 90% confidence level. The estimated required sample size is 70 participants per quarter.
3. An additional 20 sites (corresponds to approximately 90/15 confidence/precision) will be randomly selected for on-site verification.

##### *Walk-Through Audits*

There are expected to be fewer than 100 walk-through audits in the second program year. The sampling approach for the walk-through audit program component is batch-wise simple random sampling on a quarterly basis. Three tiers of sampling involved.

1. A census of the energy and demand savings calculations in the program tracking data are reviewed to ensure that the energy savings and demand reductions are claimed according to the protocols in the PA TRM.
2. The sample size for online and telephone surveys will be sufficient to determine gross impact with  $\pm 10\%$  relative precision at the 90% confidence level. The estimated required sample size is 40 participants per year.
3. An additional 5 sites (corresponds to approximately 90/15 confidence/precision) will be randomly selected for on-site verification.

The sample size for on-site visits is small because (a) this program component accounts for a small fraction of overall program savings and (b) as a direct install program, the correspondence between verified and claimed savings is expected to be very good, making for a small error ratio.

#### **4.2.4 Process Evaluation**

ADM will conduct interviews with the Companies' internal program managers and implementation staff across the multi-year evaluation period. The first set of interviews was completed prior to developing the process evaluation plan. ADM will continue to discuss issues with the program staff throughout the evaluation process.

In addition to program staff interviews, surveys of participants and non-participants will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. The first round of surveys has been administered online, and the results presently are being analyzed.

A second aspect of the process evaluation is to determine the relationship between the walk-through and online audit programs and the other energy efficiency programs offered by the Companies. The audits are intended to provide customers with "a customized comprehensive understanding of the opportunities available for saving energy." In theory, this understanding may induce customers to partake in appropriate energy efficiency programs offered by the Companies. Quantitatively, one can track the number of audit participants that also participated in other programs. Qualitatively, the evaluation effort will attempt to capture whether the appropriate energy savings opportunities are identified and described to the customers. For the walk-through audits, ADM will request the data recorded on-site and the recommendations made by the walk-through auditors. Additionally, ADM will accompany auditors for a small sample of walk-through audits.

#### **4.2.5 Program Partners and Trade Allies**

##### *Home Energy Analyzer:*

The Aclara Software Company owns the tool customers use to complete the Home Energy Audit. Households can identify energy saving opportunities though an audit completed on-line at [www.firstenergycorp.com](http://www.firstenergycorp.com) or over the phone with customer service (for customers without access to a computer). This provides customers with information on how their energy bill is impacted by each of the appliances in the home. After an online audit is completed, an Energy Conservation Kit consistent with the home's water heating source is sent to the customer.

##### *Walk Through Home Energy Audit:*

For a fee of \$50, residential customers can receive an in-home energy audit with specific energy efficiency recommendations as well as receiving \$50 worth of installed low-cost electric reduction measures (high efficiency lighting and electric water heating saving measures, etc.). Honeywell Utility Solutions is Penelec's CSP who will conduct Walk Through Home Energy Audits and complete the

installation of energy saving measures. Honeywell may recruit and develop qualified contractors if the participation rate warrants additional auditors.

#### 4.2.6 Program Finances

A summary of the project finances are presented in the following table:

**Table 4-2: Summary of Program Finances:**

		<b>IQ</b>	<b>PYTD</b>	<b>CPITD</b>
A.1	EDC Incentives to Participants	\$1,196,421	\$2,839,649	\$3,902,708
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
<b>A</b>	<b>Subtotal EDC Incentive Costs</b>	<b>\$1,196,421</b>	<b>\$2,839,649</b>	<b>\$3,902,708</b>
B.1	Design & Development <sup>1</sup>	\$2,221	\$5,302	\$54,633
B.2	Administration <sup>2</sup>	\$10,094	-\$93,278	\$89,438
B.3	Management <sup>3</sup>	\$15,131	\$52,647	\$98,008
B.4	Marketing <sup>4</sup>	\$6,040	\$78,623	\$78,877
B.5	Technical Assistance <sup>5</sup>	\$39,195	\$91,662	\$94,591
<b>B</b>	<b>Subtotal EDC Implementation Costs</b>	<b>\$72,680</b>	<b>\$134,955</b>	<b>\$415,547</b>
<b>C</b>	<b>EDC Evaluation Costs</b>	<b>\$10,030</b>	<b>\$54,022</b>	<b>\$60,135</b>
<b>D</b>	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$16,851</b>	<b>\$33,228</b>
<b>E</b>	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$1,279,130</b>	<b>\$3,045,477</b>	<b>\$4,411,617</b>
<b>F</b>	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G</b>	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

### 4.3 Residential Appliance Turn-In Program

Residential customers are eligible for a cash incentive and disposal of up to two large older inefficient appliances (refrigerators or freezers); and two room air conditioners (RAC) per household per calendar year. All units must be working and meet established size requirements.

#### **4.3.1 Program Logic**

JACO is the program CSP hired by the Companies to deliver this program. JACO is also the CSP chosen across PA utilities to run this program. JACO's selection provides Penelec's residential customers a collaborative approach to appliance collections.

JACO tests and confirms an appliance's eligibility for collection at the customer's residence prior to removing the appliance and issuing the incentive. Pre-testing of appliances may result in lower participation as a result of refusing non-working appliances, but will provide better quality control.

Marketing to residential customers is conducted through various media and marketing channels to facilitate a targeted roll-out of the program and efficient collection in targeted areas. The marketing campaign includes a mix of digital media, direct mail, radio, web banners, television and newspaper advertising. In addition Penelec uses monthly bill inserts to market this program to encourage residential customers to recycle targeted appliances.

Participation by low-income customers will be tracked or estimated to support assessment of equitable treatment of low-income customers. Direct participation by low-income customers will be included in Penelec's annual report to the PUC.

#### **4.3.2 Program M&V Methodology**

The M&V values for this program are based on the energy savings resulting from a customer taking a refrigerator, freezer or RAC out of service. The savings from refrigerator recycling are stipulated in the TRM. The savings from RAC recycling are stipulated in an interim TRM protocol. While RAC energy savings are dependent on location and are mapped using the participant's zip code, RAC demand savings are not location dependent.

Verifying the savings from this program requires telephone verification, with the final sample encompassing a range of participants entering the program at various times throughout the year.

#### **4.3.3 Program Sampling**

The sampling approach for this program is a simple random batch-wise sampling on a quarterly basis. Sample sizes will target 90% confidence level and 10% precision. The first sample of 70 participants was drawn from all appliances recycled through May 31, 2010.

#### **4.3.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team has drafted a program logic model which will serve as a visual representation for the program processes. Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys, non-participant surveys, and drop-out surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a document review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

### 4.3.5 Program Partners and Trade Allies

JACO is the CSP for Penelec's PA EDC Appliance Turn-In Program supporting residential customers. Subcontractors supporting the CSP are Appliance Distribution, Inc., Runyon Saltzman & Einhorn and ITSoft, Inc.

### 4.3.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-3: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$148,185	\$401,260	\$424,210
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
<b>A</b>	<b>Subtotal EDC Incentive Costs</b>	<b>\$148,185</b>	<b>\$401,260</b>	<b>\$424,210</b>
B.1	Design & Development <sup>1</sup>	\$1,834	\$4,378	\$43,183
B.2	Administration <sup>2</sup>	\$257,682	\$939,414	\$1,009,235
B.3	Management <sup>3</sup>	\$12,495	\$42,983	\$68,172
B.4	Marketing <sup>4</sup>	\$4,854	\$10,897	\$12,090
B.5	Technical Assistance <sup>5</sup>	\$1,771	\$10,408	\$12,712
<b>B</b>	<b>Subtotal EDC Implementation Costs</b>	<b>\$278,636</b>	<b>\$1,008,080</b>	<b>\$1,145,392</b>
<b>C</b>	<b>EDC Evaluation Costs</b>	<b>\$7,870</b>	<b>\$34,628</b>	<b>\$40,883</b>
<b>D</b>	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$13,915</b>	<b>\$26,797</b>
<b>E</b>	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$434,691</b>	<b>\$1,457,883</b>	<b>\$1,637,282</b>
<b>F</b>	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G</b>	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

## **4.4 Residential Energy Efficiency HVAC Program**

This program provides incentives supporting implementation of contractor-installed HVAC or other eligible systems in existing or new residential buildings. The program involves promoting the sale of high-efficiency, ENERGY STAR® compliant equipment through installation contractors selling to residential customers who are replacing existing home HVAC equipment. The program provides incentives to customers who replace existing or standard HVAC equipment in residential applications with qualifying energy efficient heating and cooling systems.

The program also provides incentives for maintenance (tune-ups) of existing central air conditioners or heat pump equipment and offers an additional incentive toward replacement of furnace fans meeting ENERGY STAR® efficiency guidelines.

### **4.4.1 Program Logic**

Program services will be delivered to customers by qualified local contractors identified by an implementation vendor or manufacturer of such equipment. Contractors will certify the proper sizing and installation of high efficiency equipment.

Qualifying equipment must meet or exceed ENERGY STAR® standards. Qualified HVAC equipment will include:

- High-efficiency central air conditioning units (CAC)
- High-efficiency air source heat pumps (ASHP)
- High-efficiency ground source heat pumps (GSHP)
- Central air conditioning maintenance and furnace fan motor replacement meeting Energy Star guidelines.

Customers will receive rebates for the high efficiency HVAC equipment that is installed or serviced by a participating, qualified contractor.

### **4.4.2 Program M&V Methodology**

#### **Gross Impact Analysis**

The evaluation effort will be conducted using separate methodologies for rebated HVAC equipment such as heat pumps, CACs and solar water heaters, and for HVAC maintenance. Details of the methodologies are described in the subsections below. A calculation review is part of all methodologies ensuring that the energy savings and demand reductions for each measure are calculated according to the appropriate protocols in the PA TRM.

#### **Gross Impact for CACs and Heat Pumps**

Savings associated with these HVAC equipment types are estimated using a partially deemed approach, with the kWh reduction determined using deemed hours of operation of the equipment for each EDCs service territory and nameplate information from the equipment regarding unit capacities and efficiencies.

For small split HVAC systems, the baseline efficiencies are stipulated in the PA TRM and are in accordance with Federal codes and standards. For any ground source heat pump, the Federal code for air source heat pumps is used as the baseline.

The 'nameplate' data (e.g. capacity, SEER, EER, COP, HSPF) that provides the basis for deemed savings calculation will be verified through a combination of on-site visits and customer interviews. For units in the sample, enough information will be gathered to cross-check the Air Conditioning, Heating, and Refrigeration Institute (AHRI) certificate.

The expected energy savings and demand reduction attributable to solar water heaters have been developed through technical working groups hosted by the PA Statewide Evaluator. The resulting gross impact evaluation protocol will be incorporated into the PA TRM.

#### **Gross Impact for AC Tune Ups**

The verification for AC tune-ups includes two components. First, it must be verified that a tune-up actually occurred as claimed in the DSM tracking system. Secondly, it must be verified that the tune-ups are performed according to a consistent and appropriate protocol to ensure that the assumed 10% efficiency improvement stipulated in the TRM is realized. To this end, evaluation team staff will coordinate concurrent visits with randomly chosen trade allies that conduct AC tune ups.

#### **4.4.3 Program Sampling**

The sampling will be sufficient to determine this program's gross impact with  $\pm 15\%$  relative precision at the 85% confidence level.

The sampling approach for this program is batch-wise stratified random sampling on a quarterly basis. Due to the relatively small number of anticipated ground source heat pumps, it is expected that two strata – heat pumps and CACs - will suffice. The measures within each stratum can include tune-ups or unit replacements.

Solar water heaters comprise about 1% of the expected energy savings for the program, but the expected energy impact from a solar water heater is comparable to the energy impact expected from a 5-ton heat pump. Therefore, the solar water heaters will be included in the stratum that corresponds to rebates and tune-ups of heat pumps, with the additional goal that, although the program-level energy savings are to be determined with 85/15 confidence/precision, enough solar water heaters will be sampled such that 90/30 confidence/precision will be achieved separately for the impact evaluation of the solar water heater program component.

#### **4.4.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a program logic model which will serve as a visual representation for the program processes. Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys, non-participant surveys, and drop-out surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### 4.4.5 Program Partners and Trade Allies

Residential customers may complete an incentive form for contractor-installed qualified high-efficiency heating, ventilation, and air-conditioning equipment and for solar hot water systems in existing or new residential buildings. HVAC Tune-up incentives are also available for customers through a network of participating trade allies. Honeywell is Penelec's program CSP who will recruit and develop trade allies, provide program marketing support, process customer rebate applications, validate applications meet all program requirements, and approve or deny rebate payment.

#### 4.4.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-4: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$95,744	\$302,800	\$307,495
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$95,744</b>	<b>\$302,800</b>	<b>\$307,495</b>
B.1	Design & Development <sup>1</sup>	\$778	\$1,857	\$11,444
B.2	Administration <sup>2</sup>	\$51,689	\$278,975	\$410,344
B.3	Management <sup>3</sup>	\$21,644	\$44,699	\$50,822
B.4	Marketing <sup>4</sup>	\$7,797	\$75,640	\$75,689
B.5	Technical Assistance <sup>5</sup>	\$751	\$4,414	\$4,983
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$82,658</b>	<b>\$405,585</b>	<b>\$553,282</b>
C	<b>EDC Evaluation Costs</b>	\$4,738	\$12,155	\$20,787
D	<b>SWE Audit Costs</b>	\$0	\$5,901	\$9,084
E	<b>Participant Costs</b>	\$0	\$0	\$0
	<b>Total Costs</b>	<b>\$183,141</b>	<b>\$726,441</b>	<b>\$890,648</b>
F	<b>Annualized Avoided Supply Costs</b>	\$0	\$0	\$0
G	<b>Lifetime Avoided Supply Costs</b>	\$0	\$0	\$0
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes				
:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

## **4.5 Residential Energy Efficient Products Program**

The Energy Efficient Products Program provides financial incentives to customers and support to retailers that sell energy efficient products such as ENERGY STAR® qualified appliances or compact fluorescent light bulbs. The program includes promotional support, point-of-sale materials, training, promotional events and “up-stream product buy-down” rebates to retailers, distributors or manufacturers for select appliances. The program also includes existing catalog sales channel, and support for community-based initiatives, or other distribution channels that can reliably document effective distribution of energy efficient products.

### **4.5.1 Program Logic**

The program will encourage community-based initiatives that support documented distribution of energy efficient products and energy saving results. Such community-based initiatives include outreach through in-school training, college students, faith-based organizations, and municipal initiatives. The CSP will develop educational materials on the proper use and selection of high efficiency light bulbs, along with product discounts, coupons and price buy-downs to incentivize customers to purchase CFLs, LEDs and other qualifying EE products.

Estimates of low-income participation by county and census will be included in Penelec’s annual report to the PUC.

For the program, the minimum qualifying efficiency ratings are based on current ENERGY STAR® qualified appliances published by the US EPA. Customer incentives can be in many forms and all are paid by the utility. Incentives can range from \$1 to the full purchase price of a light bulb. One incentive will be a mark-down or buy-down program which is a shelf tag, display sticker or end cap sign recognizing the incentive coming through the utility’s program. The discount is paid by the utility to the CFL manufacturer based off point-of-sale purchase data. A second incentive may include coupons through print media, bill inserts, or directly at the point of sale such as shelf coupon pads redeemable at the register. These incentives would be paid by the utility and redeemable at participating retailers. A third method may include rebate forms that are mailed to a clearing house with rebate checks sent directly to customers. A fourth method may include discounts prepaid at the utility’s on-line store which allows customers to shop using the internet.

Dealer incentives and special promotional “events” will be used to encourage sales of high efficiency products, and/or retirement of less efficient equipment (e.g. Torchiere lamps) through “buy down” first cost and/or promotion of eligible equipment to customers. Customer rebates will be available for selected appliances. Exchange program events for lighting and room air conditioners may also be employed at periodic events.

The message delivered to customers can be accomplished by using a variety of mass marketing tools including utility bill inserts, local newspaper circulars, direct mail, point-of-sale displays at retailers and the utility web site and on-line store. Retailers and manufacturers will also be involved cross-promoting product offers in conjunction with national campaigns like Earth Day and Change a Light, Change the World programs.

### **4.5.2 Program M&V Methodology** **Gross Impact Analysis**

The evaluation effort is conducted using separate methodologies for CFLs and for other appliances, with the details of the methodologies described in the subsections below.

#### **Gross Impact for CFLs**

Savings associated with the CFL component are estimated using a deemed approach, with the energy savings and demand reductions taken as deemed in accordance with the TRM. The impact evaluation for the CFL program component will include the following components:

- Review of shipment invoices, including types and quantities of CFLs distributed to participating retailers.
- Review of CSP energy savings and demand reduction calculations.
  - A review of the assumptions regarding the wattages of the baseline incandescent bulbs presumed to be supplanted by CFLs is particularly important

#### **Gross Impact for Appliances**

Gross kWh savings for appliances sold through the Residential Energy Efficient Products program are estimated using a deemed approach for measures included in the statewide TRM.

The impact evaluation for the appliance program component will include the following components:

- Verification of proper installation through on-site visits; and
- Review of CSP energy savings and demand reduction calculations
  - Calculations are reviewed to ensure that they are done according to the PA TRM or PA Interim TRM.

A realization rate for the appliance program component is calculated based on the results of the field verification and calculation review.

#### **4.5.3 Program Sampling**

The M&V of the upstream CFL program component does not require field work or customer surveys. A census of the calculations on electronic invoices is reviewed to ensure that the energy savings and demand reductions are claimed according to the protocols in the PA TRM.

The sampling approach for the appliance rebate program component is batch-wise simple random sampling on a quarterly basis. A census of the energy and demand savings calculations in the program tracking data are reviewed to ensure that the energy savings and demand reductions are claimed according to the protocols in the PA TRM.

The sample size for review of invoices and supporting documentation will be sufficient to determine gross impact with  $\pm 10\%$  relative precision at the 90% confidence level. The sample size for on-site physical verifications will be sufficient to determine gross impact with  $\pm 30\%$  relative precision at the 90% confidence level. Although the program realization rate reported herein is for the combined Efficient Products program, the realization rate for each program component is reported separately to Penelec.

#### **4.5.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a program logic model which will serve as a visual representation for the program processes. Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately.

#### **4.5.5 Program Partners and Trade Allies**

Residential customers may complete an application form for rebate incentives for purchases of qualified ENERGY STAR® labeled appliances and other energy efficient household products. Honeywell is Penelec's program CSP who will provide marketing support and training to retailers throughout PA service territory, will process customers' rebate applications, validate that applications meet all program requirements, and approve or deny rebate payment.

#### 4.5.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-5: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$587,056	\$1,472,958	\$1,567,749
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$587,056</b>	<b>\$1,472,958</b>	<b>\$1,567,749</b>
B.1	Design & Development <sup>1</sup>	\$2,951	\$7,045	\$39,728
B.2	Administration <sup>2</sup>	\$211,052	\$1,114,623	\$1,331,594
B.3	Management <sup>3</sup>	\$20,105	\$69,265	\$90,139
B.4	Marketing <sup>4</sup>	\$107,906	\$183,367	\$183,535
B.5	Technical Assistance <sup>5</sup>	\$2,850	\$16,748	\$18,689
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$344,864</b>	<b>\$1,391,048</b>	<b>\$1,663,684</b>
C	<b>EDC Evaluation Costs</b>	\$9,422	\$39,375	\$49,193
D	<b>SWE Audit Costs</b>	\$0	\$22,391	\$33,241
E	<b>Participant Costs</b>	\$0	\$0	\$0
	<b>Total Costs</b>	<b>\$941,341</b>	<b>\$2,925,772</b>	<b>\$3,313,866</b>
F	<b>Annualized Avoided Supply Costs</b>	\$0	\$0	\$0
G	<b>Lifetime Avoided Supply Costs</b>	\$0	\$0	\$0
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.6 Residential New Construction Program

This program provides incentives to builders for achieving ENERGY STAR® Homes status, or the Home Energy Rating System Program (HERS) associated with a highly energy efficient home. The program supports implementation of contractor-installed HVAC, solar, or other eligible systems in existing or new residential buildings, as well as measures addressing building shell, appliances and other energy consuming features. This program involves promoting the sale of high-efficiency, ENERGY STAR®

compliant equipment through local builders. Participants can receive a rebate based on calculation of the energy savings related to the home's construction over standard practice.

#### **4.6.1 Program Logic**

This program supports the construction of homes exceeding code requirements, and implementation of contractor-installed HVAC, solar, or other eligible systems, as well as high or energy efficient appliances in new or rehab homes.

To qualify for this program, the home must exceed the PA Energy Code (International Energy Conservation Code IECC 2006) requirements by at least 15% and 30%. Program services will be delivered to customers by qualified local builders and contractors who demonstrate (through HERS, REM/Rate or other rating tool recognized in the TRM) that the house meets minimum performance energy savings criteria consistent with that of a highly energy efficient home. Participating contractors or builders receive rebates for achieving high efficiency standards.

Equipment offered to existing residential customers under the other programs are eligible for installation in new homes under this program. The rebate is determined by a formula, based on savings, estimated at 70% of incremental costs.

#### **4.6.2 Program M&V Methodology**

The gross impact analysis for the program has four components:

1. Verify that a sample of "prototype" (unoccupied model) homes are being constructed according to the plans by conducting follow-up HERS Ratings including duct blaster and blower door tests;
2. Determine the energy savings and demand reduction for each of the builders' plan types using an engineering analysis; and
3. Verify the construction and orientation of a sample of the homes using "drive-by" visits and telephone surveys; and
4. Follow-up review of documentation for any failures that are identified.

The performance of each prototype home will be determined by obtaining the original electronic data file from the builder's simulation software and updating it to match the as-built conditions observed during the on-site data collection and monitoring visit. To account for natural variation in building orientation and to verify major equipment efficiencies of the homes, a simple random sample from the tracking system data will be taken. On-site verification of this sample will determine if the home is constructed or not, and if it is occupied or not, the home's actual cardinal orientation and to verify heating fuel type and outside unit air conditioner/heat pump efficiency. The overall realization rate will be determined by summing up the appropriate quantity of each plan type, for the frequency of orientations found in the on-site site visit. Follow-up telephone interviews may be required in some cases to verify equipment efficiency if not accessible during the on-site visit.

The energy savings and demand reductions for any energy efficiency components not incorporated into the comprehensive building simulation model and any measures installed through the other residential rebate programs will be determined based upon the methods outlined in those programs.

#### **4.6.3 Program Sampling**

The sampling approach for this program is batch-wise stratified random sampling on a quarterly basis. The sample size will be sufficient to determine this program's gross impact with  $\pm 15\%$  relative precision

at the 85% confidence level. The sample will be updated on a monthly basis and stratified according to the builder. At least three prototype homes for each builder will be selected for on-site data collection, one small, one medium, and one large home. Our efforts can be considered a follow-up evaluation after the HERS Provider has completed its verification of the HERS Rater's work. If any of the homes fail to pass the inspections, then the HERS Provider will be contacted to determine if there is a more widespread issue with quality control in the new home HERS Rater marketplace. The final sample for on-site verification will encompass a range of participants homes constructed under the program at various times throughout the year.

#### **4.6.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?
- Which measures are implemented most frequently and what is the incremental cost?
- Which measures are potentially cost effective but not implemented very frequently?
- What are the non-monetary barriers for greater implementation of energy efficiency measures?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### **4.6.5 Program Partners and Trade Allies**

The Companies selected Performance Systems Development to manage the New Construction Program. The program was launched on October 11, 2010.

#### 4.6.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-6: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$49,528	\$126,600	\$126,600
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
<b>A</b>	<b>Subtotal EDC Incentive Costs</b>	<b>\$49,528</b>	<b>\$126,600</b>	<b>\$126,600</b>
B.1	Design & Development <sup>1</sup>	\$2,448	\$5,843	\$32,101
B.2	Administration <sup>2</sup>	\$83,858	\$297,600	\$297,600
B.3	Management <sup>3</sup>	\$16,677	\$57,455	\$74,225
B.4	Marketing <sup>4</sup>	\$6,478	\$14,545	\$14,679
B.5	Technical Assistance <sup>5</sup>	\$2,364	\$13,892	\$15,452
<b>B</b>	<b>Subtotal EDC Implementation Costs</b>	<b>\$111,826</b>	<b>\$389,336</b>	<b>\$434,057</b>
<b>C</b>	<b>EDC Evaluation Costs</b>	<b>\$7,475</b>	<b>\$19,971</b>	<b>\$23,217</b>
<b>D</b>	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$18,573</b>	<b>\$27,290</b>
<b>E</b>	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$168,828</b>	<b>\$554,480</b>	<b>\$611,164</b>
<b>F</b>	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G</b>	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.7 Residential Whole Building Comprehensive

This program provides comprehensive diagnostic assessments of households followed by direct installation of selected low-cost measures plus incentives for implementation of measures addressing building shell, appliances and other energy-consuming features. Customers are eligible to receive up to \$300 in rebates for participating in a two part (test in/test out) comprehensive energy audit and up to \$900 in rebates calculated on performance-based kWh savings achieved by installing energy-saving improvements.

#### **4.7.1 Program Logic**

This program provides comprehensive EE diagnostic assessments followed by direct installation of selected low cost measures plus incentives to households for implementation of associated measures. Customers pay open market rates for the comprehensive audit while being eligible to receive incentives to offset the audit cost. Performance-based rebates up to \$900 will be paid based on calculated energy savings from major measures installed.

This is a full service program similar to the EPA's Home Performance with ENERGY STAR program that involves test-in/test-out blower door procedures, identification and installation of energy savings opportunities and, at the contractor's discretion, relevant health and safety measures.

#### **4.7.2 Program M&V Methodology**

The gross impact analysis for the program has three components:

1. Verify that a sample of participant homes are being appropriately evaluated for program benefits with accurate pre- and post-upgrade diagnostic tests and to verify estimates of savings are performed in accordance with the TRM,
2. Verify the rate of participant homes to install and continue to use the program induced low- and medium-cost upgrades,
3. Determine the savings achieved through the comprehensive residential upgrade program.

Following significant levels of participation in the program (i.e. over approximately 30 participants), additional verification work will be performed. First, the energy savings of the program will be determined through an exploratory billing analysis. For the exploratory billing analysis to occur, monthly billing data will be required for both participants and non-participants.

If the exploratory billing analysis is not possible, the energy impacts will be determined using an engineering analysis. The baseline and as-built performance of each sample participant home will be determined by obtaining the original electronic data file from the energy auditor's simulation software and updating it to match the pre-existing and as-built conditions observed during the on-site data collection and monitoring visit. If necessary, the simulation software can be calibrated to monthly usage data obtained from customer bills.

A combined telephone and field survey of the sample will verify participation rates, if the home is occupied or not, to verify heating fuel type and outside unit air conditioner/heat pump efficiency, and rate of referral to other rebate programs. The energy savings and demand reductions for any energy efficiency components not incorporated into the comprehensive building simulation model and any measures installed through the other residential rebate programs will be determined based upon the methods outlined in those programs.

#### **4.7.3 Program Sampling**

The sampling approach for this program is batch-wise stratified random sampling on a quarterly basis. The sample size will be sufficient to determine this program's gross impact with  $\pm 15\%$  relative precision at the 85% confidence level. The sample will be stratified according to the auditor. At least three participant homes for each auditor will be selected for on-site data collection, one small, one medium, and one large home. This effort can be considered a follow-up evaluation after the HERS Provider has completed its verification of the HERS Rater's work. If any of the homes fail to pass the inspections, then the HERS Provider will be contacted to determine if there is a more widespread issue with quality

control in the new home HERS Rater marketplace. The final sample for telephone verification will encompass a range of participants' homes retrofit under the program at various times throughout the year.

#### **4.7.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### **4.7.5 Program Partners and Trade Allies**

Honeywell is Penelec's program CSP who will recruit and develop qualified contractors who will use diagnostic equipment to evaluate and ensure that the home is operating at peak efficiency. Honeywell has subcontracted this program to Performance Systems Development (PSD) to benefit from their established network of BPI contractors.

#### 4.7.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-7: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$7,550	\$7,800	\$7,800
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$7,550</b>	<b>\$7,800</b>	<b>\$7,800</b>
B.1	Design & Development <sup>1</sup>	\$551	\$1,316	\$27,074
B.2	Administration <sup>2</sup>	\$40,266	\$273,736	\$325,947
B.3	Management <sup>3</sup>	\$3,756	\$23,157	\$39,608
B.4	Marketing <sup>4</sup>	\$5,913	\$73,006	\$73,139
B.5	Technical Assistance <sup>5</sup>	\$532	\$3,129	\$4,658
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$51,018</b>	<b>\$374,343</b>	<b>\$470,426</b>
C	<b>EDC Evaluation Costs</b>	\$3,611	\$12,701	\$15,370
D	<b>SWE Audit Costs</b>	\$0	\$4,183	\$12,734
E	<b>Participant Costs</b>	\$0	\$0	\$0
	<b>Total Costs</b>	<b>\$62,179</b>	<b>\$399,027</b>	<b>\$506,330</b>
F	<b>Annualized Avoided Supply Costs</b>	\$0	\$0	\$0
G	<b>Lifetime Avoided Supply Costs</b>	\$0	\$0	\$0
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
150	Notes:			
	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.8 Residential Multi-Family Program

This program leverages audit services already being provided by the Pennsylvania Housing Finance Agency (PHFA) by marketing the program to property managers and owners who have participated and completed the PHFA audits. By leveraging other resources available through PHFA, the program targets other property managers and owners who have not participated in the PHFA audits. The program also targets tenants in these multifamily buildings by directly providing an energy conservation kit at no cost

to tenants. For purposes of this report, and consistent with the Companies' February 5, 2010 EE&C filing, all energy savings and demand reduction results for this program are reported in the Residential sector.

#### **4.8.1 Program Logic**

The objective of this program is to capture electric energy savings available in common lighting areas (hallways, exit signs, laundry facilities, exterior lighting, etc.). Building upon the PHFA audit findings, this program provides common area interior and exterior lighting measures for multifamily buildings, plus installation of CFLs and LED Exit Signs in common areas. These retrofit services will be provided by electrical contractors, hired directly by the property owners/managers, as the program is being marketed to these trade allies.

In addition to providing lighting measures for common areas, this program also targets tenant areas. Tenants who pay for utilities as part of their rent in multifamily buildings often have little motivation to save electricity since they do not benefit directly, unless landlords pass on the energy savings through reduced rent. Tenants who pay electricity directly have more motivation since they are likely to experience lower electric bills. Regardless of whether a tenant is master metered or a customer of record, they will be offered a conservation kit consisting of CFLs plus two (2) LED night lights at no cost to the tenant.

Tenants that qualify as low-income customers receiving energy conservation kits will be estimated and tracked to support assessment of equitable treatment of low-income customers. This estimate will be based on the information provided by the property manager/owner as to what percentage of tenants in a given building qualify as low-income tenants.

#### **4.8.2 Program M&V Methodology**

The program effectively has two components: the first targets common areas while the second targets tenant dwellings. The common areas program component has the same list of eligible measures and the same CSP as the general C&I equipment program. Therefore, the impact evaluation of this program component will be subsumed in the C&I equipment evaluation<sup>18</sup>. The tenant CFL program component will be treated as a separate program, and will have its own population, sample, and realization rate. The energy savings and demand reductions for the CFLs are deemed in the PA TRM. The gross impact analysis for the energy conservation kits will determine the installation rate for the CFLs through a combination of on-site visits and telephone interviews.

#### **4.8.3 Program Sampling**

Sampling procedures to be followed in the present program year are summarized below for each program component.

**Common Areas Program Component:** The program component that targets common areas will be combined with the general C/I equipment program.

**Tenants Program Component:**

The sampling approach for this program is simple random sampling on a quarterly basis. The sample size will be sufficient to determine this program's gross impact with  $\pm 15\%$  relative precision at the 85% confidence level. The sampling unit will be at the individual residence level within each complex. Given the homogenous nature of the program, and our interest to utilize the most efficient sample size

---

<sup>18</sup> If this program component has higher than anticipated implementation during the second program year, a separate sample, sufficient in number to achieve 90/10 confidence/precision will be required.

necessary, we have estimated a coefficient of variation for the program and will determine our sample size accordingly. We have utilized data from the Companies' Online Audit Kit Conservation Program, to estimate a linear relationship between the RR for a program and the CV. The in-service rate of 84% is deemed in the PA TRM, and we use that rate to estimate a CV of 0.26. With a CV of 0.26 we calculate the necessary sample size as 24 sites per EDC<sup>19</sup>. A simple random sample of 24 sites will be drawn on an annual basis.

#### **4.8.4 Process Evaluation**

The contract for the tenant area program component has recently been awarded to PowerDirect. The evaluation team has reviewed the scope of work and the program delivery proposal for the tenant area program component. Interviews with the Companies' key program staff are expected to occur in early October 2010. Following the interviews, the evaluation team will draft a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### **4.8.5 Program Partners and Trade Allies**

Penelec has launched the Multifamily Program for Common Areas using SAIC to administer this program. SAIC is responsible for marketing to multifamily buildings property managers/owners by conducting direct contact with these customers, email solicitations and using Penelec account representative leads. SAIC is also marketing this program through trade allies – e.g., electrical contractors – and by targeting different associations of property owners and managers. The Companies have hired PowerDirect (PD) to administer a Multifamily Program for Tenant Areas. PD completed necessary upfront work to identify multifamily properties in the Companies' service territories and have contacted property managers and provided information about the program. Beginning in January through March, PD shipped energy conservation kits to properties that agreed to participate in the program. Starting in Apr through present, PD is working with property managers having received kits to gather pertinent information needed for program evaluation.

---

<sup>19</sup> This is calculated according to the PA TRM Formula:  $N = ((Z\_value * CV) / Precision Level)^2$

#### 4.8.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-8: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$97,883	\$372,225	\$372,225
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$97,883</b>	<b>\$372,225</b>	<b>\$372,225</b>
B.1	Design & Development <sup>1</sup>	\$143	\$340	\$2,675
B.2	Administration <sup>2</sup>	\$22,072	\$73,886	\$114,248
B.3	Management <sup>3</sup>	\$972	\$3,348	\$4,839
B.4	Marketing <sup>4</sup>	\$377	\$847	\$859
B.5	Technical Assistance <sup>5</sup>	\$138	\$809	\$948
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$23,701</b>	<b>\$79,231</b>	<b>\$123,569</b>
C	<b>EDC Evaluation Costs</b>	<b>\$1,720</b>	<b>\$9,123</b>	<b>\$11,772</b>
D	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$1,082</b>	<b>\$1,857</b>
E	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$123,304</b>	<b>\$461,660</b>	<b>\$509,423</b>
F	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
G	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.9 Residential Low-Income Programs

##### WARM Extra Measures Program:

This program is an expansion of, and enhancement to the existing comprehensive Low-Income Usage Reduction Program, known as WARM, that provides additional electric energy savings measures and services to income-eligible customers. Expanded measures include an average of four (4) additional CFLs

(including specialty CFLs such as candelabras, 3-way, outdoor, recessed and flood lights), LED night lights, and smart power strips.

**WARM Plus Program:**

This program is an expansion of, and enhancement to the existing comprehensive Low-Income Usage Reduction Program, known as WARM, that will provide additional electric energy savings measures and services to income-eligible customers. The WARM Plus program will support a 25 percent increase above the existing WARM/LIURP program, in the number of income-eligible homes receiving comprehensive treatments for Penelec.

**Low-Income, Low-Use Program:**

This program is for low-income customers that do not meet the minimum usage of 600 kWh/month to qualify for the WARM program. These customers received CFLs, faucet aerators, LED nightlights, a furnace whistle and energy education materials.

**4.9.1 Program Logic**

**WARM Extra Measures Program:**

This program offers two ways for customers to realize increased electric energy savings. The Act 129 Program opens the door for customers to reduce phantom load from electronics and entertainment equipment in their homes by allowing installation of smart power strips. It also allows for the installation of an average of four (4) CFLs in addition to the WARM/LIURP Program maximum of twelve (12) per home.

Program services are delivered by existing WARM Community Based Organizations (CBOs) and private contractors, coordinated or augmented by additional private vendors as needed to enhance the capacity of existing agencies and contractors.

The WARM/LIURP program is managed by the Companies' internal staff with outside agencies and private contractors performing comprehensive whole-house energy audits, energy education and direct installation of cost-effective electricity-saving measures.

**WARM Plus Program:**

This program provides additional electric energy savings measures and whole-house services to an additional 25 percent of lower income households above the existing WARM/LIURP program participant goals.

Program services are delivered by existing WARM CBOs and private contractors, coordinated or augmented by additional private vendors as needed to enhance the capacity of existing agencies and contractors.

The program provides whole-house energy conservation services such as those provided by the WARM Program: air sealing, insulation, electric water heat and cooling reduction measures, appliance testing and possible replacement, replacement lighting, smart power strips, energy education, and other cost-effective custom measures. The program will also increase availability of subsidized energy efficiency services to 25 percent more customers. There is no payment required by the customer for the installation of these measures.

**Low-Income, Low-Use Program:**

Hundreds of applications are received each year from low-income customers who use less electricity than the WARM program usage eligibility threshold of 600 kWh per month. This program will allow Penelec to target this previously unserved group for energy savings by providing them with CFLs, faucet aerators, LED night lights, a furnace whistle and energy education materials.

**4.9.2 Program M&V Methodology**

**WARM Extra Measures Program:**

ADM conducted site visits in July and August, 2010, to verify that the Smart Power Strips were installed in accordance with the assumptions used in the ex-ante savings calculation (e.g., the power strips control, on average, 25-30W of quiescent loads), and that the additional CFLs were installed in areas that correspond to hours of usage in the TRM.

**WARM Plus Program:**

The ex-ante energy savings for the Warm Plus program are based on the impact evaluation of the 2008 WARM program, by job type,<sup>20</sup> which employed a statistical billing analysis.

**Low-Income, Low-Use Program:**

The gross impact analysis for the energy conservation kits has two components:

1. Determine the installation rate for the measures in the conservation kits.
2. Determine the average energy savings and demand reductions for the measures in the kits.

The installation rate will be determined through a combination of on-site visits and telephone interviews. The energy savings and demand reductions for the measures are stipulated in the PA TRM. The impact evaluation effort will review the tracking data and energy savings calculations to ensure that the energy savings are reported in accordance to the TRM.

**4.9.3 Program Sampling**

**WARM Extra Measures Program:**

The energy savings and demand reductions for the measures distributed by the program are deemed in the TRM. The sample size will be sufficient to determine gross impact with  $\pm 15\%$  relative precision at the 85% confidence level. The evaluation results for the first program year indicated that there is a good correspondence between the claimed and verified savings for this program. A stratified sample of 20 sites should be sufficient to achieve this level of precision.

**WARM Plus Program:**

The sampling approach for this program component is batch-wise simple random sampling on a quarterly basis. The sample size will be approximately ten sites. This field work was conducted mainly to give feedback regarding program implementation to the Companies – the gross energy and demand impacts are determined through billing analysis.

**Low-Income, Low-Use Program:**

The sampling approach for this program component is batch-wise simple random sampling on a quarterly basis. The sample size will be sufficient to determine gross impact with  $\pm 10\%$  relative

---

<sup>20</sup> The three job types are as follows: Electric heat jobs are weatherization jobs that direct at least \$250 to reduce space heating energy usage for electrically heated homes; electric water heat jobs direct at least \$25 to reduce water heating energy usage for homes that have electric water heaters, and electric baseload jobs, which may include refrigerator/freezer replacement and lighting retrofits.

precision at the 90% confidence level for telephone interviews, and  $\pm 30\%$  relative precision at the 90% confidence level for on-site visits.

#### **4.9.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys and non-participant surveys will help to assess the efficiency of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance. The recent field work has also resulted in suggestions that will increase the evaluability of the Warm Extra Measures program. To facilitate future impact evaluations, the Companies have now directed participating contractors to mark all CFLs installed under the Warm Extra Measures program.

#### **4.9.5 Program Partners and Trade Allies**

##### **WARM Extra Measures Program:**

Program services are delivered by existing Low Income Usage Reduction Program (WARM/LIURP) non-profit agencies, private contractors and subcontractors. Three (3) non-profit agencies expanded their production capacity and additional private contractors were hired to increase capacity to meet the targets in Penelec's EE&C Plan.

The Companies' internal staff manages the program. Agencies and private contractors perform comprehensive whole house energy audits and direct installation of cost-effective electricity-saving measures.

Following is a list of program partners (Implementation Contractors):

WARM Extra Measures:

ACTION Housing, Inc. (Quality Assurance Inspectors)

Bill Busters, Inc.

Blair County Community Action Program

Community Action Partnership of Cambria County

CMC Energy Services

Center for Community Action

Community Action, Inc.

EIC/Comfort Home, Inc.

Erie County Housing Authority

Greater Erie Community Action Committee

Indiana County Community Action Program

Northern Tier Community Action

Northwest PA Weatherization

SEDA – Council of Governments

Solair Energy, Inc.

South Central Community Action Program  
Tableland Services  
Treatment and Rehabilitation Center  
Venango Office of Economic Opportunity  
Warren-Forest Counties Economic Opportunity Council  
Weatherization, Inc.

**WARM Plus Program:**

Program services are delivered by existing Low Income Usage Reduction Program (WARM/LIURP) non-profit agencies, private contractors and subcontractors. Three (3) non-profit agencies expanded their production capacity and additional private contractors were hired to increase capacity to meet the targets in Penelec's EE&C Plan.

The program is managed internally by the Companies' internal staff with outside agencies and private contractors performing comprehensive whole house energy audits and direct installation of cost-effective electricity-saving measures.

Following is a list of program partners (Implementation Contractors):

WARM Plus:

ACTION Housing, Inc. (Quality Assurance Inspectors)  
CMC Energy Services  
EIC/Comfort Home, Inc.  
Erie County Housing Authority  
Solair Energy, Inc.  
Tableland Services

**Low-Income, Low-Use Program:**

A large number of WARM applicants do not meet the minimum usage requirement of 600 kWh per month necessary to participate in certain WARM program offerings. In order to meet these customers' needs, the Low-Income Low-Use Program shipped kits of CFLs, faucet aerators, LED night lights, a furnace whistle and energy education material to select low-income Penelec customers. The Companies' internal staff participated in pre-bid meetings with interested vendors. Internal staff also compared vendor samples, reviewed proposals and met with the top three vendors. A contract award was made August 10, 2010 to PowerDirect. The program launched in October 2010, and kits were shipped in October and November 2010 and February 2011 at no direct cost to customers.

#### 4.9.6 Program Finances

A summary of the project finances are presented in the following table:

Table -9: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$415,390	\$1,457,367	\$1,487,428
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
<b>A</b>	<b>Subtotal EDC Incentive Costs</b>	<b>\$415,390</b>	<b>\$1,457,367</b>	<b>\$1,487,428</b>
B.1	Design & Development <sup>1</sup>	\$1,427	\$3,405	\$37,128
B.2	Administration <sup>2</sup>	\$14,699	\$51,234	\$60,191
B.3	Management <sup>3</sup>	\$28,184	\$103,202	\$138,817
B.4	Marketing <sup>4</sup>	\$232	\$1,117	\$2,077
B.5	Technical Assistance <sup>5</sup>	\$3,175	\$21,108	\$27,695
<b>B</b>	<b>Subtotal EDC Implementation Costs</b>	<b>\$47,716</b>	<b>\$180,067</b>	<b>\$265,906</b>
<b>C</b>	<b>EDC Evaluation Costs</b>	<b>\$10,812</b>	<b>\$47,483</b>	<b>\$53,103</b>
<b>D</b>	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$10,824</b>	<b>\$22,019</b>
<b>E</b>	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$473,918</b>	<b>\$1,695,741</b>	<b>\$1,828,457</b>
<b>F</b>	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G</b>	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.10 Commercial / Industrial Small Sector Energy Audit and Technical Assessment Program

In addition to providing information and a list of auditors, this program funds all the CFL installations for this class of customers. Since all lighting is marketed via the Standard and Nonstandard lighting incentives, this program will be combined with the C&I Equipment Program for reporting purposes.

#### **4.10.1 Program Logic**

A list of Auditor & Technical Assessment Providers has been posted on the website. The CFLs have been promoted through Penelec's Standard Lighting Incentive Program. Penelec will support and track participation by governmental customers in a separate program.

#### **4.10.2 Program M&V Methodology**

##### **Gross Impact Analysis**

The CFLs are marketed and processed in the Standard Lighting Incentive Program. As such, the gross impact of the CFL installations is covered under the impact evaluation of the C/I Equipment Program.

#### **4.10.3 Program Sampling**

The impact evaluation sample for this program is subsumed into the sample for the C/I Equipment program. In the second program year, the impact evaluation will classify all C/I programs and measures into two categories – custom and prescriptive. This program will fall under the prescriptive component of the C/I Equipment program.

#### **4.10.4 Process Evaluation**

A primary aspect of this program's process evaluation is to determine the relationship between the Audit program and the other energy efficiency programs offered by Penelec. The audits are intended to provide customers with "a customized comprehensive understanding of the opportunities available for saving energy." In theory, this understanding may induce customers to partake in appropriate energy efficiency programs offered by Penelec. Quantitatively, one can track the number of audit participants that also participated in other Penelec energy efficiency programs. Qualitatively, the evaluation effort will attempt to capture whether the appropriate energy savings opportunities are identified and described to the customers. Additionally, the evaluation team will interview the Small C/I audit vendor, the Large C/I audit contractors (trade allies), participant customers and program non-participants to address the following issues:

- Degree to which the trade ally is integrated into professional organizations;
- How the trade ally heard about the program;
- Concerns the trade ally might have had about the program;
- Motivation for participating in the program;
- Technologies and practices used by the trade ally prior to hearing about or using the program;
- Extent to which the trade ally recommends the technologies and practices to other customers;
- Extent of uptake of technologies and practices by nonparticipating customers;
- Degree to which participants promote the program with customers;
- How the trade ally "sells" the program;
- Factors that make it difficult to sell or implement the program;
- Customer reactions to the technologies and practices, and to the program;
- Effectiveness of program promotional activities and program operations;
- Quality of interactions with the implementation contractor;
- Extent to which the trade ally has talked to other trade allies about the program; and
- Recommendations for program improvement

#### **Evaluating the Procedures for Administering and Managing the Program**

In addition to the above interviews, evaluation team members will conduct interviews with the Companies' internal staff to assess program implementation and processes including but not limited to the following issues:

- Program goals and objectives;

- Development and structure of the program;
- Program activities, their outputs, and their expected outcomes;
- Internal processes and communications;
- Marketing, communication, and outreach activities;
- Step-by-step description of customer participation for each program track;
- Roles of staff members and adequacy of resources;
- Relation to other programs;
- Customer awareness of and satisfaction with program services;
- Reasons for lack of program participation;
- Data collection and tracking practices;
- Processing of projects and payments;
- Quality control and quality assurance; and
- Effectiveness of the program design, including strengths and weaknesses.

Information from the above interviews will be used to construct a “logic model” for the program. Developing a logic model for the program will help to identify gaps in the program, to develop measures for assessing progress, to identify critical issues that need attention, and to communicate with stakeholders about the program and their outcomes.

#### **4.10.5 Program Partners and Trade Allies**

SAIC was contracted to administer this program and has sent out a request for qualifications (RFQ) to gather interested energy auditors for all nonresidential sectors. This list has been provided to commercial and industrial customers. In addition, an application form has been posted on the Companies’ website. Customers will contract with these vendors directly and it is the expectation that audits will generate additional applications to other programs. SAIC will track original audit activities that culminate into equipment installations.

#### **4.10.6 Program Finances**

As Small Commercial lighting is marketed via Standard and Nonstandard lighting incentives, project finances for this program have been combined in table 4-13 with the C&I Equipment Program for reporting purposes.

Table 4-10: Included in Table 4-13

### **4.11 Commercial / Industrial Small Sector Equipment Program**

This program provides for the implementation of cost effective, high efficiency measures through the Standard Lighting, Nonstandard Lighting, Heating Ventilating and Air-conditioning, Motors & Drives, Specialty Equipment and Custom incentive programs.

#### **4.11.1 Program Logic**

The program is designed to reduce the first cost of high efficiency equipment thereby encouraging the adoption of this equipment in lieu of standard at the end of the useful life measures, or as early replacement. The savings and budget from the Energy Audit and Technical Assessment Program will be combined with this program for reporting purposes.

Incentives are provided to offset a portion of the incremental technology costs (“capital costs”) of high efficiency equipment as well as technical support when needed. Penelec currently supports high efficiency measures targeting existing buildings, new construction, and building addition for small commercial and industrial customers.

Incentives will be set at a schedule of payments per unit to address the incremental cost of commercially available energy efficient technology for each equipment category, when compared to the commonly available replacement.

Custom measures will be rebated based upon an analysis of potential energy savings on a case by case basis.

#### **4.11.2 Program M&V Methodology**

This program implements both custom measures and prescriptive measures. The impact evaluation categorizes all measures rebated under the C/I, and Governmental/Non-Profit programs as either custom or prescriptive. As a first step, then, the measures rebated under this program are combined with either the custom or prescriptive populations of measures. The M&V methodologies for each population are briefly described below.

##### **Custom Measures**

Custom measures are evaluated according to the custom measures protocol specified in the PA Statewide Evaluator’s Audit Plan. A custom measure protocol is created for each new custom measure. The protocol, once reviewed and accepted by the Statewide Evaluator, will be used to determine both ex-ante and ex-post savings<sup>21</sup>. In most cases, a site visit will be required to gather data, either by inspection or monitoring, to inform the calculations in the custom measure protocol.

##### **Prescriptive Measures**

Prescriptive measures for the C/I sector are typically partially deemed according to protocols in the PA TRM. The impact evaluation activities for such measures involve on-site inspections to verify that the measures are installed and commercially operable, and that the associated energy savings and demand reductions are calculated appropriately according to the relevant protocol in the PA TRM.

#### **4.11.3 Program Sampling**

##### *Custom Measures*

For custom measures, the general rule is that the census of projects is evaluated. However, for specific, homogenous populations (e.g. one particular ESCO is implementing the same measure on 11 branches of a chain retailer), sampling will be employed if possible.

##### *Prescriptive Measures*

The sampling approach for this program is batch-wise stratified sampling. The samples are stratified by measure type (e.g. HVAC, Lighting) and by claimed energy savings. Batch-wise samples are drawn on a quarterly basis. The number of sample sites will be sufficient to achieve  $\pm 10\%$  relative precision at the 90% confidence level separately for the prescriptive and the custom samples. Based on the results of

---

<sup>21</sup> The impact evaluation team may determine savings that differ from the ex-ante calculations - even while using the same protocol – if the on-site data collected for impact evaluation purposes is inconsistent with the assumptions and corresponding values of parameters used in the *ex-ante* energy savings estimation.

program year's evaluation, and on the current list of rebate applications, approximately 30 on-site visits will be required to achieve the desired relative precision.

#### **4.11.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a process evaluation plan and a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### **4.11.5 Program Partners and Trade Allies**

SAIC is the CSP that administers this program and has conducted face to face presentations, email solicitations using Penelec account representative leads. The program marketing strategy will utilize end-use technologies such as lighting, HVAC, motors and drives rather than just C&I Equipment. Using electronic tools (e.g., website, email-distributions, trade shows and case studies) SAIC has and will continue to market directly to customers. In addition, there has been a special emphasis on trade and professional organizations using event sponsorship, membership and speaking opportunities.

#### 4.11.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-11: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$2,471,353	\$4,241,082	\$4,353,632
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
<b>A</b>	<b>Subtotal EDC Incentive Costs</b>	<b>\$2,471,353</b>	<b>\$4,241,082</b>	<b>\$4,353,632</b>
B.1	Design & Development <sup>1</sup>	\$3,746	\$8,942	\$71,249
B.2	Administration <sup>2</sup>	\$159,007	\$424,946	\$603,521
B.3	Management <sup>3</sup>	\$22,961	\$110,201	\$140,415
B.4	Marketing <sup>4</sup>	\$0	\$0	\$0
B.5	Technical Assistance <sup>5</sup>	\$3,618	\$21,259	\$24,959
<b>B</b>	<b>Subtotal EDC Implementation Costs</b>	<b>\$189,331</b>	<b>\$565,349</b>	<b>\$840,143</b>
<b>C</b>	<b>EDC Evaluation Costs</b>	<b>\$7,489</b>	<b>\$30,947</b>	<b>\$42,898</b>
<b>D</b>	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$28,422</b>	<b>\$49,107</b>
<b>E</b>	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$2,668,173</b>	<b>\$4,865,799</b>	<b>\$5,285,780</b>
<b>F</b>	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G</b>	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.12 Commercial / Industrial Large Sector Demand Response Program – CSP Mandatory and Voluntary Curtailment Program

For Commercial and Industrial, as well as government sector customers, the Companies will solicit registration for curtailment service providers (“DR-CSPs”) registering load in PJM programs. The Companies developed an RFP supporting a pilot for the mandatory program offering firm pricing for commitments for peak load reductions during the top 100 hours, and a voluntary program offering

supplemental payment for economic market transactions during the top 100 hours. Contracts supporting launch of the 2011 Commercial/Industrial Demand Response program are pending award and approval. RFPs for 2012 are planned.

#### **4.12.1 Program Logic**

The Companies will enter into an agreement with qualified DR-CSPs selected on a first come first serve basis up to the contracted MW of peak load reductions for annual performance periods. Annual performance periods will address the 2011/12, and 2012/13 PJM planning years.

Estimated MW required from this program to meet Act 129 minimum requirements will depend on the MW achieved through energy efficiency (EE) programs. Actual MW registered for the summer of 2012 will be subject to adjustment (up or down) based on actual EE program performance through 2011, as well as experience under this program in the first two years.

#### **4.12.2 Program M&V Methodology**

Following the selection of load control technologies, the Companies will verify that demand reduction targets are being achieved consistent with PJM Economic Program protocols in effect during the summer of 2012. A "realization rate" will be developed based on review of PJM DR program transactions and compliance with the accepted CBL protocols. That realization rate will be used to assess the Companies' DR program impacts for Act 129 compliance during the top 100 hours. Details of how the realization rate will be calculated will be determined through evaluation technical working groups, with the participation of the EDCs, the EDC evaluators, and the PA Statewide Evaluator.

#### **4.12.3 Program Sampling**

A stratified random sample will be constructed for the program. The number of sample sites will be sufficient to quantify the demand reduction with  $\pm 10\%$  relative precision at the 90% confidence level. If the population size is sufficiently small, the census of participants will be evaluated.

#### **4.12.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a process evaluation plan and a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?

Participant surveys and non-participant surveys will help to assess the efficiency of the program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### **4.12.5 Program Partners and Trade Allies**

Contracts supporting launch of the 2011 Commercial/Industrial Demand Response program are pending award and approval. RFPs for 2012 are planned.

#### 4.12.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-12: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$0	\$0	\$0
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
B.1	Design & Development <sup>1</sup>	\$1,605	\$3,831	\$3,831
B.2	Administration <sup>2</sup>	\$0	\$0	\$0
B.3	Management <sup>3</sup>	\$9,580	\$24,249	\$24,249
B.4	Marketing <sup>4</sup>	\$0	\$0	\$0
B.5	Technical Assistance <sup>5</sup>	\$1,550	\$9,108	\$9,108
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$12,735</b>	<b>\$37,188</b>	<b>\$37,188</b>
C	<b>EDC Evaluation Costs</b>	\$1,795	\$10,451	\$10,451
D	<b>SWE Audit Costs</b>	\$0	\$12,177	\$12,177
E	<b>Participant Costs</b>	\$0	\$0	\$0
	<b>Total Costs</b>	<b>\$14,529</b>	<b>\$59,816</b>	<b>\$59,816</b>
F	<b>Annualized Avoided Supply Costs</b>	\$0	\$0	\$0
G	<b>Lifetime Avoided Supply Costs</b>	\$0	\$0	\$0
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes: <sup>1</sup> Includes cost of EE Expert				
<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.				
<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.				
<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.				
<sup>5</sup> Includes costs for Tracking and Reporting System				

#### 4.13 Commercial / Industrial Large Sector Performance Contracting/Equipment Program

Large commercial and industrial (and other non-residential) customers may elect to secure DSM/EE services through an Energy Services Company (ESCO) that will identify opportunities, implement retrofits and attain payment through the savings generated by the project over time

#### **4.13.1 Program Logic**

This program is designed to reduce the first cost of high efficiency equipment thereby encouraging the adoption of this equipment in lieu of standard at the end of the useful life measures, or as early replacement. The program may be delivered through qualified ESCO contractors. The same incentive programs available to Small Sector customers, the Standard Lighting, Nonstandard Lighting, Heating Ventilating and Air-conditioning, Motors & Drives, Specialty Equipment and Custom, apply to this sector. Incentives can be provided to the ESCO or to the customer as directed by the customer.

#### **4.13.2 Program M&V Methodology**

This program implements both custom measures and prescriptive measures. The impact evaluation categorizes all measures rebated under the C/I, and Governmental/Non-Profit programs as either custom or prescriptive. As a first step, then, the measures rebated under this program are combined with either the custom or prescriptive populations of measures. The M&V methodologies for each population are briefly described below.

##### **Custom Measures**

Custom measures are evaluated according to the custom measures protocol specified in the PA Statewide Evaluator's Audit Plan. A custom measure protocol is created for each new custom measure. The protocol, once reviewed and accepted by the Statewide Evaluator, will be used to determine both ex-ante and ex-post savings<sup>22</sup>. In most cases, a site visit will be required to gather data, either by inspection or monitoring, to inform the calculations in the custom measure protocol.

##### **Prescriptive Measures**

Prescriptive measures for the C/I sector are typically partially deemed according to protocols in the PA TRM. The impact evaluation activities for such measures involve on-site inspections to verify that the measures are installed and commercially operable, and that the associated energy savings and demand reductions are calculated appropriately according to the relevant protocol in the PA TRM.

#### **4.13.3 Program Sampling**

##### *Custom Measures*

For custom measures, the general rule is that the census of projects is evaluated. However, EM&V sampling will be employed for "small" custom projects (e.g. those that comprise the bottom 20% of custom project energy savings).

##### *Prescriptive Measures*

The sampling approach for this program is batch-wise stratified sampling. The samples are stratified by measure type (e.g. HVAC, Lighting) and by claimed energy savings. Batch-wise samples are drawn on a quarterly basis. The number of sample sites will be sufficient to achieve  $\pm 10\%$  relative precision at the 90% confidence level separately for the prescriptive and the custom samples. Based on the results of program year's evaluation, and on the current list of rebate applications, approximately 30 on-site visits will be required to achieve the desired relative precision.

#### **4.13.4 Process Evaluation**

The evaluation team has conducted the first set of the Companies' program staff interviews in May and June, 2010. Following the interviews, the evaluation team has drafted a process evaluation plan and a

---

<sup>22</sup> The impact evaluation team may determine savings that differ from the ex-ante calculations - even while using the same protocol - if the on-site data collected for impact evaluation purposes is inconsistent with the assumptions and corresponding values of parameters used in the *ex-ante* energy savings estimation.

program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### **4.13.5 Program Partners and Trade Allies**

SAIC is the CSP who is administering this program and is responsible for marketing by conducting face to face presentations, email solicitations and using Penelec account representative leads. The program marketing strategy will utilize end-use technology such as lighting and HVAC rather than just C&I Equipment. Using electronic tools (e.g., website, email-distribution, trade shows and case studies) SAIC has marketed directly to customers and their performance contractors. In addition, there has been a special emphasis on trade and professional organizations using event sponsorship, membership and speaking opportunities.

#### 4.13.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-13: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$825,659	\$2,706,871	\$2,832,857
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$825,659</b>	<b>\$2,706,871</b>	<b>\$2,832,857</b>
B.1	Design & Development <sup>1</sup>	\$1,530	\$3,653	\$39,020
B.2	Administration <sup>2</sup>	\$40,960	\$169,192	\$321,409
B.3	Management <sup>3</sup>	\$12,808	\$77,269	\$101,279
B.4	Marketing <sup>4</sup>	\$0	\$0	\$0
B.5	Technical Assistance <sup>5</sup>	\$1,478	\$8,685	\$10,785
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$56,776</b>	<b>\$258,799</b>	<b>\$472,493</b>
C	<b>EDC Evaluation Costs</b>	<b>\$52,085</b>	<b>\$141,811</b>	<b>\$161,503</b>
D	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$11,611</b>	<b>\$23,352</b>
E	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$934,521</b>	<b>\$3,119,092</b>	<b>\$3,490,205</b>
F	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
G	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.14 Commercial / Industrial Large Sector Industrial Motors and Variable Speed Drives Program

This program is designed to encourage Penelec's commercial and industrial customers to:

1. Upgrade their existing motors to NEMA Premium® motors when switching out old motors due to breakdowns and or programmed replacements; and,

2. Install variable speed drives on motors that do not always operate at the same speed.

The variable speed drive program is designed for commercial and industrial energy customers whose motors are utilized for increased operating hours and have a higher variability of loads on the system. Applications with low variability of loads where the motor runs at constant speed are not good candidates for a variable-speed drive.

#### **4.14.1 Program Logic**

This program seeks to provide an incentive for Penelec's customers when motors are upgraded to NEMA Premium<sup>®</sup> motors and/or when customers install a new variable speed drive. The incentives offered by Penelec are provided to help initiate momentum among its customers.

Incentives will be available to customers and through motors distributors as a rebate per unit replaced on a first come first serve basis and will be limited to Penelec's motor upgrade budget.

To qualify for an incentive, the motor(s) must operate a minimum of 3,000 hrs/yr. The motor upgrade program's individual incentives per motor start at \$20 for a 1HP. The variable-speed drive incentive is a flat rate of \$30 per motor horsepower controlled.

The program is being administered by SAIC.

#### **4.14.2 Program M&V Methodology**

The Motors and Variable Speed Drives Program is evaluated separately from all other C/I programs. This is done in part because the impact evaluation team expects to include all or most of the projects in the M&V sample. This program implements both custom measures and prescriptive measures. The M&V methodologies for each type of measure are briefly described below.

##### **Custom Measures**

Custom measures are evaluated according to the custom measures protocol specified in the PA Statewide Evaluator's Audit Plan. The PA statewide evaluator has created a custom measure protocol for motors and drives in non-HVAC applications. The protocol will be used to determine both ex-ante and ex-post savings. In most cases, pre-installation and post-installation monitoring will be required to inform the calculations in the custom motors and drives protocol.

##### **Prescriptive Measures**

Prescriptive measures for the motors and drives program are partially deemed according to protocols in the PA TRM. Most of the prescriptive measures are expected to target HVAC loop pumps and fans. The impact evaluation activities for such measures involve on-site inspections to verify that the measures are installed and commercially operable, and that the associated energy savings and demand reductions are calculated appropriately according to the relevant protocol in the PA TRM.

#### **4.14.3 Program Sampling**

ADM will employ sampling for the prescriptive measures (e.g. motors and drives on secondary HVAC loops), but will attempt a census of custom measures. The sampling scheme will be adequate to report overall verified savings with  $\pm 15\%$  relative precision at the 85% confidence level.

#### **4.14.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a process evaluation plan and a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### **4.14.5 Program Partners and Trade Allies**

SAIC is the CSP that administers this program and has conducted face to face presentations, email solicitations and using Penelec account representative leads. This program will be marketed to both commercial and industrial customers using tools such as a website, email-based distribution lists, trade shows and case studies. In addition, there will be special promotions to motor equipment suppliers.

#### 4.14.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-14: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$220,338	\$220,338	\$220,338
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
<b>A</b>	<b>Subtotal EDC Incentive Costs</b>	<b>\$220,338</b>	<b>\$220,338</b>	<b>\$220,338</b>
B.1	Design & Development <sup>1</sup>	\$242	\$578	\$9,582
B.2	Administration <sup>2</sup>	\$12,819	\$57,715	\$150,875
B.3	Management <sup>3</sup>	\$2,028	\$11,846	\$17,854
B.4	Marketing <sup>4</sup>	\$0	\$0	\$0
B.5	Technical Assistance <sup>5</sup>	\$234	\$1,375	\$1,910
<b>B</b>	<b>Subtotal EDC Implementation Costs</b>	<b>\$15,323</b>	<b>\$71,515</b>	<b>\$180,220</b>
<b>C</b>	<b>EDC Evaluation Costs</b>	<b>\$1,801</b>	<b>\$18,047</b>	<b>\$31,334</b>
<b>D</b>	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$1,838</b>	<b>\$4,827</b>
<b>E</b>	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$237,462</b>	<b>\$311,739</b>	<b>\$436,720</b>
<b>F</b>	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G</b>	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.15 Governmental / Non-Profit Street Lighting Program

The Street Lighting Program is offered to municipalities regardless of ownership of the street lights. This segment of the Government program will seek to convert existing street lights to high pressure sodium units. In addition to street lights conversion, this program also provides an option to municipalities to upgrade existing outdoor area lights to high pressure sodium units and traffic and pedestrian signals to LEDs.

#### **4.15.1 Program Logic**

This program provides incentives to offset the incremental technology costs (“capital costs”) for energy efficient retrofit projects.

#### **4.15.2 Program M&V Methodology**

The energy savings and demand reductions attributable to LED traffic and pedestrian signals are deemed in the PA TRM. Currently, Municipal Street Lighting Upgrades are not included in the TRM. However, it is likely that a deemed hours of operation for municipal lighting will be approved by the SWE and PA PUC. In this context, a deemed savings approach to impact evaluation is appropriate. The energy savings will be the product of the wattage reduction from the old Mercury Vapor lamps to the new High Pressure Sodium lamps, and the annual hours of operation. The impact evaluation of these measures will involve verification of installation and operation, coupled with verification that energy savings calculations are performed in accordance with the appropriate protocols in the PA TRM. Large projects will also be subject to on-site baseline verification.

#### **4.15.3 Program Sampling**

The sampling approach for this program is batch-wise stratified sampling, updated on a quarterly basis. The stratification is based on the total ex-ante kWh savings with municipal retrofit projects as sampling units. The number of sampled sites will be sufficient to quantify the energy savings and demand reduction with  $\pm 15\%$  relative precision at the 85% confidence level.

#### **4.15.4 Process Evaluation**

The evaluation team has conducted the first set of the Companies’ program staff interviews in May and June, 2010. Following the interviews, the evaluation team has drafted a process evaluation plan and a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- Is the marketing plan likely to reach the targeted customers?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. The process evaluation will identify specific best practices that may help the Companies improve program performance.

#### **4.15.5 Program Partners and Trade Allies**

More than 98% of streetlights that must be changed under this program are Penelec owned. Penelec plans to use internal resources or a combination of internal resources and external contractors to accomplish the conversion. Information pertaining to this program will be delivered to customers who own streetlights by contracted CSPs and Penelec area managers or customer service representatives. Similarly, municipalities will receive information about the outdoor area lights and traffic and pedestrian signals change out options through the contracted CSP and Penelec area managers. Also, the contracted CSP is marketing this program to electrical contractors and lighting distributors.

#### 4.15.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-15: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$334,972	\$881,459	\$881,459
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$334,972</b>	<b>\$881,459</b>	<b>\$881,459</b>
B.1	Design & Development <sup>1</sup>	\$903	\$2,155	\$16,287
B.2	Administration <sup>2</sup>	\$4,909	\$53,125	\$78,749
B.3	Management <sup>3</sup>	\$5,291	\$21,604	\$33,685
B.4	Marketing <sup>4</sup>	\$0	\$0	\$0
B.5	Technical Assistance <sup>5</sup>	\$872	\$5,123	\$5,962
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$11,975</b>	<b>\$82,006</b>	<b>\$134,683</b>
C	<b>EDC Evaluation Costs</b>	\$1,401	\$7,050	\$12,896
D	<b>SWE Audit Costs</b>	\$0	\$6,849	\$11,541
E	<b>Participant Costs</b>	\$0	\$0	\$0
	<b>Total Costs</b>	<b>\$348,347</b>	<b>\$977,364</b>	<b>\$1,040,579</b>
F	<b>Annualized Avoided Supply Costs</b>	\$0	\$0	\$0
G	<b>Lifetime Avoided Supply Costs</b>	\$0	\$0	\$0
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes				
:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.16 Governmental / Non-Profit Program

This program targets a small sector of customers on special non-profit rates. They include volunteer fire companies, ambulance associations, some schools and municipal customers. This sector is eligible for all the incentive programs the Small or Large C&I Sector is eligible for, including the Standard Lighting, Nonstandard Lighting, Heating Ventilating and Air-conditioning, Motors & Drives, Specialty

Equipment and Custom. In April 2011, the Companies' received approval to enhance the program to include an opt-in CFL kit offering. Customers enrolled in this program are eligible to receive a single CFL kit or multiple CFL kits at no cost.

#### **4.16.1 Program Logic**

This program provides incentives to offset the incremental technology costs ("capital costs") for energy efficient retrofit projects.

#### **4.16.2 Program M&V Methodology**

This program offers the same set of measures as the general C/I program and is administered by the same conservation service provider, SAIC, and managed by the Companies' internal staff that also manage the C/I program. As such, the impact evaluation effort for this program is combined with the impact evaluation effort for the C/I Equipment program.

#### **4.16.3 Program Sampling**

The impact evaluation sample for this program is subsumed into the sample for the C/I Equipment program. However, the program participants are pooled into a separate "Government/Non-Profit" stratum. This stratum's impacts will be reported with  $\pm 15\%$  relative precision at the 85% confidence level.

#### **4.16.4 Process Evaluation**

In May and June, 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. Following the interviews, the evaluation team drafted a process evaluation plan and a program logic model which will serve as a visual representation for the program processes (subject to periodic review and update). Additional interviews with program staff will seek information on researchable issues such as:

- Are IT processes in place and effective?
- Are program roles, hierarchies, and contracts clearly stated?
- How is the marketing plan specifically targeting the decision makers in this sector?

Participant surveys and non-participant surveys will help to assess the value of the marketing program, to characterize the customer experience, and to identify any barriers to customer participation. In addition to interviews, a literature review will help to determine if the program goals were set appropriately. With many aspects of the program being identical to the general C/I Equipment program, the evaluation team recognizes that the outreach to the government and non-profit sectors is this program's key characteristic. The process evaluation will focus on this program's outreach and marketing effort, since many of the other issues, such as IT system processes, will be addressed in the process evaluations of the C/I Equipment program. The process evaluation will identify specific best practices that may help the Companies to improve program performance.

#### **4.16.5 Program Partners and Trade Allies**

SAIC is administering this program and is responsible for marketing by conducting face to face presentations, email solicitations and using Penelec personnel to solicit participation. This program has been marketed primarily to County and local government, nonprofit and institutional customers. SAIC has marketed directly to customers using tools such as the website, email-based distribution lists, trade shows and case studies. Additionally, SAIC is responsible for shipping the CFL kits directly to customers.

#### 4.16.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-16: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$29,268	\$43,321	\$52,918
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
A	<b>Subtotal EDC Incentive Costs</b>	<b>\$29,268</b>	<b>\$43,321</b>	<b>\$52,918</b>
B.1	Design & Development <sup>1</sup>	\$86	\$206	\$1,431
B.2	Administration <sup>2</sup>	\$4,238	\$54,343	\$62,110
B.3	Management <sup>3</sup>	\$505	\$2,186	\$2,750
B.4	Marketing <sup>4</sup>	\$0	\$0	\$0
B.5	Technical Assistance <sup>5</sup>	\$83	\$489	\$562
B	<b>Subtotal EDC Implementation Costs</b>	<b>\$4,912</b>	<b>\$57,224</b>	<b>\$66,853</b>
C	<b>EDC Evaluation Costs</b>	<b>\$73</b>	<b>\$621</b>	<b>\$822</b>
D	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$654</b>	<b>\$1,060</b>
E	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$34,254</b>	<b>\$101,819</b>	<b>\$121,653</b>
F	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
G	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes				
:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			

#### 4.17 Governmental / Remaining Non-Profit Programs

The Federal Facilities Program supports identifying energy savings opportunities to expedite the Federal Government agencies taking action.

Governmental Buildings and Schools Program will help better identify energy savings opportunities and expedite their implementation. The CSP would provide diagnostic assistance, technical support and rebates incentives necessary for school districts to install high-efficiency measures.

County and Local Buildings including schools will be provided energy audits free of charge up to \$2,000 as a way to increase the proportional share of saving received from governmental customers. In April 2011, the Companies' received approval to enhance the program to include an opt-in CFL Kit offering. Customers enrolled in this program are eligible to receive a single or multiple CFL kits at no cost.

#### **4.17.1 Program Logic**

The program provides for the implementation of cost effective, high efficiency measures through a CSP for local and state government buildings, as well as for institutional customers. This sector is eligible for the same incentives as the Small or Large C&I sector (the Standard Lighting, Nonstandard Lighting, Heating Ventilating and Air-conditioning, Motors & Drives, Specialty Equipment and Custom).

#### **4.17.2 Program M&V Methodology**

This program offers the same set of measures as the general C/I program and is administered by the same conservation service provider, SAIC, and managed by the Companies' internal staff that also manage the C/I program. As such, the impact evaluation effort for this program is combined with the impact evaluation effort for the C/I Equipment program.

#### **4.17.3 Program Sampling**

The impact evaluation sample for this program is consolidated with the sample for the C/I Equipment program. However, the program participants are separated into a "Government/Non-Profit" stratum. This stratum's impacts will be reported with  $\pm 15\%$  relative precision at the 85% confidence level.

#### **4.17.4 Process Evaluation**

As with the process evaluation for the Governmental /Non-Profit Program, in May and June 2010, ADM conducted the first set of interviews with the Companies' EE&C program staff. The initial interviews have resulted in a logic model and process evaluation work plan. Additional interviews, particularly with program participants and non-participants will help to identify the value of the marketing and outreach campaign, and the needs and constraints of the target market.

#### **4.17.5 Program Partners and Trade Allies**

SAIC was contracted to administer this program and is responsible for marketing by conducting face to face presentations, email solicitations and using the Companies' Governmental Affairs representative leads.

This program has been marketed primarily to County and local government, nonprofit and institutional customers. SAIC will continue to market directly to customers using tools such as the website, email-distribution, trade shows and case studies. Additionally, SAIC is responsible for shipping the CFL kits directly to customers.

#### 4.17.6 Program Finances

A summary of the project finances are presented in the following table:

Table 4-17: Summary of Program Finances:

		IQ	PYTD	CPITD
A.1	EDC Incentives to Participants	\$1,120,323	\$1,795,267	\$1,798,467
A.2	EDC Incentives to Trade Allies	\$0	\$0	\$0
<b>A</b>	<b>Subtotal EDC Incentive Costs</b>	<b>\$1,120,323</b>	<b>\$1,795,267</b>	<b>\$1,798,467</b>
B.1	Design & Development <sup>1</sup>	\$1,426	\$3,404	\$14,592
B.2	Administration <sup>2</sup>	\$55,062	\$292,352	\$338,169
B.3	Management <sup>3</sup>	\$8,357	\$34,125	\$39,274
B.4	Marketing <sup>4</sup>	\$0	\$0	\$0
B.5	Technical Assistance <sup>5</sup>	\$1,377	\$8,092	\$8,756
<b>B</b>	<b>Subtotal EDC Implementation Costs</b>	<b>\$66,222</b>	<b>\$337,973</b>	<b>\$400,792</b>
<b>C</b>	<b>EDC Evaluation Costs</b>	<b>\$1,664</b>	<b>\$10,748</b>	<b>\$14,073</b>
<b>D</b>	<b>SWE Audit Costs</b>	<b>\$0</b>	<b>\$10,818</b>	<b>\$14,533</b>
<b>E</b>	<b>Participant Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Costs</b>	<b>\$1,188,209</b>	<b>\$2,154,807</b>	<b>\$2,227,865</b>
<b>F</b>	<b>Annualized Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>G</b>	<b>Lifetime Avoided Supply Costs</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Total Lifetime Economic Benefits</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
	<b>Portfolio Benefit-to-Cost Ratio</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Notes:	<sup>1</sup> Includes cost of EE Expert			
	<sup>2</sup> Costs paid to Conservation Service Providers (CSPs) for program implementation. To define in the TRC Technical Working Group.			
	<sup>3</sup> Costs incurred to manage the CSPs and programs. To define in the TRC Technical Working Group.			
	<sup>4</sup> Includes umbrella marketing costs for programs. Marketing completed by the CSPs are included in Administration.			
	<sup>5</sup> Includes costs for Tracking and Reporting System			