Final Annual Report
to the
Pennsylvania Public Utility Commission

For the Period
June 2011 through May 2012
Program Year 3

For Pennsylvania Act 129 of 2008
Energy Efficiency and Conservation Plan

Prepared by ADM Associates, Inc.

For

Pennsylvania Power Company
Docket No. M-2009-2112956

November 15, 2012

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Acronyms

C&I	Commercial and Industrial
CATI	Computer-Aided Telephone Interview
CFL	Compact Fluorescent Lamp
CPITD	Cumulative Program/Portfolio Inception to Date
CPITD-Q	Cumulative Program/Portfolio Inception through Current Quarter
CSP	Conservation Service Provider or Curtailment Service Provider
CVR	Conservation Voltage Reduction
CVRf	Conservation Voltage Reduction factor
DLC	Direct Load Control
DR	Demand Response
EDC	Electric Distribution Company
EE&C	Energy Efficiency and Conservation
EM&V	Evaluation, Measurement, and Verification
GNI	Government, Non-Profit, Institutional
HVAC	Heating, Ventilating, and Air Conditioning
IQ	Incremental Quarter
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light Emitting Diode
LEEP	Low-Income Energy Efficiency Program
LIURP	Low-Income Usage Reduction Program
M&V	Measurement and Verification
MW	Megawatt
MWh	Megawatt-hour
NTG	Net-to-Gross
PA PUC	Pennsylvania Public Utility Commission
PY1	Program Year 2009, from June 1, 2009 to May 31, 2010
PY2	Program Year 2010, from June 1, 2010 to May 31, 2011
PY3	Program Year 2011, from June 1, 2011 to May 31, 2012
PY4	Program Year 2012, from June 1, 2012 to May 31, 2013
PYX QX	Program Year X, Quarter X
PYTD	Program Year to Date
SEER	Seasonal Energy Efficiency Rating
SWE	Statewide Evaluator
TRC	Total Resource Cost
TRM	Technical Reference Manual

Report Definitions

Note: Definitions provided in this section are limited to terms critical to understanding values presented in this report. For other definitions, please refer to the Act 129 glossary.

REPORTING PERIODS

Cumulative Program Inception to Date (CPITD)
Refers to the period of time since the start of the Act 129 programs. CPITD is calculated by totaling all program year results, including the current program year to date results. For example, CPTID results for PY3 Q3 is the sum of PY1, PY2, PY3 Q1, PY3 Q2, and PY3 Q3 results.

Incremental Quarter (IQ)
Refers to the current reporting quarter only. Activities occurring during previous quarters are not included. For example, IQ results for PY3 Q3 will only include results that occurred during PY3 Q3 and not PY2 Q2.

Program Year to Date (PYTD)
Refers to the current reporting program year only. Activities occurring during previous program years are not included. For example, PYTD results for PY3 Q3 will only include results that occurred during PY3 Q1, PY3 Q2, and PY3 Q3. It will not include results from PY1 and PY2.

SAVINGS TYPES

Preliminary
Qualifier used in all reports except the final annual report to signify that evaluations are still in progress and that results have not been finalized. Most often used with “realization rate” or “verified gross savings”.

Reported Gross
Refers to results of the program or portfolio determined by the program administrator (e.g., the EDC or the program implementer). Also known as *ex-ante*, or “before the fact” (using the annual evaluation activities as the reference point).

Verified Gross
Refers to results of the program or portfolio determined by the evaluation activities. Also known as *ex-post*, or “after the fact” (using the annual evaluation activities as the reference point).

TRC COMPONENTS[1]

Administration Costs
Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical costs.

EDC Costs
Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenditures only.

Management Costs
Includes the EDC program management, CSP program management, general management oversight and major accounts.

Participant Costs
Per the 2011 Total Resource Cost Test Order, the net participant costs are the costs for the end use customer.

Total TRC Costs
Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

Total TRC Benefits
Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[1] All TRC definitions are subject to the 2011 Total Resource Cost Test Order.

1 Overview of Portfolio

Pennsylvania Act 129 of 2008 signed on October 15, 2008 mandated energy savings and coincident peak demand reduction goals for the largest electric distribution companies (EDCs) in Pennsylvania. Each EDC submitted energy efficiency and conservation (EE&C) plans—which were approved by the Pennsylvania Public Utility Commission (PA PUC)—pursuant to these goals. This report documents the progress and effectiveness of the EE&C accomplishments for Pennsylvania Power Company ("Penn Power" or "Company) in the fourth quarter of Program Year Three (PY3), defined as June 1, 2011 through May 31, 2012, as well as the cumulative accomplishments of the programs since inception.

ADM Associates, Inc. has evaluated the programs, which included measurement and verification of the savings. The final verified savings for PY3 and the cumulative verified savings since inception of the programs are included in this final annual report.

This report is organized into two major sections. The first section provides an overview of activities for the entire portfolio. This includes summary information and portfolio level details regarding the progress towards compliance goals, energy and demand impacts, net-to-gross ratios, finances, and cost-effectiveness. The following sections include program specific details, including program updates, impact evaluation findings, and process evaluation findings.

Other Observations and Risks That May Affect Portfolio Success

Given the dynamic nature of the economy and customer participation rates, there is a clear need for implementation flexibility and prompt approval of plan changes to ensure adequate time to attain the May 31, 2013 goals. Prompt approval minimizes the potential of having funds that could be applied to successful programs stranded on unsuccessful programs.

The Company has ongoing concerns about its ability to achieve the 4½ percent demand reduction target based on: (i) the magnitude of the MW goal; (ii) customers' ability and willingness to curtail sufficient load for approximately 20 days within a four month window specific to the top 100 hours; (iii) the Company's ability to accurately forecast when the top 100 hours will occur; and (iv) budget constraints which limit the Company's ability to overcome forecasting and participation risks. Regarding the budget constraint, in the draft implementation order for Phase II of Act 129, the Commission has recognized the imbalance among EDCs regarding the amount of funding available to meet the Phase I goals.

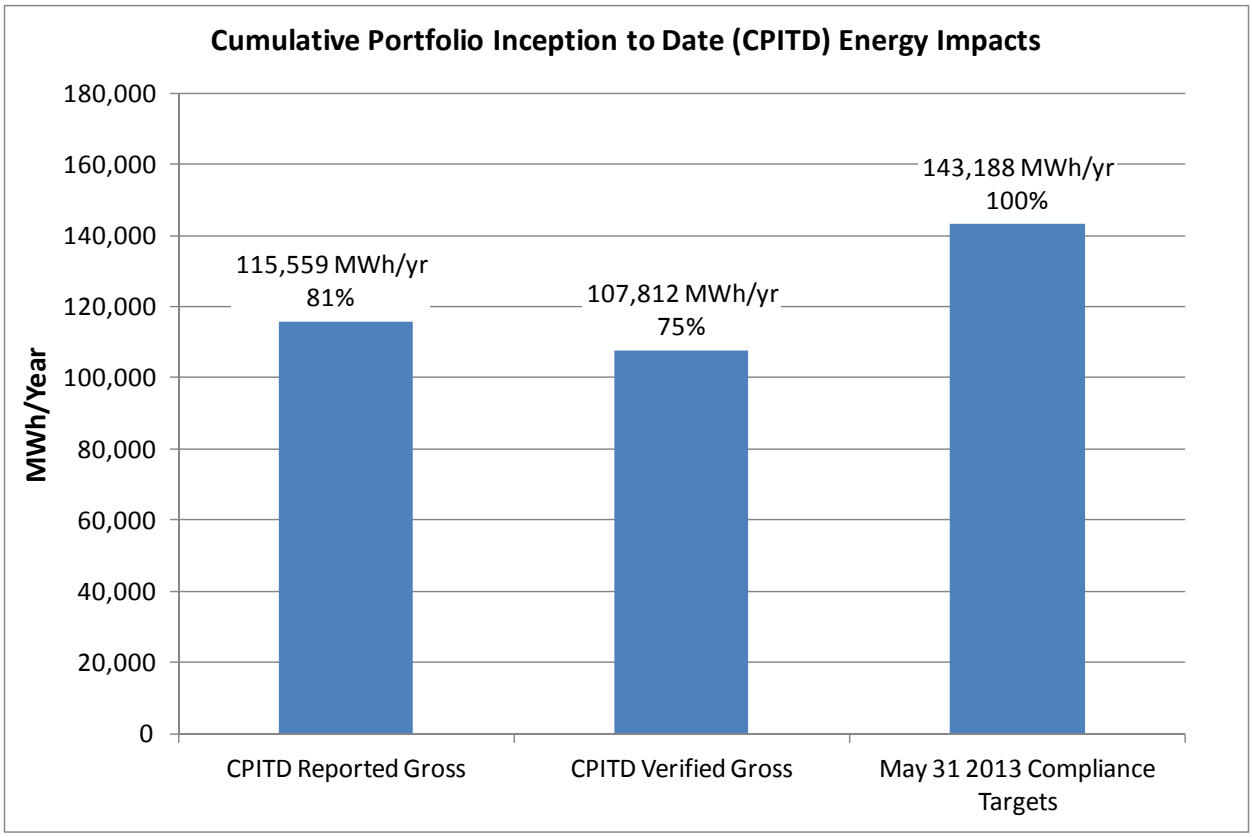
Additionally, given the current economic conditions and their impact on government and institutional budgets, achieving 10% of Act 129 target savings from Federal/State/local/municipal governments, school districts, institutions of higher education, and nonprofit entities may prove challenging.

Notwithstanding these difficulties, the Company is diligently working with its implementation and evaluation Conservation Service Providers ("CSPs") to evaluate current programs and identify the most effective and economic approach for achieving Act 129 targets.

1.1 Summary of Progress Toward Compliance Targets

The energy savings[2] compliance target for Penn Power is 143,188 MWh/yr and must be achieved by May 31, 2013 per Act 129. Based on CPITD verified gross energy savings[3], Penn Power has achieved 75 percent of the energy savings compliance target. These figures are shown in **Figure 1-1**. The PUC will determine compliance using CPITD verified gross energy savings.

Figure 1-1: Portfolio CPITD Energy Savings

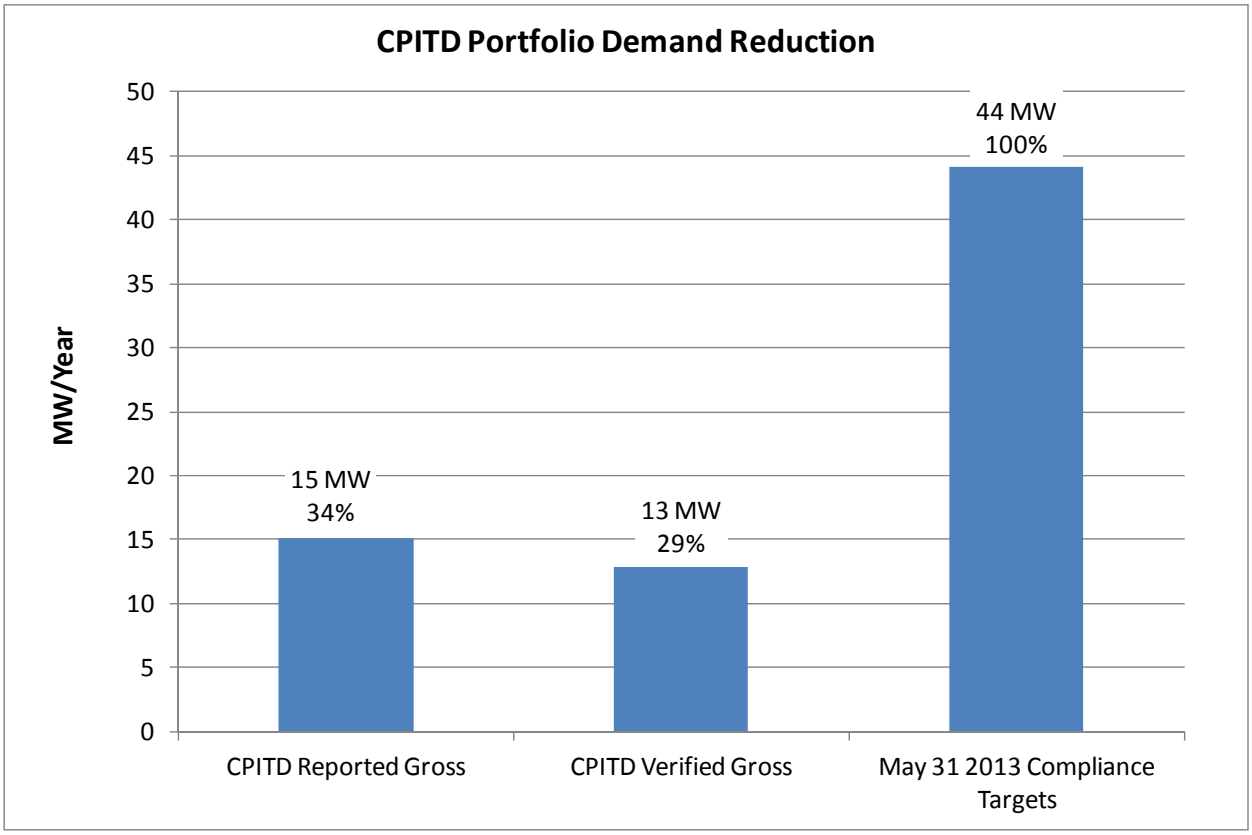


[2] Herein, energy savings refers to annualized energy savings and is measured in kWh/year or MWh/year. Energy savings are reported at the meter.

[3] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

The system peak demand reduction[4] compliance target for Penn Power is 44 MW per Act 129 and must be achieved by September 30, 2012. Based on CPITD verified gross demand reduction[5], Penn Power has achieved 29 percent of the demand reduction compliance target. These figures are shown in **Figure 1-2**. The PUC will determine compliance using CPITD verified gross demand reduction.

Figure 1-2: Portfolio CPITD Peak Demand Reduction[6]



[4] Herein, demand reduction refers to the EDC's system peak demand reduction in the EDC's top 100 hours of highest demand, as defined by the PA PUC and is measured in kW or MW.

[5] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

[6] For cumulative results through Plan year 3 demand reductions are at the customer level. Reported results for PY4 will include the addition of line losses.

Act 129 mandates that the number of measures offered to the low-income sector be proportionate to the low-income sector's share of total energy usage.[7] There are 7 measures available to the low-income sector. The measures offered to the low-income sector therefore comprise 17.1 percent of the total measures offered. This exceeds the fraction of the electric consumption of the utility's low-income households divided by the total electricity consumption in the Penn Power territory (10.6 percent). These values are shown in **Table 1-1**. Over 200 measures are offered in the low-income WARM program, yet in this classification a home weatherization audit is one measure. The energy efficiency kits mailed to low-income customers is also categorized as one measure, though it contains several items that target the plug loads and lighting end-uses. Likewise, the measure classification scheme also treats, for example, all commercial lighting upgrades as two separate measures, logically distinguished by the rebate application process than whether a fixture is a 3-lamp T8 or a 4-lamp T5.

Table 1-1: Low-Income Sector Compliance Metrics

	Low-Income Sector	All Sectors	% Low-Income
# of Measures Offered	7	41	17.1%
Electric Consumption (MWh/yr)	494,113	4,644,360	10.6%

The CPITD reported gross energy savings for low-income sector programs (excluding low-income participation in non-low-income programs) is 2,548 MWh/yr; this is 2.2 percent of the CPITD total portfolio reported gross energy savings.

Including low-income customer participation in non-low-income programs, the CPITD reported gross energy savings achieved is 13,126 MWh/yr; this is 11.4 percent of the CPITD total portfolio reported gross energy savings.

The CPITD verified gross energy savings achieved in for low-income programs (excluding low-income participation in non-low-income programs) is 2,271 MWh/yr; this is 2.1 percent of the CPITD total portfolio verified gross energy savings.[8]

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

[8] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

Including low-income customer participation in non-low-income programs, the CPITD reported verified energy savings achieved is 12,832 MWh/yr; this is 11.9 percent of the CPITD total portfolio reported verified gross energy savings.[9] [10]

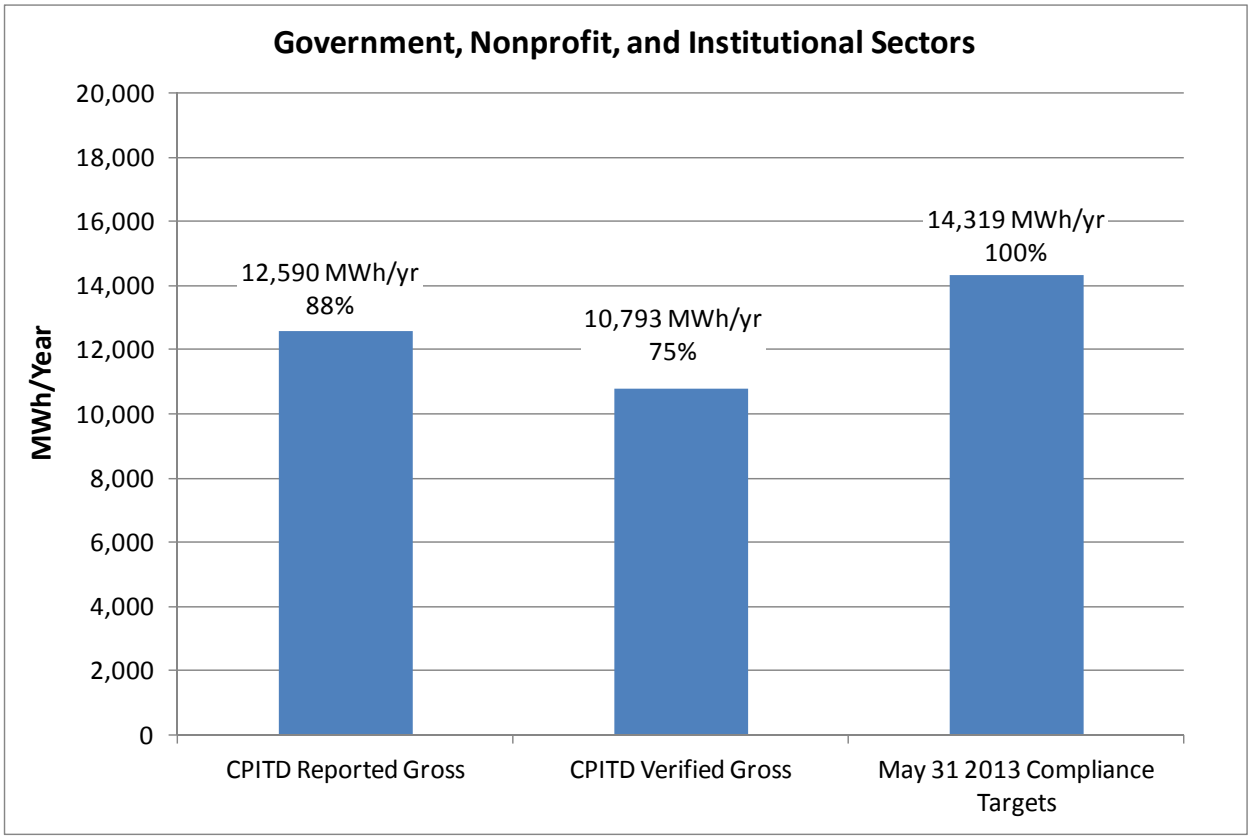
[9] The low-income participation in general residential programs is computed as follows: Three of the seven general residential programs offered by the Company have the majority of savings attributable to low-cost or no-cost measures. The Home Energy Audit and Multi-Family programs provide no-cost conservation kits, while the efficient products program owes most of its savings to upstream and giveaway CFLs, but includes appliances as well. For these programs, it is assumed that the low-income participation share is equal to the 75% of the fraction of LI residents in the service territory. That is, a low-income customer is 75% as likely as a non low-income customer to participate in the no-cost or low-cost programs. Though participation in the Appliance Turn-In program is free, it is assumed that a low-income customer is 50% as likely as a non low-income customer to participate in this program, as one must own multiple appliances to participate. It is assumed that the participation rate for the EE HVAC and New Construction programs is zero, as these programs primarily offer capital cost measures. The 75% and 50% assumptions are loosely based on previous efforts to track low-income participation by matching account numbers to lists of past participants in income-qualified utility programs.

[10] The estimated cost of low-income savings from non-low-income programs is $867,671

Act 129 mandates that a minimum of 10% of the required energy and demand targets be obtained from units of federal, state and local governments, including municipalities, school districts, institutions of higher education and nonprofit entities. Herein, this group is referred to as the government, nonprofit and institutional (GNI) sector.

The energy savings compliance target for the GNI sector for Penn Power is 14,319 MWh/yr, which must be obtained by May 31, 2013. Based on CPITD verified gross energy savings[11], Penn Power achieved 75 percent of the target. These values are shown in **Figure 1-3**.

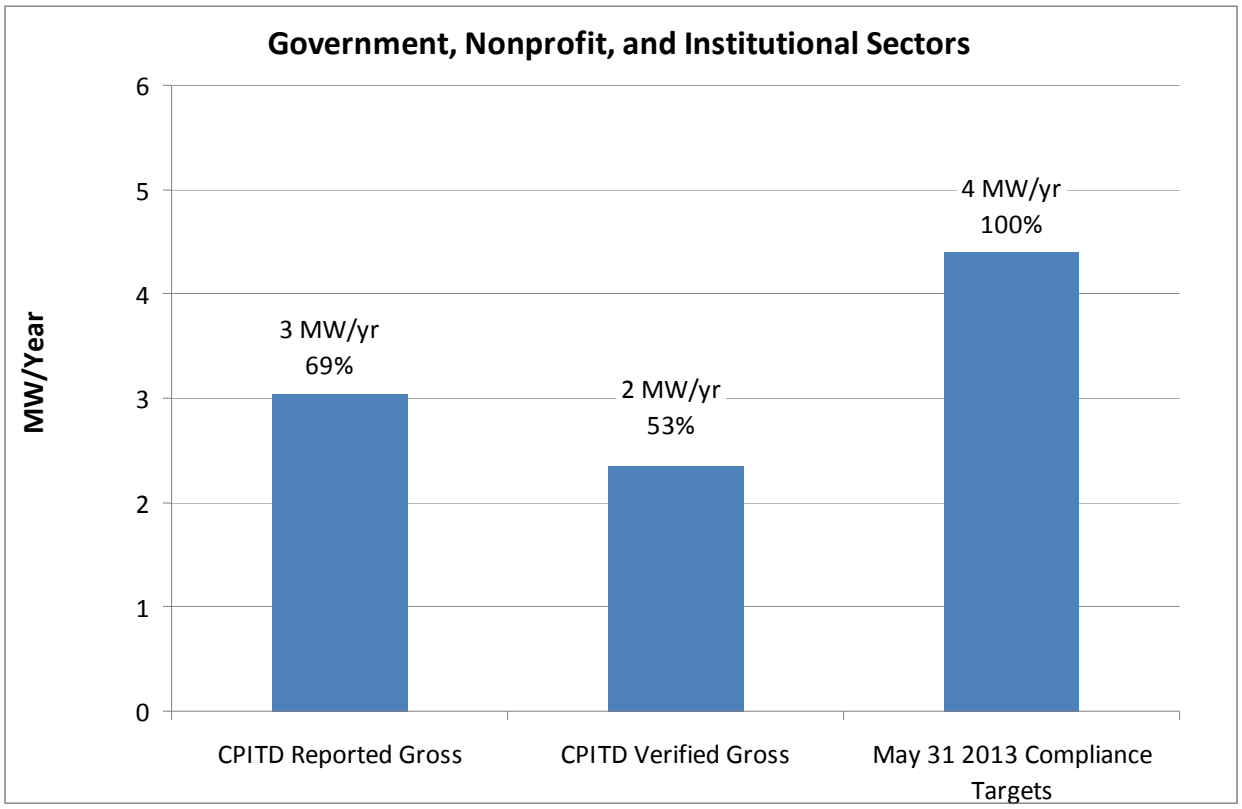
Figure 1-3: GNI CPITD Energy Savings



[11] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

The peak demand reduction compliance target for the GNI sector for Penn Power is 4.4 MW. Based on CPITD verified gross demand reduction[12], Penn Power achieved 53 percent of the target. These values are shown in **Figure 1-4**.

Figure 1-4: GNI CPITD Peak Demand Reduction[13]



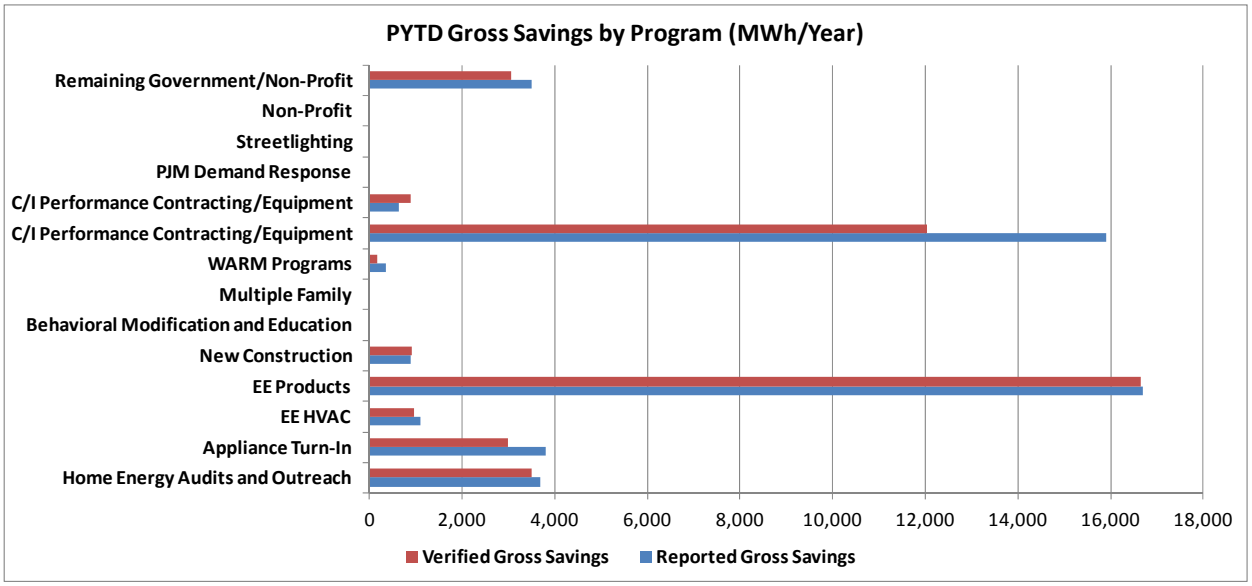
[12] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

[13] For cumulative results through Plan year 3 demand reductions are at the customer level. Reported results for PY4 will include the addition of line losses.

1.2 Summary of Energy Impacts

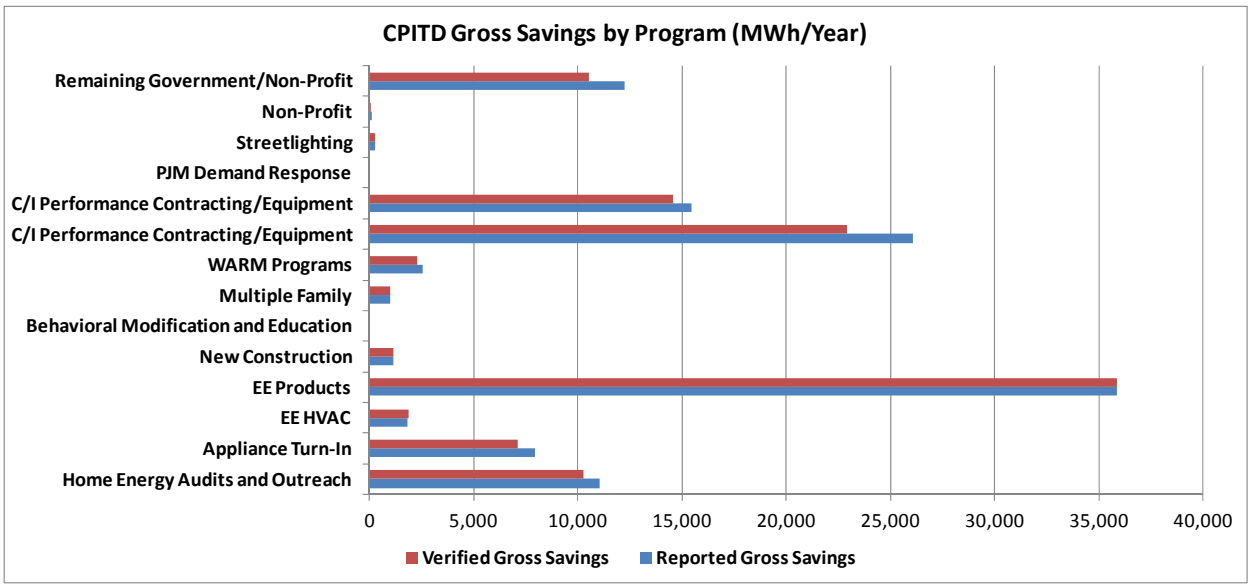
A summary of the reported and verified energy savings by program for the program year is presented in **Figure 1-5**.

Figure 1-5: PYTD Gross Energy Savings by Program



A summary of the cumulative reported and verified energy savings by program is presented in **Figure 1-6**.

Figure 1-6: CPITD Gross Energy Savings by Program



A summary of energy impacts by program through the PY3 Q4 is presented in **Table 1-2** and **Table 1-3**.

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

Program	Participants			Reported Gross Energy Savings (MWh/Year)		
	IQ	PYTD	CPITD	IQ	PYTD	CPITD
Demand Reduction	-5	2,041	2,683	n/a	n/a	n/a
Home Energy Audits and Outreach	2,069	5,863	20,133	1,295	3,682	11,073
Appliance Turn-In	456	2,069	4,305	802	3,795	7,916
EE HVAC	174	1,983	2,574	167	1,106	1,849
EE Products	19,198	95,115	230,589	3,462	16,700	35,887
New Construction	20	257	383	80	902	1,166
Behavioral Mod and Education	0	0	0	0	0	0
Multiple Family	3	3	3,467	51	0	1,010
WARM Programs	36	541	5,088	6	360	2,548
Small C/I Equipment	10	41	187	13,723	15,913	26,069
Large C/I Equipment	1	7	54	10	634	15,451
PJM Demand Response	0	0	0	0	0	0
Street lighting	0	0	127	0	0	247
Non-Profit	0	0	4	0	0	90
Remaining Gov/Non-Profit [1]	14	29	572	2,745	3,495	12,253
TOTAL PORTFOLIO	**21,976**	**107,949**	**270,166**	**22,341**	**46,588**	**115,559**

[1] CPITD participants were understated in prior PY3 quarterly reports by 495; they did not include participation attributed to PY2 site-specific kit mailings. MWh/MW savings impacts for the same periods were reported correctly.

Table 1-3: Verified Gross Energy Savings by Program

Program	PYTD Reported Gross Energy Savings (MWh/Year)	PYTD Energy Realization Rate	PYTD Verified Gross Energy Savings (MWh/Year)	PYTD Confidence	PYTD Achieved Precision	CPITD Verified Gross Energy Savings (MWh/Year)
Demand Reduction	n/a	n/a	n/a	85%	n/a	n/a
Home Energy Audits and Outreach	3,682	95%	3,513	85%	11%	10,270
Appliance Turn-In	3,795	79%	2,995	85%	6%	7,115
EE HVAC	1,106	88%	973	85%	11%	1,864
EE Products	16,700	100%	16,649	85%	9%	35,876
New Construction	902	101%	908	85%	12%	1,127
Behavioral Mod and Education	0	n/a	0	85%	0%	0
Multiple Family	0	n/a	0	85%	0%	1,021
WARM Programs	360	45%	163	85%	12%	2,271
Small C/I Equipment	15,913	76%	12,035	85%	8%	22,897
Large C/I Equipment	634	139%	883	85%	3%	14,578
PJM Demand Response	0	n/a	0	85%	0%	0
Street lighting	0	n/a	0	85%	0%	246
Non-Profit	0	n/a	0	85%	0%	37
Remaining Gov/Non-Profit	3,495	88%	3,062	85%	12%	10,510
TOTAL PORTFOLIO	**46,588**	88%	**41,182**	**90%**	**5.3%**	**107,812**

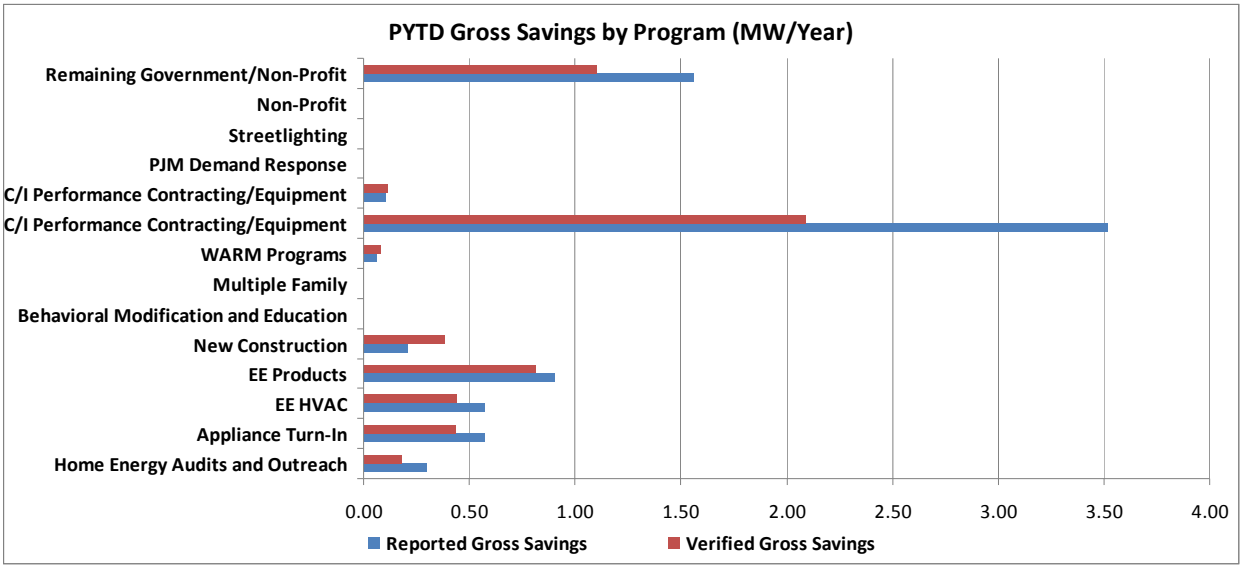
1.3 Summary of Fuel Switching Impacts

Penn Power has not rebated any overt gas to electric fuel switching measures. In some programs, there are rebates available for electric heat pumps or electric water heaters. Customers who choose switch to electric equipment are eligible for rebates. All program participants are asked if gas is available in their homes or businesses. Approximately 28% of customers (i.e. 48 of 173 customers) who received rebates for electric heat pumps have gas service available in their homes. Approximately 12% of customers who received rebates for electric water heaters (4 of 33 customers) have gas service available at their homes.

1.4 Summary of Demand Impacts

A summary of the reported and verified demand reduction by program for the program year is presented in **Figure 1-7**. The impacts below reflect a line loss factor of 0%[14].

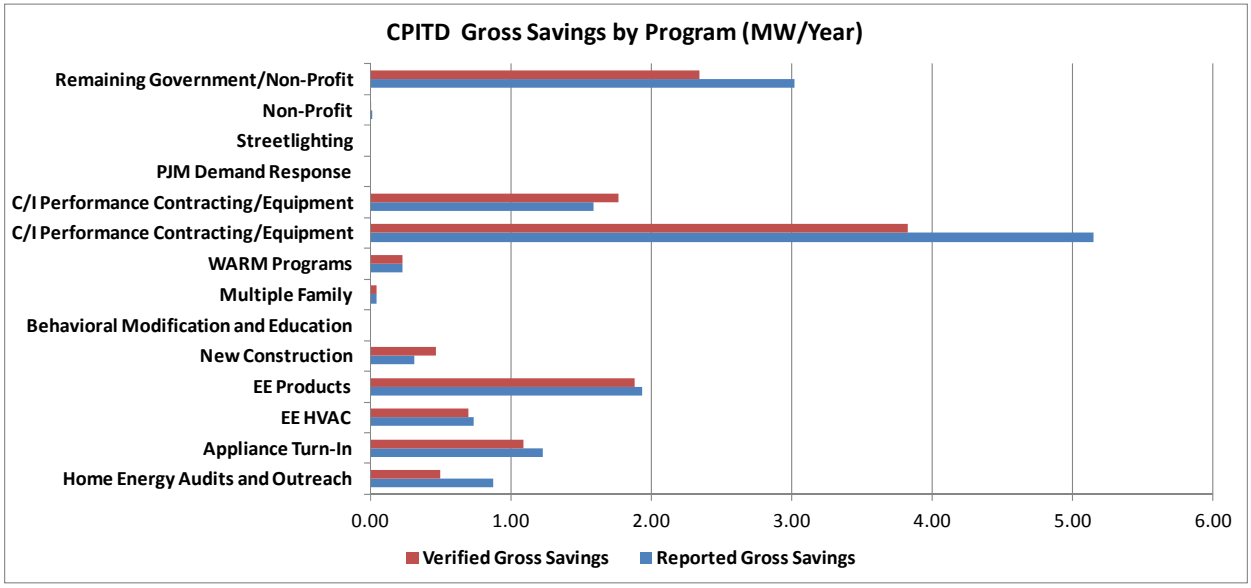
Figure 1-7: PYTD Reported Demand Reduction by Program



[14] For cumulative results through Plan year 3 demand reductions are at the customer level. Reported results for PY4 will include the addition of line losses.

A summary of the cumulative reported and verified demand reduction by program is presented in **Figure 1-8**.

Figure 1-8: CPITD Reported Demand Reduction by Program



A summary of demand reduction impacts by program through the PY3 Q4 is presented in **Table 1-4** and **Table 1-5**.

Table 1-4: EDC Reported Participation and Gross Demand Reduction by Program

Program	Participants			Reported Gross Demand Reduction (MW)		
	IQ	PYTD	CPITD	IQ	PYTD	CPITD
Demand Reduction	-5	2,041	2,683	n/a	n/a	n/a
Home Energy Audits and Outreach	2,069	5,863	20,133	0.11	0.30	0.88
Appliance Turn-In	456	2,069	4,305	0.10	0.57	1.23
EE HVAC	174	1,983	2,574	0.05	0.57	0.74
EE Products	19,198	95,115	230,589	0.19	0.90	1.93
New Construction	20	257	383	0.02	0.21	0.32
Behavioral Mod and Education	0	0	0	0.00	0.00	0.00
Multiple Family	3	3	3,467	0.00	0.00	0.04
WARM Programs	36	541	5,088	0.00	0.06	0.23
Small C/I Equipment	10	41	187	3.06	3.52	5.15
Large C/I Equipment	1	7	54	0.00	0.10	1.59
PJM Demand Response	0	0	0	0.00	0.00	0.00
Street lighting	0	0	127	0.00	0.00	0.00
Non-Profit	0	0	4	0.00	0.00	0.02
Remaining Gov/Non-Profit[1]	14	29	572	1.43	1.56	3.02
TOTAL PORTFOLIO	**21,976**	**107,949**	**270,166**	**4.95**	**7.79**	**15.15**
TOTAL PORTFOLIO INCLUDING LINE LOSSES [2]	**n/a**	**n/a**	**n/a**	**n/a**	**TBD**	**TBD**

NOTES:
[1] CPITD participants were understated in prior PY3 quarterly reports by 495; they did not include participation attributed to PY2 site-specific kit mailings. MWh/MW savings impacts for the same periods were reported correctly.

[2] For cumulative results through Plan year 3 demand reductions are at the customer level. Reported results for PY4 will include the addition of line losses.

Table 1-5: PYTD Verified Gross Demand Reduction by Program

Program	PYTD Reported Gross Demand Savings (MW/Year)	PYTD Demand Realization Rate	PYTD Verified Gross Demand Savings (MW/Year)	PYTD Confidence	PYTD Achieved Precision	CPITD Verified Gross Demand Savings (MW/Year)
Demand Reduction	n/a	n/a	n/a	85%	n/a	0
Home Energy Audits and Outreach	0.3	60%	0.18	85%	10%	0.5
Appliance Turn-In	0.6	76%	0.44	85%	6%	1.1
EE HVAC	0.6	77%	0.44	85%	8%	0.7
EE Products	0.9	93%	0.84	85%	8%	1.9
New Construction	0.2	181%	0.38	85%	12%	0.5
Behavioral Mod and Education	0.0	n/a	0.00	85%	0%	0.0
Multiple Family	0.0	n/a	0.00	85%	0%	0.0
WARM Programs	0.1	131%	0.08	85%	12%	0.2
Small C/I Equipment	3.5	59%	2.09	85%	13%	3.8
Large C/I Equipment	0.1	110%	0.11	85%	4%	1.8
PJM Demand Response	0.0	n/a	0.00	85%	0%	0.0
Street lighting	0.0	n/a	0.00	85%	0%	0.0
Non-Profit	0.0	n/a	0.00	85%	0%	0.0
Remaining Gov/Non-Profit	1.6	71%	1.10	85%	11%	2.3
TOTAL PORTFOLIO	**8**	73%	**5.66**	**90%**	**6.2%**	**12.9**
TOTAL PORTFOLIO INCLUDING LINE LOSSES [1]	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**

NOTES:

[1] For cumulative results through Plan year 3 demand reductions are at the customer level. Reported results for PY4 will include the addition of line losses.

1.5 Summary of PY3 Net to Gross Ratios

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

1.6 Summary of Portfolio Finances and Cost-Effectiveness

A breakdown of the portfolio finances is presented in **Table 1-6**.

Table 1-6: Summary of Portfolio Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$709	$2,564	$8,131
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$709**	**$2,564**	**$8,131**
Design & Development	$0	$2	$81
Administration[1]	$188	$2,170	$3,967
Management[2]	$76	$251	$544
Marketing[3]	$107	$105	$234
Technical Assistance	$11	$36	$92
Subtotal EDC Implementation Costs	**$383**	**$2,564**	**$4,917**
EDC Evaluation Costs	$44	$232	$391
SWE Audit Costs	$43	$81	$143
Total EDC Costs[4]	$1,179	$5,441	$13,581
Participant Costs[5]	$0	$5,523	$20,200
Total TRC Costs[6]		**$8,319**	**$25,508**
Total Lifetime Energy Benefits	$0	$23,179	$71,869
Total Lifetime Capacity Benefits	$0	$3,020	$8,088
Total TRC Benefits[7]	**$0**	**$26,199**	**$79,956**
TRC Ratio[8]	**0.00**	**3.15**	**3.13**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

1.7 Summary of Cost-Effectiveness by Program

TRC ratios are calculated by comparing the total TRC benefits and the total TRC costs. **Table 1-7** shows the TRC ratios by program and other factors used in the TRC ratio calculation.

Table 1-7: PYTD TRC Ratios by Program

Program	TRC Benefits ($1000)	TRC Costs ($1000)	TRC Ratio	Discount Rate	Line Loss Factor
Demand Reduction	0	772	0.00	7.92%	11.0%
Home Energy Audits and Outreach	2,199	696	3.16	7.92%	11.0%
Appliance Turn-In	2,104	388	5.42	7.92%	11.0%
EE HVAC	1,012	855	1.18	7.92%	11.0%
EE Products	8,772	1,746	5.02	7.92%	11.0%
New Construction	1,225	307	3.99	7.92%	11.0%
Behavioral Mod and Education	0	0	0.00	7.92%	11.0%
Multiple Family	0	11	0.00	7.92%	11.0%
WARM Programs	210	288	0.73	7.92%	11.0%
Small C/I Equipment	6,784	1,469	4.62	7.92%	11.0%
Large C/I Equipment	943	420	2.25	7.92%	11.0%
PJM Demand Response	0	266	0.00	7.92%	11.0%
Street lighting	0	9	0.00	7.92%	11.0%
Non-Profit	0	7	0.00	7.92%	11.0%
Remaining Gov/Non-Profit	2,950	779	3.79	7.92%	11.0%

2 Residential Demand Reduction Program

This program pays an incentive to participants who agree to have controls installed on their Central Air Conditioning (CAC) systems that enable Penn Power to limit CAC operation during peak load periods. Once such devices are installed, the utility has 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 Penn Power's top 100 load hours, typically from noon – 7 pm on selected weekdays.

2.1 Program Updates

There were no changes to this program during PY3.

2.2 Impact Evaluation Gross Savings

This program was operated between June 1 and September 30 2012. There were no impacts reported for PY3. The gross /net impact evaluation effort is underway as of this writing, but preliminary results are not yet available.

2.3 Process Evaluation

Process evaluation activities for this program will be detailed in PY4 reports. Activities to date include formal and informal interviews with Penn Power staff and participant surveys.

2.4 Financial Reporting

A breakdown of the program finances is presented in Table 2-6.

Table 2-1: Summary of Residential Demand Reduction Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$0	$67	$99
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$0**	**$67**	**$99**
Design & Development	$0	$0	$4
Administration[1]	$48	$679	$887
Management[2]	$3	$9	$27
Marketing[3]	$0	$3	$7
Technical Assistance	$0	$1	$3
Subtotal EDC Implementation Costs	**$51**	**$692**	**$928**
EDC Evaluation Costs	$2	$12	$16
SWE Audit Costs	$1	$3	$7
Total EDC Costs[4]	$54	$775	$1,049
Participant Costs[5]	$0	$67	$99
Total TRC Costs[6]		**$772**	**$1,042**
Total Lifetime Energy Benefits	$0	$0	$0
Total Lifetime Capacity Benefits	$0	$0	$0
Total TRC Benefits[7]	**N/A**	**$0**	**$0**
TRC Ratio[8]	**N/A**	**0.00**	**0.00**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

3 Residential Home Energy Audits and Outreach Program

The purpose of the Home Energy Audit Program is to: 1) identify energy savings opportunities; 2) install basic low-cost measures; and 3) make customers aware of other programs offered by Penn Power. Households will be able to identify energy saving opportunities through three types of home energy audits.

1. Online Audit – This program is 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. Customers who complete the on-line audit are eligible to receive an energy conservation kit valued at up to $104 once the audit is complete and submitted. There is no additional charge to complete the on-line audit.
2. Walk Through audit – This program is an on-site audit administered by a trained professional auditor. Customers pay a fee of $50 for the walk-through on-site audit and will receive direct-installed low-cost energy savings measures of equal value selected by the trained auditor based on the needs of the home.
3. Whole House Comprehensive audit – 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.

3.1 Program Updates

On January 12, 2012, the Commission approved the Petition of Pennsylvania Power Company, Pennsylvania Power Company and Pennsylvania Power Company ("the Companies") for modifications to their EE&C Plans. Immediately following approval, the Companies began implementing the First Amended EE&C Plan changes, which included the consolidation of the Residential Whole Building Comprehensive with the Home Energy Audit program.

3.2 Impact Evaluation Gross Savings

This program has three components: Online audits with mailings of conservation kits, walk-through audits with direct installation of low-cost measures, and comprehensive whole-house retrofits. In PY3, the conservation kits accounted for approximately 99% of the program level energy savings. Furthermore, the majority of the remaining savings were attributable to the same low-cost measures that are available through the conservation kits, but were installed directly by participating contractors. The evaluation process used a combination of on-site visits, an online survey data collection system and telephone interviews.

Gross Impact Analysis for the Energy Conservation Kit Contents

Two separate energy conservation kits were sent to customers depending 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, a "smart" power strip, 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 a "smart" power strip. In addition to the main two kit types, a relatively small number of "Legacy" kits were delivered in PY3. These kits are phased out of the program, in favor of the two standard kits discussed above.

In evaluating the gross impact analysis for the energy conservation kits in PY3, four items must be determined:

1. The average energy savings and demand reduction for the kit elements that are installed; and,
2. The number and type of kits mailed to customers during PY3,
3. The installation rate for the various kit elements
4. The percentage of kits claimed to be sent to customers that were not received by customers, either because of shipping problems, customer moving, or other such scenarios.

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 incorporated into the 2011 PA TRM.

The second item, the total number and type of kits mailed to customers in PY3, is determined by reviewing the program tracking system, shipment tracking logs, and invoices from the implementation contractor. Specifically, the tracking system is checked to assure that: (1) duplicate shipments to the same account number are not counted, (2) all kits being claimed for PY3 are eligible based on shipment dates; and (3) the ex-ante kWh savings and kW reduction claims are reasonable. The energy conservation kits are mailed to the Pennsylvania address on record for those ratepayers who complete the online energy audit questionnaire (or complete the questionnaire via telephone).

The third item, installation rates, are determined through a combination of online surveys and on-site visits, except for CFLs which are given "deemed" installation rates of 0.84, consistent with the TRM. While initial survey findings for CFL ISRs are approximately 70%, there is evidence that it may take one year or more for the ISR to reach 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 and low flow showerheads 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. . Similarly, LED night lights are only counted as "installed" if they replace an incandescent night light. While the furnace whistle installation rate is also deemed at 47.4% in the TRM, in PY3, results from approximately 60 on-site visits and over 100 surveys conducted in Penn Power, Penn Power, and Penn Power service territories indicate that the ISR for the furnace whistle is approximately 11%. The gross verified savings for the kits are calculated with the lower ISR. ADM uses EDC specific ISRs to calculate the verified savings for the kits.

The final item, the percentage of kits that are claimed to be sent to customers but for whatever reason do not arrive, is determined through the online survey instrument and through follow up telephone interviews. Online survey respondents are asked to indicate whether they received the conservation kit that was mailed to them. For the small percentage of respondents who indicated that they did not receive the kits, a follow up telephone interview was conducted at a later date to determine if the kit was received late, or if the customer had misunderstood the question in the online survey. The true rate of kit non-receipts is very low, and the EDC-specific measurement of the rate is subject to significant uncertainty[15]. Therefore, ADM combined results for all three EDCs to develop an unsuccessful delivery rate of 3%. In addition to adjustments for in-service rates, all gross reported savings are discounted by this rate.

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 nested sample of the online survey respondents. The results of this analysis indicate that the vast majority of the variance in savings attributable to this program is a result of installation rates. This variance is best captured in the online survey instrument, as it allows for a large sample size not easily obtained through on-site data collection. Furthermore, the online survey seems particularly appropriate because the majority of program participants completed the audit process online (as opposed to the telephone and walk-through methods). The more anonymous nature of online survey method is also arguably less likely to introduce bias in the estimates of installation rates. The on-site visits did find, on average, slightly higher apparent ISRs than the online survey instrument. One possible reason is that some time had elapsed between the online surveys and on-site visits, so that participants may have had opportunities to install more measures. The more likely scenario, however, is that the field technicians may have counted pre-existing or otherwise installed CFLs as being attributable to the program.

[15] That is, though it is quite certain that the rate of successful delivery is in the high 90percent range, whether the rate of unsuccessful delivery for a particular EDC is truly 1%, 2%, or 3% is difficult to determine. Note, this analysis excludes kits that were shipped back to the implementer due to incorrect addresses – such customers are excluded from the *gross reported* numbers.

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. All of the energy efficiency measures distributed in the walk-through audits have energy savings protocols that are in the 2011 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.

Savings claims were further verified through a telephone survey effort focusing on the installation rates. While this is a direct-install program, the telephone survey recognizes that some of the items may have been uninstalled by participating home owners. The installation rates determined through the telephone survey were applied to each measure to determine verified savings, except for CFLs which have a "deemed" installation rate of 0.84.

3.2.1 Program Sampling

The two program components - online and walk-through audits - are treated as separate programs, each with distinct populations, samples, and realization rates. A sample point in the context of this program is "a program participant." For the online/telephone audits component, this is equivalent to "one energy conservation kit[16]." For the walk-through audit component, it is equivalent to saying "one home."

Online Audits

The sampling approach for the online audit program component is random sampling. Stratification by kit type was done to ensure that appropriate realization rates are determined for the two individual kit types. While many of the measures are mutually included in the various kits, there are some measures that are unique to certain kits and as such the kits can be viewed as heterogeneous subsets with homogeneous sample points. In other words, it would not be appropriate to impute the installation rates of kits for electric water heater homes on non-electric water heater kits.

[16] Out of approximately 22,000 participants in PY3, two participants have been sent two kits each. Each mailing has a different job number in the tracking database, indicating that these are not mere duplicate records, but rather, duplicate mailings.

Overall, there are 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, with reasonable assumptions for installation rates.
2. The sample size for online surveys was sufficiently large to determine gross impact with ±15% relative precision at the 85% confidence level. This large sample size (see Table 1-9) is motivated by the fact that installation rates for some items in the kit are sufficiently low that only a large sample can accurately capture a true estimate of the installation rate. This is the main advantage of an online survey instrument as compared to on-site data collection for this program.
3. The sample size for on-site surveys targeted ±15% relative precision at the 85% confidence level.

Walk-Through Audits

There were very few walk-through audits completed in the third program year. Though the on-site audits account for approximately 1% of program impacts, the M&V effort did conduct calculation reviews and a very small number of verification interviews for due diligence purposes. The sampling approach for the walk-through audit program component is random sampling, but for Penn Power, two of the largest savings projects were sampled with certainty to verify that the audit and retrofit activities and utility bills are consistent with the savings claims.

For the purely prescriptive, low-cost measures, 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.

Table 3-1: Residential Home Energy Audits and Outreach Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	1,405	875	0.07	346
PY3 Q2	821	525	0.04	70
PY3 Q3	1,574	991	0.08	119
PY3 Q4	2,063	1,291	0.10	143
PY3 Total	5,863	3,682	0.30	678
CPITD Total	20,133	11,073	0.88	1,196

Table 3-2: Residential Home Energy Audits and Outreach Program Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
PY3 Electric Water Heat Kits	all	3,116	0.5	15%	24	all	Mix of on-site visits and on-line surveys
PY3 Non-Electric Water Heat Kits	all	2,685	0.5	15%	24	all	Mix of on-site visits and on-line surveys
PY2 and PY1 Kits	all	40	0.5	50%	3	all	Calculation Review and measure-specific ISRs from PY3 data collection
In-Home Audits	all	22	0.5	50%	3	all	Calculation Review, Invoice review
Program Total		5,863		15%	54		Achieved sample count does not include calculation reviews

Table 3-3: PY3 Residential Home Energy Audits and Outreach Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
PY3 Electric Water Heat Kits	2,027,725	90%	0.34	17%	1,819,140
PY3 Non-Electric Water Heat Kits	1,619,940	103%	0.23	13%	1,661,542
PY2 and PY1 Kits	12,387	87%	0.5	5%	10,766
In-Home Audits	21,881	100%	0.5	42%	21,881
Program Total	3,681,933	95%	Observed Lower than 0.5, Used 0.5 for Precision Calculations	11%	3,513,330

Table 3-4: PY3 Residential Home Energy Audits and Outreach Program Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
Electric Hot Water Kits	158	52%	0.34	17%	82
Non-Electric Hot Water Kits	137	70%	0.23	13%	96
In-Home Audits	1	30%	0.5	5%	0
In-Home Audits	1	100%	0.5	42%	1
Program Total	297	60%	Observed Lower than 0.5, Used 0.5 for Precision Calculations	10%	179

3.3 Impact Evaluation Net Savings

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

3.4 Process Evaluation

The process evaluation effort for PY3 includes program participant surveys and contractor surveys. The objectives were to evaluate free-ridership and spillover and to investigate key process-related questions such as source of awareness, program satisfaction, and barriers to making energy efficiency improvements. Data collection for this effort has concluded and analysis is currently underway. Therefore, process related and NTG results are not available as of this writing.

Methodology

The population for this effort included all PY3 program participants. The evaluation plan called for 70 completed surveys for the Walk-Through Audit and Whole House Comprehensive Audit programs each (across all EDCs) and 70 completed surveys per EDC for the Online Home Audit program. This number of completions is sufficient for a 90/10 confidence interval around net-to-gross estimates at the program level for the Walk-Through Home Audit and Whole-House Comprehensive Audit programs and at the EDC level for the Online Home Audit program.

Measure categories were assigned program by program based on several considerations, including similarity of measures, participation numbers, delivery mechanisms (e.g. direct-install versus rebates), and potential differences in customer decision-making across different types of measures. Using the information provided in the participant tracking data, the following measure categories were assigned:

- Online Audit program consists of the following measure categories: CFLs, power strips, hot water equipment (aerators and showerheads), LED nightlights, and furnace whistles.
- Walk-Through Audit program consists of the following measure categories: CFLs, power strips, hot water equipment (e.g., aerators, showerheads, pipe wrap), and LED nightlights.
- Whole-House Comprehensive Audit program consists of the following measure categories: CFLs, power strips, hot water equipment (e.g., aerators, showerheads, pipe wrap), LED nightlights, and test-out energy efficiency improvements.

Next, the records were aggregated by EDC, program, account number, and measure category. To avoid double-contacting individual participants for multiple evaluation activities, the evaluation team removed accounts already contacted by ADM for PY3 evaluation activities from the eligible survey sample frame.

3.5 Financial Reporting

A breakdown of the program finances is presented in **Table 3-5**

Table 3-5: Summary of Residential Home Energy Audits and Outreach Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$143	$395	$1,196
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$143**	**$395**	**$1,196**
Design & Development	$0	$0	$11
Administration[1]	$4	$207	$319
Management[2]	$10	$32	$65
Marketing[3]	$4	$11	$54
Technical Assistance	$9	$18	$36
Subtotal EDC Implementation Costs	**$27**	**$268**	**$485**
EDC Evaluation Costs	$3	$21	$41
SWE Audit Costs	$5	$9	$16
Total EDC Costs[4]	$177	$694	$1,739
Participant Costs[5]	$0	$407	$1,211
Total TRC Costs[6]		**$696**	**$1,737**
Total Lifetime Energy Benefits	$0	$2,107	$6,882
Total Lifetime Capacity Benefits	$0	$92	$279
Total TRC Benefits[7]	**N/A**	**$2,199**	**$7,160**
TRC Ratio[8]	$143	$395	$1,196

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

4 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.

4.1 Program Updates

There were no changes to this program during PY3.

4.2 Impact Evaluation Gross Savings

4.2.1 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. The TRM protocols for refrigerator and freezer PY3 are substantially different than the previous protocols. In PY3, the deemed energy impacts for refrigerators and freezers are as follows:

Measure Description	Unit Annual Energy Savings	Unit Annual Demand Reduction
Refrigerator/Freezer Recycling without replacement	1,659 kWh	0.2057 kW
Refrigerator/Freezer Recycling with replacement with ENERGY STAR®	1,205 kWh	0.1494 kW
Refrigerator/Freezer Recycling with replacement with non ENERGY STAR[17]	1,091 kWh	0.1350 kW
RAC	Varies by Zip Code	0.6395 kW

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. The verification survey was designed to identify whether a refrigerator or freezer was recycled without

[17] This entry is from the PY4 TRM.

replacement or if it was replaced with a standard or ENERGY STAR unit. The survey also verifies that the room AC , refrigerator, or freezer was operational at the time of retirement. A final step is necessary to avoid double-counting of savings in the case that a refrigerator is replaced with an ENERGY STAR unit and rebated under the Efficient Products program. ADM conducted a database lookup to identify customers that recycled a refrigerator or freezer, and also received rebates for ENERGY STAR refrigerators or freezers during the same program year. The savings associated with the ENERGY STAR refrigerators or freezers were then subtracted from the gross verified savings for the program.

In PY3, there is a significant decrease in the average per-unit savings achieved by this program. This decrease is not due to poor program execution, but rather is due to the fact that the ex-ante per-unit savings estimations for the tracking database were developed with PY2 TRM protocols. The gross realization rate is essentially a reflection of the savings reduction associated with the PY3 TRM update.

4.2.2 Program Sampling

The sampling approach for this program is a simple random sample. Sample sizes will target 90% confidence level and 10% precision[18].

4.2.3 Process Evaluation

A participant survey was conducted in September and October 2012, with customers who participated in the program in PY3. The survey was designed to capture:

- Customer perceptions and program experiences
- Satisfaction overall and across multiple program dimensions
- Awareness and attitudes of energy efficiency and conservation
- Net-to-gross
- Preliminary impact findings.

The data collection phase is recently completed; therefore, there are no results to report as of this writing.

Methodology

In order to achieve a 90 ± 10 percent level of precision, approximately 70 completed surveys were attempted for each measure type recycled through the program, per EDC. A random sample was drawn at the customer level, ensuring the measure mix for each replicate is similar to that of the overall sample frame. During the analysis phase, weight ratios will be applied to the data so that the analyses are reflective of the population.

[18] See Table 1-9.

The initial sample file included data for 25,865 measures, representing 19,076 unique households. A review of the distribution and statistics of participants shows that participants are most likely to have recycled a refrigerator (65 percent). Recycled freezers and room air-conditioners make up 20 percent and 16 percent of the population, respectively. To avoid contacting participants multiple times, 81 households were removed as these had been contacted for a previous survey conducted by ADM or for another program evaluation.

Table 4-1: Residential Appliance Turn-In Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	677	1,238	0.20	166
PY3 Q2	517	973	0.16	27
PY3 Q3	425	783	0.11	19
PY3 Q4	450	802	0.10	26
PY3 Total	2,069	3,795	0.57	239
CPITD Total	4,305	7,916	1.23	221
This program exclusively serves the residential sector				

Table 4-2: Residential Appliance Turn-In Program Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
Refrigerators/Freezers	n/a	2,209	0.5	15%	23	123	Verification Survey
				5%	census	census	Cross check to EE Products
Room ACs	n/a	117	0.5	20%	13	19	Verification Survey
				5%	census	census	Calculation Review
Program Total		2,326		15%	36	142	

Table 4-3: PY3 Residential Appliance Turn-In Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
Refrigerators/Freezers	3,770	79%	CV<<0.5	6%	2,971
Room ACs	25	101%	CV<<0.5	6%	25
Program Total	3,795	79%		6%	2,995

Table 4-4: PY3 Residential Appliance Turn-In Program Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
Refrigerators/Freezers	0.503	73%	CV<<0.5	6%	0.367
Room ACs	0.068	100%	CV<<0.5	6%	0.068
Program Total	0.571	76%		6%	0.435

4.3 Impact Evaluation Net Savings

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

4.4 Financial Reporting

The TRC for this program has decreased due to the PY3 TRM update: The per-unit annual savings per refrigerator/freezer are now approximately 1.3 MWh compared to the 1.7 MWh that resulted from the PY2 TRM protocol. A breakdown of the program finances is presented in **Table 4-5**

Table 4-5: Summary of Residential Appliance Turn-In Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$26	$112	$221
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$26**	**$112**	**$221**
Design & Development	$0	$0	$6
Administration[1]	$59	$248	$517
Management[2]	$3	$10	$24
Marketing[3]	$0	$3	$7
Technical Assistance	$0	$1	$3
Subtotal EDC Implementation Costs	**$62**	**$263**	**$556**
EDC Evaluation Costs	$3	$14	$24
SWE Audit Costs	$1	$3	$7
Total EDC Costs[4]	$92	$392	$808
Participant Costs[5]	$0	$112	$221
Total TRC Costs[6]		**$388**	**$801**
Total Lifetime Energy Benefits	$0	$1,883	$4,581
Total Lifetime Capacity Benefits	$0	$221	$577
Total TRC Benefits[7]	**N/A**	**$2,104**	**$5,159**
TRC Ratio[8]	**N/A**	**5.42**	**6.44**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

5 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 promotes the sale of high-efficiency, ENERGY STAR® compliant equipment through installation contractors selling to residential customers who are replacing existing home HVAC equipment and provides incentives to customers who replace existing or standard HVAC equipment in residential applications with qualifying energy-efficient heating and cooling systems.

Additionally, 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.

5.1 Program Updates

There were no changes to this program during PY3.

5.2 Impact Evaluation Gross Savings

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 determined by which reference city the installed location is closest to and nameplate information from the equipment regarding unit capacities and efficiencies.

For all new HVAC systems, the baseline efficiencies are stipulated in the PA TRM and are in accordance with Federal codes and standards.

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 three activities:

1. A review of the DSM tracking system to identify claimed nameplate data,
2. On-site verification visits, and;

3. A review of program application materials including contractor and retailer invoices, rebate applications, and AHRI certificates.

The first activity, reviewing the DSM tracking system, consists of several elements. First the tracking data are checked for duplicate entries, program eligibility based on date, and proper use of PA TRM protocols for calculating savings. Upon reviewing the tracking system data it was identified that the claimed savings values were computed using "average" capacity and efficiency assumptions rather than characteristics specific to each unit/application. Additionally, all units were assumed to have operational hours consistent with the reference city of Harrisburg, rather than the closest and most appropriate reference city. In the context of this program, proper use of PA TRM protocols for calculating savings requires data fields listing the 'nameplate' data for each unit. These data elements, as well as the AHRI certificate number for new equipment applications, are captured and stored in the tracking system. However, these are not reported for the census of sites in the DSM tracking database. As such, a sufficiently large sample of program applications was checked on a one-by-one basis in the online database to determine actual capacities and efficiencies. The AHRI database was then cross-checked to ensure that the capacities and efficiencies listed in the online database were accurate. Finally, a zip-code "lookup" was used to identify the closest reference city and therefore the most appropriate deemed hours of operation[19]. The proper PA TRM protocols for savings calculations were then applied to this sample of program participants, and the results were compared with the claimed savings from the DSM tracking system to develop a "preliminary desk review realization rate." The number of ductless mini-split heat pump rebates has increased in PY3 compared to PY2. The TRM has two sets of "equivalent full load hours" based on whether the mini-split is a primary or secondary system in a home. Using the DSM tracking database, ADM aggregated the total installed capacity per premise for mini split systems. In about 50% of cases, the total installed capacity was less than 24,000 BTUh. ADM determined that in these cases, the ductless mini-split heat pumps (or air conditioners) should be treated as secondary units. For reference, approximately 20% of rebated central heat pumps are under 24,000 BTUh in heating capacity. The distributions are shown in Figure 4-1.

[19] This zip code lookup was generated by ADM and modified slightly by the SWE team. The version used in this EM&V effort included any modifications proposed by the SWE as it was taken from the Appendix of the draft 2012 PA TRM

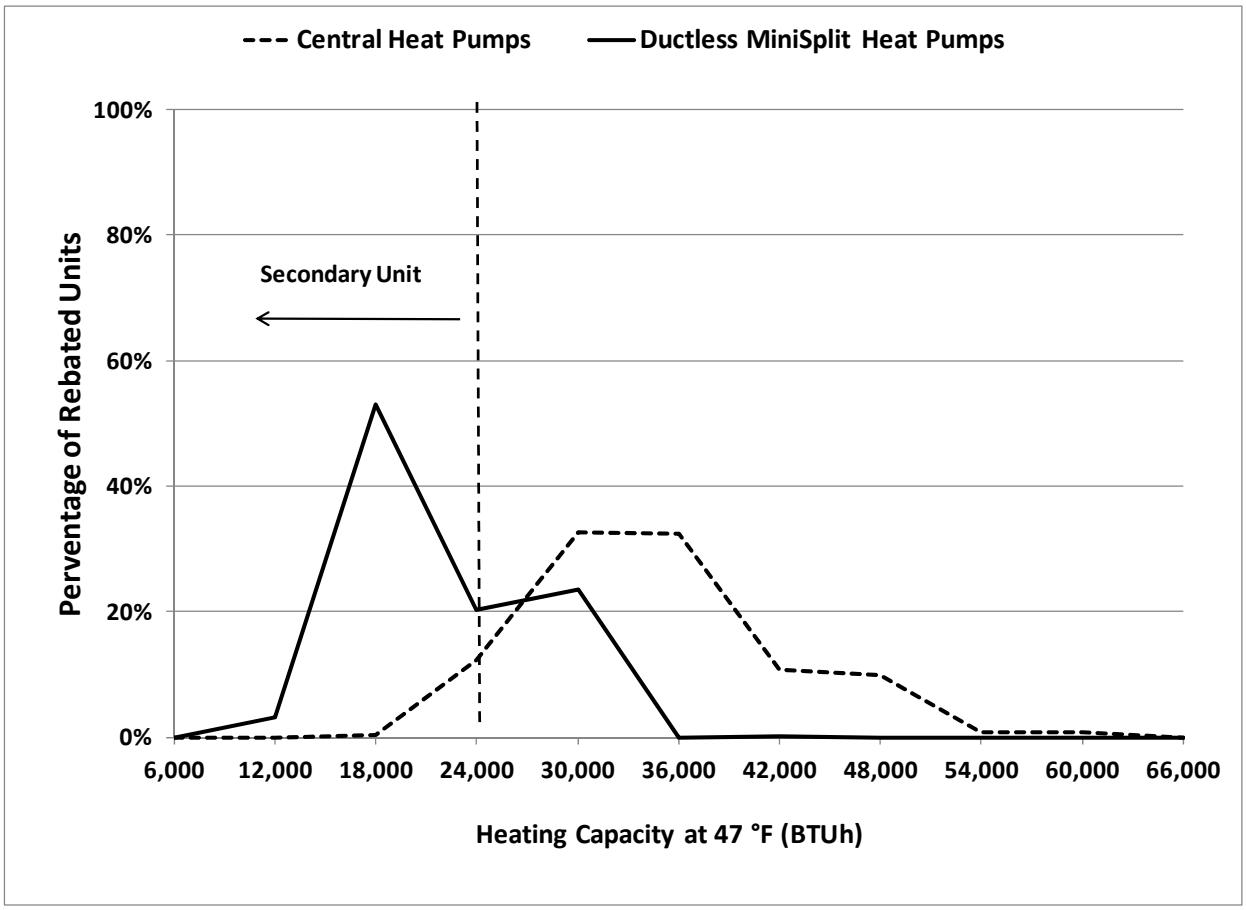


Figure 4-1. Heating capacities of central (dashed profile) and ductless (solid profile) heat pumps with the threshold at 24,000 kBTU, below which ductless systems are considered to be 'secondary'.

The second activity, on-site verification visits, was conducted to verify installation and operation of a sample of program participants. During these on-site visits, field staff documented important unit characteristics and took pictures of the installed equipment. The product of these visits is two important verification items:

1. An "installation verification rate," and;
2. Installed capacity and efficiency characteristics that were used to check the accuracy of the online program database.

The third activity, reviewing program application materials, is performed in an effort to verify that program application materials, on-site data, AHRI database specifications, and information found in the online program database are all in agreement.

Final verified savings are a product of the "preliminary desk review realization rate," and the "installation verification rate," adjusted for any discrepancies found through review of the online database, application materials, and on-site data collection activities. The vast majority of variance between claimed and verified savings comes as a result of using proper capacities, efficiencies, and deemed hours of operation rather than assumed averages. The variance attributable to discrepancies found on-site or through review of program application materials are negligible in comparison.

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.

This was accomplished by surveying program participants via telephone to confirm that they had received a tune-up during PY3. Additionally, several informal phone interviews with participating contractors were conducted to confirm that they were actively providing HVAC maintenance services and submitting rebate applications. Program application materials were also reviewed for a sample of tune-up participants.

Secondly, to properly utilize the PA TRM protocols for savings calculations, the capacities and efficiencies of the units being serviced needs to be known. The capacities of the units in question are inferred through the model numbers. This information is not always available, however – the model numbers may have been illegible or omitted from the applications, for example. As such, the average capacity and efficiencies found during the desk review of new equipment were used as proxy values. Cross-checking program application materials for a sample of tune-up participants verified that these proxy values, on average, were reasonable. Proper deemed hours of operation were also determined using the zip-code "lookup" mentioned above.

The PA TRM deemed savings calculations were applied using the capacities, efficiencies, and deemed hours of operation as described above. The resulting savings estimates were then compared to the claimed savings values from the DSM tracking system to develop a "preliminary desk review realization rate." Final verified savings are a product of this preliminary realization rate and the verification rate determined through the participant telephone interviews.

Evaluation Findings

The program had a 100% verification rate. All of the variance between the gross reported and gross verified savings was attributable to the application of PA TRM protocols to gross reported savings that were estimated with 'typical' capacities, efficiencies, and heating, cooling hours.

5.2.1 Program Sampling

The two program components – new equipment rebates and AC tune-ups - are treated as separate programs, each with distinct populations, samples, and realization rates. A sample point in the context of this program is "a participating unit." For new equipment, this is equivalent to "one CAC, ASHP, or GSHP." For the AC tune-up component, it is equivalent to "one serviced CAC or ASHP."

New Equipment: CAC's and Heat Pumps

There are two sampling activities associated with this component of the program. The first is sampling from the DSM tracking system to identify unit characteristics from the online program database, while the second is sampling for on-site verification visits. The gross impact confidence and precision is based upon the sample size for on-site verification visits.

The first sampling activity was to select new equipment participants from the DSM tracking system to identify relevant unit capacities and efficiencies from the online program database. The characteristics of these sample points were also verified using the AHRI database. To ensure accuracy at the measure level, each measure was treated as a separate population, from which a simple random sample was drawn. Thus a unique sample was drawn for each of the following measures: CACs, ASHPs and GSHPs. The sample size was then determined such that the results would exceed ±10% relative precision at the 90% confidence level at the measure level. The sample is not strictly random because (1) any preexisting valid AHRI lookups from previous program years were retained and utilized and (2) if AHRI certification numbers that were downloaded from the database as a result of conducting inclusive searches, the data were retained and were used to match AHRI certificates or make/model numbers from the program tracking data. In this fashion, approximately 50% of all rebated HVAC units were matched to corresponding data from the AHRI database.

The second sampling activity was for on-site verification visits. The sampling approach for these on-site visits is batch-wise stratified random sampling on a quarterly basis. Due to the relatively small number of participating ground source heat pumps, just two strata – heat pumps and CACs – were sufficient to determine this component's gross impact with ±15% relative precision at the 85% confidence level.

AC Tune-Ups

A simple random sample of AC tune-up participants was used such the ±15% relative precision at the 85% confidence level was achieved for gross impacts attributable to the tune-up measure. The increased sample size for tune-ups in PY3 is necessary because tune-ups make up a relatively larger percentage of the total program savings than in previous years.

Table 5-1: Residential Energy Efficiency HVAC Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	1,195	499	0.35	185
PY3 Q2	430	241	0.12	48
PY3 Q3	184	199	0.05	39
PY3 Q4	174	167	0.05	42
PY3 Total	1,983	1,106	0.57	314
CPITD Total	2,574	1,849	0.74	406

Table 5-2: Residential Energy Efficiency HVAC Program Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
HVAC Equipment	Qualitative Strata: GSHP, ASHP, CAC	343	0.499	5%	206	107	AHRI Lookups, TRM calculation review
HVAC Equipment	Qualitative Strata: GSHP, ASHP, CAC		0.5	20%	13	16.00	On-Site Verification Visits
HVAC Tune-Ups	n/a	1,640	0.5	15%	23	35.00	Inspection of Invoices
HVAC Tune-Ups	n/a		0.5	15%	23	35.00	Telephone Verification Interviews
Solar Water Heaters	n/a	-	0.5	30%	6	-	TRM Calculation Review
Program Total		1,983		15%	271	193	

Table 5-3: PY3 Residential Energy Efficiency HVAC Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
HVAC Equipment	558,260	111%	0.3 for mini-splits, 0.4 to 0.6 for CAC, ASHP, GSHP, Weighted average is 0.50	18%	618,522
HVAC Tune-Ups	547,793	65%	CV<<0.5	12%	354,094
Solar Water Heaters	-	n/a	CV<<0.5	n/a	-
Program Total	1,106,053	88%		11%	972,616

Table 5-4: PY3 Residential Energy Efficiency HVAC Program Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
HVAC Equipment	96	90%	0.3 for mini-splits, 0.4 to 0.6 for CAC, ASHP, GSHP	18%	86
HVAC Tune-Ups	475	74%	CV<<0.5	12%	352
Solar Water Heaters	-	n/a	CV<<0.5	n/a	-
Program Total	571	77%		8%	438

5.3 Impact Evaluation Net Savings

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

5.4 Process Evaluation

Tetra Tech conducted interviews with key groups associated with the Pennsylvania HVAC program to better understand the program and its various impacts. These activities included the following:

- Program manager in-depth interview
- Program implementation staff in-depth interviews
- Participating trade ally contractor interviews

- Participant surveys

Methodology

Tetra Tech designed the program participant process evaluation survey to evaluate the general experiences with program and to verify program impact indicators based on participant perceptions. The sample information was used to supplement the survey by providing contact information for targeted respondents as well as to provide measure information, such as measure type installed, which was used to inform the pattern of questions that the respondent was asked. Records were randomly sampled for each measure type from the PY3 rebate population.

In order to ensure the data were representative of the population, weighting ratios were applied to the survey responses to account for sampling and differential response so that statistical analysis of the survey results will accurately represent the larger population from which the sample was drawn. To weight back up to the sample frame, deration the total number of measure types available, the number sampled, and the number of completed surveys were considered.

Tetra Tech also randomly sampled and interviewed nine HVAC contractors that participated in the program in PY2. These interviews were conducted with semi-structured interviews and were exploratory to provide insight into issues for further investigation. PY4 activities will include updated interviews with HVAC contractors to assess the market and program impact on sales.

Key Findings

- The previous federal tax credit offerings have positively impacted program participation for high-efficiency equipment; however, as the federal offerings diminished, the program saw a slight reduction in program participation. Fifty-three percent of surveyed participants indicated that they received additional funding outside of what was provided by the program. This perception was supported via a monthly review of the rebate application counts which showed a modest decrease in HVAC equipment installations in PY3 (through March 2012) compared to PY2.
- Participants and contractors, alike, are highly satisfied with the program and their respective electric distribution company. Overall, surveyed respondents are satisfied with the program, with 59 percent of respondents rating their level of satisfaction with the program as a ten, on a zero to ten scale, with zero being very dissatisfied and ten being very satisfied.
- Overall, from the contractors' perspective, the program is meeting and occasionally exceeding expectations. Contractors commented that the program is well run, well thought out, and that they are satisfied with their experiences.
- Contractors play a substantial role in encouraging customers to participate in the program, emphasizing the importance of contractor-program relations, which will likely further increase the program's reach over time.

- Contractors regularly discuss opportunities for increased energy efficiency with their customers. Surveyed customers also reported that their contractors taught them how to maintain the equipment installed.

The consensus from the contractor in-depth interviews was that they face challenges selling high-efficiency equipment to their customers. One contractor stated, “We promote higher efficiency, but it’s becoming a tougher and tougher sale.” The primary contributing factor is that the current group of rebates (i.e., from utilities, manufacturers, as well as the federal tax credit) does not sufficiently reduce the incremental costs of moving from a 13 SEER to a 14.5+ SEER central air conditioner or heat pump.

5.5 Financial Reporting

The TRC for this program is lower than last year. This is in part due to increased uptake of capital cost measures such as ground source heat pumps. A breakdown of the program finances is presented in Table 5-5.

Table 5-5: Summary of Residential Energy Efficiency HVAC Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$42	$230	$406
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$42**	**$230**	**$406**
Design & Development	$0	$0	$3
Administration[1]	-$95	$122	$243
Management[2]	$3	$14	$33
Marketing[3]	$14	$13	$38
Technical Assistance	$0	$1	$3
Subtotal EDC Implementation Costs	**-$78**	**$150**	**$320**
EDC Evaluation Costs	$0	$14	$20
SWE Audit Costs	$2	$4	$7
Total EDC Costs[4]	-$34	$397	$752
Participant Costs[5]	$0	$692	$1,175
Total TRC Costs[6]		**$855**	**$1,514**
Total Lifetime Energy Benefits	$0	$772	$1,608
Total Lifetime Capacity Benefits	$0	$240	$438
Total TRC Benefits[7]	**N/A**	**$1,012**	**$2,046**
TRC Ratio[8]	**N/A**	**1.18**	**1.35**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

6 Residential Energy Efficient Products Program

This program provides financial incentives to customers and support to retailers that sell energy-efficient products such as ENERGY STAR® qualified appliances or CFLs. 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.

6.1 Program Updates

There were no changes to this program during PY3.

6.2 Impact Evaluation Gross Savings

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.

There were two separate activities within the CFL component of this program in PY2: upstream discounts and giveaway events. The impact evaluation for both activities within the CFL program component includes the following verification elements:

- Review of shipment invoices, including types and quantities of CFLs distributed to participating retailers. These shipment invoices are carefully matched to the DSM tracking system to confirm proper counts and bulbs types claimed.
- Review of the DSM tracking system to assure there are no duplicate entries and that all bulbs were eligible for being counted in PY2 based on invoice dates.
- 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.
- For CFL giveaway events, a review of the event documentation including photographs and post-event reports.

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.
    - For three particular measures – room air conditioners, dehumidifiers, and clothes washers – the PA TRM requires a partially deemed approach. That is, certain characteristics of the appliance or the household in which the appliance is used affect the calculations.

Upon review of the DSM tracking system, it was found that the CSP energy savings and demand calculations for room air conditioners used Harrisburg as the reference city in all cases. This was corrected by using a zip-code "lookup" to identify the closest reference city to the household in which the unit was used for each case. Additionally, the savings for dehumidifiers assumed that all of the rebated units had a capacity between 25 and 35 pint per day. This resulted in an understatement of energy savings attributable to dehumidifiers, as many of the units had capacities greater than that range (and accordingly greater deemed savings). The default export of the DSM tracking system for the program did not have a data field listing the capacities of each dehumidifier rebated. Fortunately, these parameters *are* captured and recorded in the tracking database, though in a format that precludes determination of these parameters for the census of the population[20]. Accordingly, ADM sampled a sufficiently large number of rebated dehumidifiers to check the distribution of capacities. Deemed energy savings and demand reductions from the PA TRM were applied to this sample of dehumidifiers and compared to the claimed savings in the DSM tracking system. The resulting realization rate was applied to the population of dehumidifiers rebated through the program. Finally, the DSM tracking system energy savings calculations for clothes washers assumed that all units were operating in households with electric water heating. However, on-site data collection activities revealed that this was not necessarily the case. For the sample of clothes washers verified on-site, information regarding the households' water heating fuel source was documented and used to properly assign energy savings according to the PA TRM. These energy savings were compared to the DSM tracking system's claims and used to develop a realization rate that was applied to the population of clothes washers rebated through the program.

[20] This is technically possible, and future exports may indeed include these essential fields. For the PY2 report, ADM staff needed to access these data elements on a rebate by rebate basis using the online "Vision DSM" database tool.

For LED holiday lighting, the DSM tracking system had a systematic error of over estimating energy savings by a factor of six. This was corrected by applying the proper deemed energy savings and demand reductions in accordance with the PA TRM for all LED holiday lights. For the rest of the appliances rebated though the program, the claimed energy savings and demand reductions were appropriately calculated in the DSM tracking system. As a result, a realization rate for these appliances was calculated based on the results of the field verification activities.

The preceding discussion illustrates the fact that the majority of the variance between claimed savings and verified savings was the result of miscalculations in the DSM tracking system, which were corrected during the "desk review" phase of verification. The only exception, which was revealed during field verification, was the prevalence of non-electric water heating and its effect on verified savings for clothes washers.

6.2.1 Program Sampling

The M&V of the upstream CFL program component does not require field work or customer surveys. A census of shipment invoices along with the calculations in the DSM tracking system were reviewed to ensure that the energy savings and demand reductions are claimed according to the protocols in the PA TRM. Minor discrepancies were found regarding baseline wattage assumptions and there were some rounding errors but overall there was very little variance between claimed and verified savings.

The sampling approach for the appliance rebate program component is batch- stratified random sampling on a quarterly basis (for on-site verification) [21]. A sample point in the context of the appliance rebate component of this program is defined as "one appliance." 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, as described in the previous section.

Two sampling activities were required for the appliance component of the program:

1. A sample of rebated dehumidifiers from the DSM tracking system was examined in the online program database to identify each unit's capacity in pints per day. This was a simple random sample that achieved ±6% precision at the 90% confidence level. The sample size for on-site physical verifications will be sufficient to determine gross impact with ±30% relative precision at the 90% confidence level.

2. The sampling technique was stratified random sampling with clothes washers comprising one stratum, and all other appliances composing a separate stratum. This stratification was chosen because of the variance in savings unique to clothes washers resulting from different water heating fuel sources.

[21] See Table 1-9.

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 Penn Power.

Table 6-1: Residential Energy Efficient Products Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	26,962	4,723	0.255	437
PY3 Q2	22,158	3,682	0.203	98
PY3 Q3	26,748	4,834	0.258	131
PY3 Q4	19,237	3,462	0.186	98
PY3 Total	95,105	16,700	0.903	763
CPITD Total	230,589	35,887	1.935	1,081

Table 6-2: Residential Energy Efficient Products Program Sampling Strategy for PY3

Stratum	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Achieved Sample Size	Evaluation Activity
Upstream Lighting	89,145	0.5	10%	Census on calculation review, near census on invoice	Calculation Review, Invoice check
CFL Giveaway	591	0.5	10%	census	Calculation Review, Invoice check
Clothes Washers	805	0.5	30%	23	on-site verification
Dehumidifiers	463	0.5	30%	128	TRM calculation review
LED Holiday Lights	118	0.5	30%	census	TRM calculation review
All Other	2,630	0.5	30%	18	on-site verification
Program Total	93,752			169	

Table 6-3: PY3 Residential Energy Efficient Products Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
Upstream Lighting	15,729	100%	CV <<0.5	10%	15,693
CFL Giveaway	449	100%	CV <<0.5	10%	451
Clothes Washers	208	73%	CV <<0.5	15%	151
Dehumidifiers	54	247%	CV <<0.5	6%	134
LED Holiday Lights	34	17%	n/a	0%	6
All Other	225	96%	CV <<0.5	17%	215
Program Total	16,700	100%		9%	16,649

Table 6-4: PY3 Residential Energy Efficient Products Program Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
Upstream Lighting	0.82	88%	CV <<0.5	10%	0.72
CFL Giveaway	0.02	82%	CV <<0.5	10%	0.02
Clothes Washers	0.01	98%	CV <<0.5	15%	0.01
Dehumidifiers	0.00	590%	CV <<0.5	6%	0.03
LED Holiday Lights	0.00	n/a	n/a	0%	0.00
All Other	0.05	87%	CV <<0.5	17%	0.04
Program Total	0.90	90%		8%	0.82

6.3 Impact Evaluation Net Savings

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

6.4 Process Evaluation

A participant survey was conducted in September and October 2012, with customers who participated in the program in PY3. The survey was designed to capture:

- Customer perceptions and program experiences
- Satisfaction overall and across multiple program dimensions
- Awareness and attitudes of energy efficiency and conservation
- Net-to-gross
- Preliminary impact findings.

The data collection phase is recently completed; therefore, there are no results to report as of this writing.

Methodology

In order to achieve a 90 ± 10 percent level of precision, approximately 70 completed surveys were attempted for each measure type (refrigerator, clothes washer, dehumidifier, room air conditioner, and heat pump water heater) rebated through the program, per EDC.

A random sample was drawn at the customer level after aggregating records by account numbers, ensuring the measure mix for each replicate is similar to that of the overall sample frame. During the analysis phase, weight ratios will be applied to the data so that the analyses are reflective of the population.

6.5 Financial Reporting

A breakdown of the program finances is presented in **Table 6-5**

Table 6-5: Summary of Residential Energy Efficient Products Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$98	$483	$1,081
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$98**	**$483**	**$1,081**
Design & Development	$0	$0	$5
Administration[1]	-$236	$302	$679
Management[2]	$10	$29	$46
Marketing[3]	$88	$68	$117
Technical Assistance	$0	$2	$4
Subtotal EDC Implementation Costs	**-$137**	**$402**	**$850**
EDC Evaluation Costs	$3	$14	$25
SWE Audit Costs	$4	$7	$11
Total EDC Costs[4]	-$31	$905	$1,968
Participant Costs[5]	$0	$1,331	$2,401
Total TRC Costs[6]		**$1,746**	**$3,276**
Total Lifetime Energy Benefits	$0	$8,396	$18,445
Total Lifetime Capacity Benefits	$0	$376	$842
Total TRC Benefits[7]	**N/A**	**$8,772**	**$19,287**
TRC Ratio[8]	**N/A**	**5.02**	**5.89**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

7 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.

7.1 Program Updates

The incentive structure was modified due to changes in IEEC code requirements. Penn Power also added an ENERGY STAR V3 requirement to participate.

7.2 Impact Evaluation Gross Savings

This program started up late in PY2, and contributes approximately 1% of the portfolio level savings for PY3. The PY3 evaluation approach is similar to that employed in PY2, although ADM added several on-site verification visits for the PY3 evaluation.

For the PY3 evaluation, ADM focused on conducting engineering reviews of a sample of projects. The engineering review involved inspection of the REM/Rate models associated with the rebated buildings. For each sampled home, ADM analysts ran the REM/Rate input files and made the following considerations:

1. Are the baseline specifications in accordance to those in the 2011 PA TRM?
2. Are the claimed impacts attributable to improved construction practices and premium efficiency HVAC systems and appliances, or do they result from modifications that are not supportable by the PA TRM?[22]
3. Is the REM/Rate modeling performed correctly and does it provide accurate results[23]?
4. Are the participating HERS raters accurately describing the homes in the REM/Rate models and HERS ratings?

[22] For example, it would not be appropriate to claim energy savings based on differences in the 'reference' and 'as built' models' thermostat settings, or by virtue of using different heating or cooling degree days in the two models.

[23] There can be relatively minor variations in savings because the HERS raters may have different versions of REM/Rate. ADM used version 12.98 to conduct the simulation model reviews.

If any irregularities or inconsistencies are discovered in the above checks, ADM recalculated the energy savings and determined the realization rate for the particular sampled project.

Evaluation Findings

The engineering review in large validated that the reference homes were modeled in accordance with the PA 2010 TRM requirements. In rare cases, the REM/Rate models miscalculated the energy usage of ground source heat pumps. For Penn Power, all four sampled projects out of six in the highest savings stratum exhibited the aforementioned problem, and the energy savings realization rate for this stratum was approximately 20%. On the other hand, the verified demand reductions are significantly higher than the gross reported demand reductions. This discrepancy is due to the implementer's REM/Rate calculations being relatively conservative s in comparison to the algorithms in the 2011 PA TRM. The separate (extrinsic to REM/Rate) of accounting for TRM-based lighting and appliances proved to be challenging to adhere to. The primary difficulty is that, during the time of the home inspection, the lamps may not be fully installed. It is advantageous for M&V site inspections to occur in the late construction stage because key components such as insulation, window make and model and whole house air infiltration properties easy to verify. For the evaluation sample, ADM collected information on installed ENERGY STAR lighting and appliances through surveys with occupants and home builders.

7.2.1 Program Sampling

The sampling approach for this program is stratified random sampling. The sample size is sufficient to determine this program's gross impact with ±15% relative precision at the 85% confidence level[24]. The sample employs three strata due to the skewed distribution of energy savings. The stratification is along claimed energy savings, and the strata are determined such that all strata have approximately the same amount of cumulative gross reported energy savings. Homes with electric space heating and electric water heating tend to have much higher claimed savings than homes with gas heating. Homes with ground source heat pumps tend to have the highest claimed savings in the population.

[24] See Table 1-9.

Table 7-1: Residential New Construction Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	48	156	0.0	3
PY3 Q2	71	212	0.1	121
PY3 Q3	118	454	0.1	196
PY3 Q4	20	80	0.0	16
PY3 Total	257	902	0.21	335
CPITD Total	383	1,166	0.32	567
This program exclusively serves the residential sector.				

Table 7-2: Residential New Construction Program Sampling Strategy for PY3

Stratum	Strata Boundaries (kWh)	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Achieved Sample Size	Evaluation Activity
3	5,000	47	0.4	7	Model Review and Adjustment, Survey for Lights/Appliances
2	3,500	60	0.4	6	Model Review and Adjustment, Survey for Lights/Appliances
1	-	150	0.4	9	Model Review and Adjustment, Survey for Lights/Appliances
Program Total		257		22	

Table 7-3: PY3 Residential New Construction Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
3	275,089	92%	CV<<0.5	20%	253,113
2	246,486	97%	CV<<0.5	22%	240,142
1	380,732	109%	CV<<0.5	19%	414,576
Program Total	902,307	101%		12%	907,831

Table 7-4: PY3 Residential New Construction Program Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
3	45.650	149%	CV<<0.5	20%	67.863
2	57.177	176%	CV<<0.5	22%	100.802
1	108.240	198%	CV<<0.5	19%	214.115
Program Total	211	181%		12%	383

7.3 Impact Evaluation Net Savings

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

7.4 Process Evaluation

ADM and Tetra Tech conducted 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).

In real-time evaluations, there is also a strong component of "Process Feedback" that may result from impact evaluation activities. For example, ADM has communicated the nature of the discrepancy related to the modeling of ground source heat pumps to PSD. After a web-based meeting of ADM and PSD staff, PSD has developed a three-fold effort to remedy this potential issue. First, PSD is engaging Architectural Energy Corporation regarding modifications to REM/Rate that may prevent or minimize this occurrence, even if the nature of the problem lies with the modeler and not the REM/Rate software itself. It appears

that, in PY3, the occurrences of these errors is somewhat lower, though the problem has not been eliminated completely.

7.5 Financial Reporting

The CPITD TRC for this program is now above 1.0 as the startup costs are diluted by multiple years of implementation. A breakdown of the program finances is presented in Table 7-5

Table 7-5: Summary of Residential New Construction Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$16	$390	$567
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$16**	**$390**	**$567**
Design & Development	$0	$0	$6
Administration[1]	$3	-$101	$19
Management[2]	$2	$14	$36
Marketing[3]	$0	$6	$11
Technical Assistance	$0	$1	$5
Subtotal EDC Implementation Costs	**$5**	**-$79**	**$77**
EDC Evaluation Costs	$0	$6	$11
SWE Audit Costs	$1	$5	$10
Total EDC Costs[4]	$22	$321	$666
Participant Costs[5]	$0	$380	$567
Total TRC Costs[6]		**$307**	**$655**
Total Lifetime Energy Benefits	$0	$898	$1,125
Total Lifetime Capacity Benefits	$0	$327	$404
Total TRC Benefits[7]	**N/A**	**$1,225**	**$1,529**
TRC Ratio[8]	**N/A**	**3.99**	**2.33**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

8 Residential Behavioral Modification and Education Program

This program is designed to educate residential customers on no-cost or low-cost measures and behaviors that can reduce energy consumption or energy demand and encourage them to adopt a more energy efficient lifestyle. This information will be conveyed through various means, such as: 1) periodic reports to customers that compare their usage with other, comparable customers in the same geographical area; 2) outreach programs that emphasize the importance of peak load reduction during peak periods and ways to shift energy use away from these periods; 3) informational materials that provide general conservation tips (such as adjusting the thermostat during heating and cooling periods, turning off lights, shortening showers); 4) informational materials that provide low-cost energy efficiency tips (such as replacing incandescent lights with CFLs, installing weather stripping, and using power strips); and 5) informational materials that direct a customer to the FirstEnergy website where additional energy savings information and tools are available.

8.1 Program Updates

Program launch is underway.

8.2 Impact Evaluation Gross Savings

This program officially launched in PY4. As such, there are no gross or net savings for this program in PY3.

8.3 Impact Evaluation Net Savings

This program officially launched in PY4. As such, there are no gross or net savings for this program in PY3.

8.4 Process Evaluation

This program officially launched in PY4 and will be evaluated in PY4

8.5 Financial Reporting

This program started implementation in early PY4. A breakdown of the program finances is presented in **Table 8-1**

Table 8-1: Summary of Residential Behavioral Modification and Education Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$0	$0	$0
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$0**	**$0**	**$0**
Design & Development	$0	$0	$0
Administration[1]	$307	$307	$307
Management[2]	$0	$0	$0
Marketing[3]	$0	$0	$0
Technical Assistance	$0	$0	$0
Subtotal EDC Implementation Costs	**$307**	**$307**	**$307**
EDC Evaluation Costs	$0	$0	$0
SWE Audit Costs	$0	$0	$0
Total EDC Costs[4]	$307	$307	$307
Participant Costs[5]	$0	$0	$0
Total TRC Costs[6]		**$307**	**$307**
Total Lifetime Energy Benefits	$0	$0	$0
Total Lifetime Capacity Benefits	$0	$0	$0
Total TRC Benefits[7]	**N/A**	**$0**	**$0**
TRC Ratio[8]	**N/A**	**0.00**	**0.00**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

9 Residential Multiple 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.

9.1 Program Updates

This program had no participation in PY3.

9.2 Impact Evaluation Gross Savings

This program had no participation in PY3.

9.3 Impact Evaluation Net Savings

This program had no participation in PY3.

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

9.4 Process Evaluation

This program had no participation in PY3.

9.5 Financial Reporting

A breakdown of the program finances is presented in **Table 9-1**

Table 9-1: Summary of Residential Multiple Family Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$4	$4	$61
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$4**	**$4**	**$61**
Design & Development	$0	$0	$1
Administration[1]	$3	$6	$51
Management[2]	$0	$1	$2
Marketing[3]	$0	$0	$0
Technical Assistance	$0	$0	$0
Subtotal EDC Implementation Costs	**$3**	**$7**	**$54**
EDC Evaluation Costs	$0	$4	$7
SWE Audit Costs	$0	$0	$1
Total EDC Costs[4]	$7	$16	$123
Participant Costs[5]	$0	$0	$57
Total TRC Costs[6]		**$11**	**$118**
Total Lifetime Energy Benefits	$0	$0	$521
Total Lifetime Capacity Benefits	$0	$0	$18
Total TRC Benefits[7]	**N/A**	**$0**	**$540**
TRC Ratio[8]	**N/A**	**0.00**	**4.57**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

10 Residential Low-Income (WARM) Programs

WARM Extra Measures Program: This program is an expansion of, and enhancement to the existing comprehensive Low-Income Usage Reduction Program (LIURP), 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, furnace whistles 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 an increase of 75 homes receiving comprehensive treatments above the existing WARM/LIURP program for Penn Power.

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.

10.1 Program Updates

The Statewide Evaluator ("SWE"), along with low-income program administrators, conducted site visits during August, September and October of 2011 to verify that appropriate energy conservation measures were installed. In March 2012, program administrators created an inspection checklist, at the request of the SWE, in order to eliminate the need for additional SWE and program administrator site visits. The approved checklist will be completed by third-party inspectors when they assess work performed by contractors. This improvement provides the SWE with the ability to review the checklist and pertinent customer information upon request.

WARM Extra Measures Program:

This program exceeded its EE&C Plan targets through 2013 and due to minimal funds remaining in the budget, the program was closed at the end of March 2012. Any remaining funds budgeted for this program will be used for ongoing EM&V and reporting.

WARM Plus Program:

This program exceeded its EE&C Plan targets through 2013 and due to minimal funds remaining in the budget, the program was closed at the end of January 2012. Any remaining funds budgeted for this program will be used for ongoing EM&V and reporting.

10.2 Impact Evaluation Gross Savings

In PY3, the WARM Plus program component accounted for 89% of the overall program savings, and the WARM Extra Measures accounted for 11%. There was no participation in the Low-Income Low-Use program for PY3.

WARM Extra Measures Program: ADM conducted telephone surveys to verify that the various energy efficiency measures were installed in accordance with the assumptions in the TRM.

The surveys collected information regarding the installation rates for all measures installed under the WARM Extra Measures Program, though the CFLs and furnace whistles have ISRs that are stipulated in the TRM. 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. 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. Similarly, LED night lights are only counted as "installed" if they replace an incandescent night light.

The ISRs for CFLs and furnace whistles are taken from the TRM. Last year's evaluation surveys have found that for both CFLs and furnace whistles, the ISRs in this program component are higher than the stipulated values in the TRM. These ISRs are higher because this program utilizes "direct-install" implementation strategy rather than the usual (and more cost effective) "direct-delivery" or "point-of-sale" channels. To be consistent with evaluation protocols used for the rest of the residential sector in Penn Power's portfolio, the stipulated TRM ISRs were used instead of the as-found ISRs for the CFLs and furnace whistles. There are practical reasons for this. First, the TRM ISRs can be interpreted as long-term installation rates. Though ISRs may be initially higher for direct-install programs, and initially lower for direct-delivery or upstream programs, it is reasonable to expect that the ISRs may, in the long term, approach the same value. Secondly, past experience has shown that for CFLs in particular, the ISR for the WARM Extra Measures program may be difficult to ascertain because it is not always possible to distinguish CFLs installed through the WARM Program from CFLs installed in the Extra Measures program. Finally, in PY3 ADM has conducted a billing analysis for the PY2 WARM Plus (and underlying WARM) programs. The billing analysis results also include the contribution of the WARM Extra Measures program, and these must be subtracted from the result. Therefore, in an indirect fashion the impacts of the Warm Extra Measures program are also determined by billing analysis.

WARM Plus Program: The ex-ante energy savings for the Warm Plus program are based on the impact evaluation of the 2008 and 2009 WARM program and the 2010 WARM Plus program by job type,[25] which employed a statistical billing analysis. According to the custom measure protocols for low-income weatherization programs, ADM conducted an independent billing analysis of the PY2 (referred to as 2010 above) WARM Plus program. For Penn Power, the WARM Plus program appeared to reduce the participants' weather adjusted energy usage by approximately 10%.

Additionally, both ADM and the SWE team conducted on-site inspections to verify installation of energy efficiency measures. The on-site inspections did not result in adjustments to the reported energy savings, but were used, along with a review of the tracking system and program rules and procedures, to establish the general validity of the application of 2008 and 2009 WARM evaluation results to the 2011 WARM Plus program.

10.2.1 Program Sampling

The sampling schemes for each program component are described below. The overall statistical precision of the program was 6% at the 85% confidence level, driven by 30 surveys for each program component and by billing analysis.

WARM Extra Measures Program: The simple random sample for this program component included 30 telephone verification surveys.

WARM Plus Program: The evaluation approach for this program is billing analysis. Traditional sampling methods do not apply to billing analysis. The billing analysis attempted to include as many past participants as possible. Certain customers had multiple meter reads for the same billing period. For such customers, in certain cases, ADM was able to clearly identify the correct meter read. In other cases where there was much uncertainty about the actual electric energy usage for a given period, the observation was excluded from the evaluation sample. Both the 2010 LIURP program billing analysis and ADM's independent billing analysis show that the baseline usages for participants and the savings achieved relative to the usage are smaller than for the 2008 and 2009 years. As such, the per-unit savings for this program for PY3 are significantly lower than the corresponding numbers for PY2 or PY1. However, there are still significant relative savings, as the typical participant experienced a 10% reduction in electricity usage.

One aspect of ADM's independent analysis that reduced savings compared to 2008 and 2009 involved the subtraction of the savings claimed for the "WARM Extra Measures" program from the WARM Plus participants in the billing analysis. This resulted in an approximate 10% reduction in savings. Note that

[25] 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.

this was not possible or relevant in PY1 and PY2 since the per-home savings for those program years were based on LIURP reports filed with the PUC for the program years 2008 and 2009, when there was no overlap with the WARM Extra Measures program.

Table 10-1: Residential Low-Income (WARM) Programs Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	269	165	0.03	368
PY3 Q2	237	190	0.03	102
PY3 Q3	0	0	0.00	79
PY3 Q4	35	6	0.00	5
PY3 Total	541	360	0.06	555
CPITD Total	5,088	2,548	0.23	735

Table 10-2: Residential Low-Income (WARM) Programs Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
Warm Plus - Space Heat	Electric Space Heat	23	n/a	n/a	Billing analysis of prior year participants	106	Billing Analysis
Warm Plus - Base Load	Base Load	104	n/a	n/a	Billing analysis of prior year participants	431	Billing Analysis
Warm Extra Measures	All	414	0.5	20%	30	30	Telephone Surveys
Low-Income Low-Use	All	0	0.5	n/a	n/a	n/a	n/a
Program Total		541		15%		567	

Table 10-3: PY3 Residential Low-Income (WARM) Programs Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
Warm Plus - Space Heat	47,334	45%	n/a	54%	21,186
Warm Plus - Base Load	224,982	24%	n/a	21%	54,984
Extra Measures	88,152	99%	CV <0.5	13%	87,011
Low-Income Low-Use	-	n/a	n/a		-
Program Total	360,468	45%		12%	163,182

Table 10-4: PY3 Residential Low-Income (WARM) Programs Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
Warm Plus - Space Heat	6	256%	n/a	54%	14
Warm Plus - Base Load	49	132%	n/a	21%	64
Extra Measures	9	45%	CV <0.5	13%	4
Low-Income Low-Use	0	n/a	n/a	0%	0
Program Total	63	131%		12%	82

10.3 Impact Evaluation Net Savings

This program targets customers that are qualified on the basis of low income, yet the WARM Plus program includes many capital cost measures. As such, it is assumed that the NTG ratio is so close to unity that formal net-to-gross surveying is not required. The NTG determination results from the premise indicate that all, or the overwhelming majority, of the energy-efficiency measures would likely not have occurred in the absence of this program.

10.4 Process Evaluation

Tetra Tech completed a process evaluation for the Residential Low-income (WARM) program in PY2. Given there were no significant issues identified through this process evaluation, and no change in program delivery, process evaluation activities were not included as part of the PY3 evaluation scope.

10.5 Financial Reporting

The TRC for this program is much lower in PY3 than in PY2. This is expected because in PY2, the TRC was buoyed by the cost-effective low-income low-use program, while in PY3 the main component was the WARM Plus program which provides comprehensive weatherization services to qualified customers. A breakdown of the program finances is presented in **Table 10-5**

Table 10-5: Summary of Residential Low-Income (WARM) Programs Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$5	$228	$735
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$5**	**$228**	**$735**
Design & Development	$0	$0	$6
Administration[1]	$1	$22	$40
Management[2]	$4	$23	$67
Marketing[3]	$0	$0	$1
Technical Assistance	$0	$2	$11
Subtotal EDC Implementation Costs	**$5**	**$47**	**$126**
EDC Evaluation Costs	$1	$13	$25
SWE Audit Costs	$1	$2	$5
Total EDC Costs[4]	$12	$290	$892
Participant Costs[5]	$0	$228	$735
Total TRC Costs[6]		**$288**	**$886**
Total Lifetime Energy Benefits	$0	$141	$1,579
Total Lifetime Capacity Benefits	$0	$69	$161
Total TRC Benefits[7]	**N/A**	**$210**	**$1,741**
TRC Ratio[8]	**N/A**	**0.73**	**1.96**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer. For the WARM program, there is no net cost to the end-use customer, all products and services are covered by Act 129 funding.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

11 Commercial / Industrial Small Sector Equipment Program

This program consists of the following components:

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

Energy Audit and Technical Assessment: This program component provides information, a list of auditors and funds all of the CFL installations for this class of customers marketed through Nonstandard lighting incentives.

11.1 Program Updates

On January 12, 2012, the Commission approved the Petition of Pennsylvania Power Company, Pennsylvania Power Company and Pennsylvania Power Company ("the Companies") for modifications to their EE&C Plans. Immediately following approval, the Companies began implementing the First Amended EE&C Plan changes, which included the consolidation of the C/I Small Sector Energy Audit and Technical Assessment with the C/I Small Sector Equipment program.

11.2 Impact Evaluation Gross Savings

This program implements both custom measures and prescriptive measures.

Over 95% of the gross reported energy savings for this program were attributable to prescriptive and performance lighting measures, with the remainder of the savings being attributable to prescriptive and custom motors projects, and custom projects. The M&V methodology for this program is described below.

Tracking system review:

ADM worked with Penn Power and SAIC to set up quarterly reports from the implementer's tracking system - EPMIS. Each quarterly report included information for all rebates in the EPMIS database at the time of the report. This information was used to monitor the 'pulse' of each program as it was implemented and also used to inform quarterly sampling. At the end of each quarter ADM reviewed an updated dataset to define a discrete set of rebates that would be included into the population for that quarter's evaluation. Eligibility was based on an application's status and approval date.

ADM also reviewed each dataset and identified sites at which multiple rebates were incentivized. The additional site documentation was used to confirm invoice counts when a multiple rebates covered a single project, and in some cases enabled ADM to reduce the impact on sites with multiple large rebates in separate quarters.

Analytical Desk Review: Prescriptive and Custom

Each sampled site received a thorough desk review before ADM visited the site or calculated ex post verified savings. The desk review included verifying invoices, re-calculating claimed savings using TRM algorithms and/or ex ante assumptions (i.e. fixture quantities, motor horse-powers, EFLHs, etc), and identifying key parameters to be researched on-site. This review informed ADM's fieldwork by identifying missing data and sites at which ADM needed to install monitoring equipment. The desk review was also used to flag sites that were claimed using prescriptive algorithms, but whose savings needed to be calculated using a custom approach. This is the case for several of 'Motors & Drives' rebates which were flagged late in the fourth quarter.

Many prescriptive applications with rebate amounts under $10,000 were submitted through the "Standard Lighting for Business" program component. This program component targeted smaller rebates and strived to simplify the application process for small commercial applicants who may not have the required time or skill to fill out a detailed inventory of the lighting projects. At the time of program design, the 2009 PA TRM was the prevailing guidance document, and Table 12 of that "deemed" the baseline fixtures based on the new efficient fixtures. ADM evaluated all sampled "Standard Lighting for Business" (SLB) projects by applying Appendix C from the 2010 PA TRM and by determining the baseline fixtures through on-site inspection (post only), site contact interviews, and by baseline fixture descriptions available in rebate project documentation. The SLB projects tended to have high verification rates and much of the variability in the realization rates was attributable to differences between Appendix C of the 2010 TRM and Table 12 of the 2009 TRM. The SLB rebate forms are being phased out in favor of the "Non-Standard Lighting for Business" rebate forms described below.

The great majority (over 80% of all prescriptive lighting savings in the C/I sector) of lighting projects were submitted through the "Non-Standard Lighting for Business" (NSLB) program. The NSLB application process requires the applicant to fill out a version of the Appendix C calculator from the 2010 TRM. As such, these projects generally conformed with TRM algorithms. Inconsistencies were limited to discrepancies in EFLH claims and occasionally, usage of 'cut-sheets' for novel lighting fixtures[26]. The overall realization rates for the prescriptive lighting measures are near unity across all three operating companies, indicating that for the most part, results are reported in accordance to TRM protocols.

For custom projects, desk reviews were performed in order to create an EM&V plan for each sampled site. ADM used the project documentation and site contact to determine what monitoring equipment needed to be installed and if baseline monitoring was required. ADM worked closely with SAIC and Penn

[26] The general guidance used in this impact evaluation is that if one can find a similar fixture in Appendix C with a connected load within 5% of the proposed fixture, then one should defer to Appendix C.

Power to identify custom sites at which pre-monitoring would be required by reviewing site documentation for sites early in SAIC's approval process and flagging sites which would only be evaluable with monitored baseline data. ADM reviewed each Custom Incentive application before its approval to ensure its evaluability.

Verification /Data Acquisition (DAQ)

ADM used surveys, on-site verification, and/or data logging in order to address uncertainties identified in the desk review process. ADM determined the requisite level of additional verification by applying the following general rule-set:

Measure Category	Measure Type	Survey	On-Site Verification	Data Logging
Prescriptive	Lighting		x	x*
Prescriptive	Motors & Drives		x	x*
Prescriptive	Other		x	x*
Custom	All		x	x

** As required by the TRM*

In this way ADM ensured that enough information was gathered to make accurate and robust site analyses.

Post DAQ analysis

In order to promote consistency and accuracy, ADM created a Microsoft Excel based calculator for each prescriptive measure rebated in the program that has a stipulated savings algorithm in the Pennsylvania TRM. Each calculator has one spreadsheet that is used to recreate the claimed savings values by entering in values according to the rebate application and site documentation during the desk review. There is a second sheet that is then used to calculate ex post verified savings by updating key parameters according to on-site data collection. In many cases no changes were made between these two sheets, as all key variables were identified correctly through the desk review.[27]

[27] This is particularly true for rebates incentivized through the "Non-Standard Lighting for Business" program and whose connected load reduction was less than 50 kW. These rebates usually included itemized invoices, an itemized list of fixtures and their locations, and fixture cut-sheets. Since the TRM stipulates hours of use by space type for sites whose connected load reduction is less than 50 kW, this documentation proved sufficient much of the time.

Custom measures were evaluated according to the EM&V plan that was written during the desk review and in accordance with IPMVP. Given the nature of these measures, the custom analyses employed monitored data, cut-sheets, and one-time power measurements to characterize energy use and energy savings. For measures installed on equipment used in industrial processes, ADM also collected annual production data (in addition to any production collected during the monitored time period). This was used to normalize energy savings to production.

11.2.1 Program Sampling

ADM evaluated the commercial and industrial programs using stratified ratio estimation. Separate samples were drawn, at the 85% confidence level with 15% precision at the annual evaluation level, for each operating company, program, and quarter. A 'sample point' denotes a particular rebate which was randomly sampled within its population.

At the end of the second, third, and fourth quarter ADM reviewed tracking data to define a discrete list of rebates that became the sample population for that quarter. Once separated into their respective operating companies and programs, this population was then stratified according to measure category (prescriptive vs. custom), common drivers of realization rates or the variability of the realization rates, modes (e.g. "Standard Lighting Rebate" rebates vs. other prescriptive rebates), and the magnitude of rebated savings (used to create 'certainty' strata). ADM used a coefficient of variation (CV) of 0.5 for all qualitative strata that[28], based on the PY2 evaluation, are expected to have homogenous realization rates for sampled projects and a CV of 1.0 for strata that, based on the PY2 evaluation, are expected to have homogenous realization rates for sampled project. The actual observed error ratios for the various strata, as trended from ADM's sample of over 200 site visits in PY3, are significantly smaller than the initial CV estimates. In late PY3, many conservation kits that included CFLs were mailed out to small commercial customers. The CFL mailings were placed into separate strata in ADM's sampling framework. ADM conducted on-site verification visits and telephone verification surveys to determine the in-service rates of the CFLs. Additionally, ADM conducted a metering study to establish hours of use for CFLs installed in facilities that fall into the "other" category according to the lighting section of the 2011 PA TRM. The metering study involved 40 loggers deployed in FirstEnergy service territories in Fall of 2012. The typical hours of use for CFLs in the 'other' category were 1,581 hours, which is approximately 15% lower than the corresponding entry in the Mid Atlantic TRM (there is no corresponding entry in the PA TRM). This lower hours of use resulted in a low realization rate for the program, as a significant fraction of kits were mailed to small commercial customers in the "other" category according to the lighting section in the PA 2011 TRM. Other factors that reduced the realization rate for the kits included instances of CFLs that were mailed to small

[28] Streetlights are given a CV of 0.4 but the PY2 evaluation proved that the variance is in fact much smaller than that.

business customers, but according to surveys, were actually installed in residential settings. The residential hours of use form the PA TRM were used to calculate savings and demand reductions for the proportion of CFLs that were determined to be installed in residential settings.

Table 11-1: Commercial / Industrial Small Sector Equipment Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	10	949	0.20	96
PY3 Q2	8	630	0.11	18
PY3 Q3	0	-	-	42
PY3 Q4	23	14,334	3.20	223
PY3 Total	41	15,913	3.52	378
CPITD Total	187	26,069	5.15	1,539
This program servers the small commercial sector exclusively.				

Table 11-2: Commercial / Industrial Small Sector Equipment Program Sampling Strategy for PY3

Stratum Name	Reported Gross Savings	Strata Boundaries	Population Size	Assumed CV	Achieved Sample	Evaluation Activity
CFL0	12,723,992	n/a	3,543	0.5	98	On-Site+ Survey + Meter
NSL0	772,916	100,000	25	0.5	3	On-Site
NSL1	1,756,439	500,000	7	0.5	4	On-Site
NSL2	537,492	n/a	1	0.5	1	On-Site
SLB0	82,367	100,000	3	1.0	1	On-Site
SLB1	0	500,000	0	1.0	0	On-Site
SLB2	0	n/a	0	1.0	0	On-Site
Prescriptive0	2,548	100,000	2	0.5	1	On-Site
Prescriptive1	0	500,000	0	0.5	0	On-Site
Prescriptive2	0	n/a	0	0.5	0	On-Site
Custom0	37,500	40,000	1	1.0	1	On-Site
Custom1	0	500,000	0	1.0	0	On-Site
Custom2	0	n/a	0	1.0	0	On-Site
SAL0	0	10,000	0	0.4	0	On-Site
SAL1	0	100,000	0	0.4	0	On-Site
SAL2	0	n/a	0	0.4	0	On-Site
Total	**15,913,254**		**3,582**		**109**	**-**

Table 11-3: PY3 Commercial / Industrial Small Sector Equipment Program Summary of Evaluation Results for Energy

Stratum Name	Reported Gross Energy Savings	Realization Rate	Observed CV	Relative Precision	Verified Gross Energy Savings
CFL0	12,723,992	72%	0.6	9%	9,118,507
NSL0	772,916	105%	0.4	31%	814,253
NSL1	1,756,439	89%	0.4	19%	1,567,393
NSL2	537,492	93%	0.4	0%	499,640
SLB0	82,367	40%	0.6	68%	33,220
SLB1	0	n/a	0.6	n/a	
SLB2	0	n/a	0.6	n/a	
Prescriptive0	2,548	0%	1.6	158%	0
Prescriptive1	0	n/a	1.6	n/a	
Prescriptive2	0	n/a	1.6	n/a	
Custom0	37,500	6%	0.4	0%	2,264
Custom1	0	n/a	0.4	n/a	
Custom2	0	n/a	0.4	n/a	
SAL0	0	n/a	0.4	n/a	
SAL1	0	n/a	0.4	n/a	
SAL2	0	n/a	0.4	n/a	
Total	**15,913,254**	**76%**		**8%**	**12,035,277**

Table 11-4: PY3 Commercial / Industrial Small Sector Equipment Program Summary of Evaluation Results for Demand

Stratum Name	Reported Gross Demand Savings	Realization Rate	Observed CV	Relative Precision	Verified Gross DemandSavings
CFL0	2,833	51%	0.6	9%	1,443
NSL0	181	106%	0.4	31%	193
NSL1	333	109%	0.4	19%	362
NSL2	71	117%	0.4	0%	83
SLB0	15	39%	0.6	68%	6
SLB1	0	n/a	0.6	n/a	
SLB2	0	n/a	0.6	n/a	
Prescriptive0	2	0%	1.6	158%	0
Prescriptive1	0	n/a	1.6	n/a	
Prescriptive2	0	n/a	1.6	n/a	
Custom0	80	3%	0.4	0%	2
Custom1	0	n/a	0.4	n/a	
Custom2	0	n/a	0.4	n/a	
SAL0	0	n/a	0.4	n/a	
SAL1	0	n/a	0.4	n/a	
SAL2	0	n/a	0.4	n/a	
Total	**3,515**	**59%**		**13%**	**2,088**

11.3 Impact Evaluation Net Savings

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

11.4 Process Evaluation

Tetra Tech conducted a telephone survey of C&I Equipment program participants from in PY3 quarters one, two, and three (June 1, 2011 through March 15, 2012). The purpose of the telephone survey was to:

- Confirm receipt of the measures
- Learn about the installation and use of the measures
- Learn about customer's awareness, experiences and satisfaction with the program
- Understand decision-making processes
- Estimate program performance indicators
- Estimate net-to-gross
- Understand customer characteristics.

In addition to those who participated in the program, the evaluation team attempted to contact all customers who had been placed on the wait list. The purpose of these telephone surveys was to:

- Verify wait list project status
- Understand the communication process for the project
- Learn about customer's experiences and satisfaction with the program
- Understand equipment purchasing decision.

Methodology

Tetra Tech designed the data collection instrument and Research America conducted the surveys. All customers sampled for the study were sent an advance letter explaining the purpose of the phone call. Sampling was done to achieve a confidence interval level of 90 percent +/- 10 percent at the EDC level with the exception of Penn Power, where a census was selected.

Project measures were aggregated to the site level for a comprehensive view of the projects completed for each site. The initial sample file included 1,030 records[29] for PY3, representing 928 unique sites[30]. Non-standard lighting projects were the most common, followed by standard lighting. Custom projects, HVAC, motors and drives, and specialty equipment account for less than 100 projects total across all three operating companies.

[29] Records were provided at the equipment type level, using Rebate Application Number.

[30] Sites were aggregated using Participant Name and Installation Address.

The sample was stratified by the equipment types within each operating company. A census was attempted for each strata for Penn Power except for standard and custom lighting. For these strata, the highest ten percent of projects based on kWh savings was sampled. The remaining cases were sampled randomly with the assumption.

Companies that performed projects at more than one site were flagged to be called by experienced interviewers with methods developed to address the projects at all sites without overburdening the respondent.

Key Findings

- Customers were most likely to hear about the program from a contractor. Nearly half (44 percent) of customers mentioned that they heard about the program from a contractor.
- Nearly one-third of customers reported some challenges during participation in the program. The challenges focused around the rebate application process. In particular, the application forms were difficult to understand and required detailed information.
- Wait list customers are receiving infrequent program updates, if any. Only two-thirds of wait list customers have received updates on the status of the program, which have been infrequent.
- Almost half of customers on the wait list have already moved forward with their projects. Thirty percent of wait list customers have already completed their projects and another 12 percent have started the project, but decided to complete in phases.

Program satisfaction was generally high for those who completed projects. Seventy-seven percent of program participants rated their overall satisfaction as very satisfied or somewhat satisfied compared to 57 percent of wait list customers giving the program high satisfaction ratings.

11.5 Financial Reporting

The CFL kits sent to small business customers were a significant and cost effective program component in PY3. The increase in TRC compared to PY2 is largely attributable to these kits. A breakdown of the program finances is presented in **Table 11-5**

Table 11-5: Summary of Commercial / Industrial Small Sector Equipment Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$223	$309	$1,539
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$223**	**$309**	**$1,539**
Design & Development	$0	$0	$13
Administration[1]	$57	$221	$428
Management[2]	$9	$25	$64
Marketing[3]	$0	$0	$0
Technical Assistance	$0	$2	$6
Subtotal EDC Implementation Costs	**$67**	**$249**	**$511**
EDC Evaluation Costs	$8	$30	$44
SWE Audit Costs	$6	$10	$19
Total EDC Costs[4]	$303	$597	$2,114
Participant Costs[5]	$0	$1,190	$4,654
Total TRC Costs[6]		**$1,469**	**$5,209**
Total Lifetime Energy Benefits	$0	$5,795	$16,549
Total Lifetime Capacity Benefits	$0	$988	$2,521
Total TRC Benefits[7]	**N/A**	**$6,784**	**$19,070**
TRC Ratio[8]	**N/A**	**4.62**	**3.66**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

12 Commercial / Industrial Large Sector Equipment Program

This program consists of the following components:

Performance Contracting and Equipment: Large commercial and industrial (and other non-residential) customers may elect to secure Demand Side Management/Energy Efficiency (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.

Industrial Motors and Variable Speed Drives (VSD): This program is designed to encourage Penn Power'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.

12.1 Program Updates

On January 12, 2012, the Commission approved the Petition of Pennsylvania Power Company, Pennsylvania Power Company and Pennsylvania Power Company ("the Companies") for modifications to their EE&C Plans. Immediately following approval, the Companies began implementing the First Amended EE&C Plan changes, which included the consolidation of the C/I Large Sector Industrial Motors and Variable Speed Drives with the C/I Large Sector Performance Contracting/Equipment program.

12.2 Impact Evaluation Gross Savings

This program implements both custom measures and prescriptive measures. The great majority of the gross reported energy savings for this program were attributable to prescriptive and performance lighting measures. The M&V methodology for this program is identical to the approach used for the Small C/I equipment program described in section 11.2.

12.2.1 Program Sampling

The sampling methodology for this program is identical to the approach used for the Small C/I equipment program described in section 11.2.1. Program-specific details are in Table 12-3

Table 12-1: Commercial / Industrial Large Sector Equipment Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	3	447	0.06	(67)
PY3 Q2	2	170	0.03	95
PY3 Q3	0	-	-	0
PY3 Q4	2	17	0.01	9
PY3 Total	7	634	0.10	36
CPITD Total	54	15,451	1.59	1,299

Table 12-2: Commercial / Industrial Large Sector Equipment Program Sampling Strategy for PY3

Stratum Name	Reported Gross Savings	Strata Boundaries	Population Size	Assumed CV	Achieved Sample	Evaluation Activity
CFL0	0	n/a	0	0.5	0	On-Site+ Survey+Meter
NSL0	127,493	100,000	3	0.5	2	On-Site
NSL1	337,609	500,000	2	0.5	2	On-Site
NSL2	0	n/a	0	0.5	0	On-Site
SLB0	0	100,000	0	1.0	0	On-Site
SLB1	0	500,000	0	1.0	0	On-Site
SLB2	0	n/a	0	1.0	0	On-Site
Prescriptive0	7,567	100,000	1	0.5	1	On-Site
Prescriptive1	0	500,000	0	0.5	0	On-Site
Prescriptive2	0	n/a	0	0.5	0	On-Site
Custom0	0	40,000	0	1.0	0	On-Site
Custom1	161,393	500,000	1	1.0	1	On-Site
Custom2	0	n/a	0	1.0	0	On-Site
SAL0	0	10,000	0	0.4	0	On-Site
SAL1	0	100,000	0	0.4	0	On-Site
SAL2	0	n/a	0	0.4	0	On-Site
Total	634,062		**7**		**6**	**-**

Table 12-3: PY3 Commercial / Industrial Large Sector Equipment Program Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
CFL0	0	n/a	0.6	n/a	
NSL0	127,493	253%	0.4	24%	322,520
NSL1	337,609	97%	0.4	0%	329,069
NSL2	0	n/a	0.4	n/a	
SLB0	0	n/a	0.6	n/a	
SLB1	0	n/a	0.6	n/a	
SLB2	0	n/a	0.6	n/a	
Prescriptive0	7,567	954%	1.6	0%	72,210
Prescriptive1	0	n/a	1.6	n/a	
Prescriptive2	0	n/a	1.6	n/a	
Custom0	0	n/a	0.4	n/a	
Custom1	161,393	99%	0.4	0%	159,205
Custom2	0	n/a	0.4	n/a	
SAL0	0	n/a	0.4	n/a	
SAL1	0	n/a	0.4	n/a	
SAL2	0	n/a	0.4	n/a	
Total	**634,062**	**139%**		**3%**	**883,004**

Table 12-4: PY3 Commercial / Industrial Large Sector Equipment Program Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
CFL0	0	n/a	0.6	n/a	
NSL0	17	100%	0.4	24%	17
NSL1	56	93%	0.4	0%	52
NSL2	0	n/a	0.4	n/a	
SLB0	0	n/a	0.6	n/a	
SLB1	0	n/a	0.6	n/a	
SLB2	0	n/a	0.6	n/a	
Prescriptive0	11	256%	1.6	0%	28
Prescriptive1	0	n/a	1.6	n/a	
Prescriptive2	0	n/a	1.6	n/a	
Custom0	0	n/a	0.4	n/a	
Custom1	18	85%	0.4	0%	16
Custom2	0	n/a	0.4	n/a	
SAL0	0	n/a	0.4	n/a	
SAL1	0	n/a	0.4	n/a	
SAL2	0	n/a	0.4	n/a	
Total	**103**	**110%**		**4%**	**113**

12.3 Impact Evaluation Net Savings

Per the 2012 TRC Order, EDCs are required to use Net-to-Gross (NTG) for program planning purposes. NTG ratios are not applied to gross savings for compliance purposes. The Company's Evaluators completed NTG program research which was used to inform program design for Phase II of Act 129.

12.4 Process Evaluation

The process evaluation for C/I Small Sector Equipment program includes the evaluation for the C/I Large Sector Equipment program as these programs are the same but are simply tracked separately for reporting by small and large sectors.

12.5 Financial Reporting

A breakdown of the program finances is presented in Table 12-5

Table 12-5: Summary of Commercial / Industrial Large Sector Equipment Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$9	$68	$1,299
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$9**	**$68**	**$1,299**
Design & Development	$0	$0	$19
Administration[1]	$16	$66	$234
Management[2]	$9	$21	$61
Marketing[3]	$0	$0	$0
Technical Assistance	$0	$2	$5
Subtotal EDC Implementation Costs	**$25**	**$89**	**$319**
EDC Evaluation Costs	$20	$88	$148
SWE Audit Costs	$5	$8	$17
Total EDC Costs[4]	$59	$253	$1,784
Participant Costs[5]	$0	$243	$5,674
Total TRC Costs[6]		**$420**	**$6,141**
Total Lifetime Energy Benefits	$0	$846	$11,840
Total Lifetime Capacity Benefits	$0	$97	$1,401
Total TRC Benefits[7]	**N/A**	**$943**	**$13,241**
TRC Ratio[8]	**N/A**	**2.25**	**2.16**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

13 Commercial / Industrial Large Sector Demand Response Program – CSP Mandatory and Voluntary Curtailment Program ("PJM Demand Response")

For C/I, as well as government sector customers, the Companies will solicit registration for curtailment service providers ("DR-CSPs") registering load in PJM programs. DR-CSPs will provide services to register and dispatch customer curtailable load during the Company's targeted hours of 100 hours of highest demand. The Plan includes a 50 hour Mandatory Program, and a Voluntary Program. 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.

13.1 Program Updates

The Company contracted in July 2011 with two DR-CSPs to deliver services on a pilot basis for the summer of 2011 under the Mandatory Program.

13.2 Impact Evaluation Gross Savings

Since this program was operated between June 1 and September 30 2012, there were no impacts reported for PY3. The gross impact evaluation effort is underway as of this writing, but preliminary results are not yet available.

13.3 Impact Evaluation Net Savings

There were no impacts reported for PY3. The net impact evaluation effort is underway as of this writing, but preliminary results are not yet available.

13.4 Process Evaluation

Process evaluation activities for this program will be detailed in PY4 reports. Activities to date include formal and informal interviews with Penn Power staff and participant surveys.

13.5 Financial Reporting

A breakdown of the program finances is presented in **Table 13-1**

Table 13-1: Summary of Commercial / Industrial Large Sector PJM Demand Response Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$57	$190	$190
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$57**	**$190**	**$190**
Design & Development	$0	$1	$4
Administration[1]	$0	$0	$0
Management[2]	$21	$62	$97
Marketing[3]	$0	$0	$0
Technical Assistance	$1	$5	$12
Subtotal EDC Implementation Costs	**$22**	**$67**	**$113**
EDC Evaluation Costs	$3	$8	$15
SWE Audit Costs	$13	$23	$33
Total EDC Costs[4]	$95	$288	$350
Participant Costs[5]	$0	$190	$190
Total TRC Costs[6]		**$266**	**$318**
Total Lifetime Energy Benefits	$0	$0	$0
Total Lifetime Capacity Benefits	$0	$0	$0
Total TRC Benefits[7]	**N/A**	**$0**	**$0**
TRC Ratio[8]	**N/A**	**0.00**	**0.00**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

14 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.

14.1 Program Updates

There were no changes to this program during PY3.

14.2 Impact Evaluation Gross Savings

The gross impact evaluation was identical to the PY2 effort. ADM conducted random sampling with on-site verifications. No metering is required as the lights operate dusk to dawn.

Table 14-1: Governmental / Non-Profit Street Lighting Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	0	0.00	0.00	18
PY3 Q2	0	0.00	0.00	0
PY3 Q3	0	0.00	0.00	0
PY3 Q4	0	0.00	0.00	0
PY3 Total	0	0.00	0.00	18
CPITD Total	127	247	0	181
This program exclusively serves the gov/non-profit sector. Note, the incentives in PY3Q1 were for projects that were installed, approved, and evaluated in PY2.				

14.3 Impact Evaluation Net Savings

A NTG study was not conducted for this program.

14.4 Process Evaluation

A Process evaluation was not conducted for this program.

14.5 Financial Reporting

A breakdown of the program finances is presented in **Table 14-2**

Table 14-2: Summary of Governmental / Non-Profit Street Lighting Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$0	$6	$181
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$0**	**$6**	**$181**
Design & Development	$0	$0	$1
Administration[1]	$0	$1	$30
Management[2]	$0	$2	$4
Marketing[3]	$0	$0	$0
Technical Assistance	$0	$0	$1
Subtotal EDC Implementation Costs	**$0**	**$3**	**$36**
EDC Evaluation Costs	$0	$6	$9
SWE Audit Costs	$0	$1	$2
Total EDC Costs[4]	$1	$15	$227
Participant Costs[5]	$0	$0	$31
Total TRC Costs[6]		**$9**	**$76**
Total Lifetime Energy Benefits	$0	$0	$242
Total Lifetime Capacity Benefits	$0	$0	$0
Total TRC Benefits[7]	**N/A**	**$0**	**$242**
TRC Ratio[8]	**N/A**	**0.00**	**3.20**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

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[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

15 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 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.

15.1 Program Updates

There were no changes to this program during PY3.

15.2 Impact Evaluation Gross Savings

The impact evaluation effort is identical to the 'Small Commercial/Industrial' program's effort, discussed in section 11.2.

Table 15-1: Governmental / Non-Profit Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	0	0	0	1
PY3 Q2	0	0	0	0
PY3 Q3	0	0	0	0
PY3 Q4	0	0	0	0
PY3 Total	0	0	0	1
CPITD Total	4	90	0.02	10
This program exclusively serves the government/non-profit sector. Note, the incentives in PY3Q1 were for projects that were installed, approved, and evaluated in PY2.				

15.3 Impact Evaluation Net Savings

The net impact evaluation effort is identical to the 'Small Commercial/Industrial' program's effort, discussed in section 11.3.

15.4 Process Evaluation

A process evaluation was not completed for this program for PY3.

15.5 Financial Reporting

A breakdown of the program finances is presented in **Table 15-2**

Table 15-2: Summary of Governmental / Non-Profit Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$0	$0	$10
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$0**	**$0**	**$10**
Design & Development	$0	$0	$0
Administration[1]	$2	$7	$21
Management[2]	$0	$0	$0
Marketing[3]	$0	$0	$0
Technical Assistance	$0	$0	$0
Subtotal EDC Implementation Costs	**$2**	**$7**	**$22**
EDC Evaluation Costs	$0	$0	$0
SWE Audit Costs	$0	$0	$0
Total EDC Costs[4]	$2	$7	$32
Participant Costs[5]	$0	$0	$50
Total TRC Costs[6]		**$7**	**$72**
Total Lifetime Energy Benefits	$0	$0	$36
Total Lifetime Capacity Benefits	$0	$0	$8
Total TRC Benefits[7]	**N/A**	**$0**	**$44**
TRC Ratio[8]	**N/A**	**0.00**	**0.62**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

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[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

16 Governmental / Remaining Non-Profit Program

This sector is eligible for all the incentive programs the small or large C/I sector is eligible for, including the 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.

16.1 Program Updates

There were no changes to this program during PY3.

16.2 Impact Evaluation Gross Savings

The impact evaluation effort is identical to the 'Small Commercial/Industrial' program's effort, discussed in section 11.2.

Table 16-1: Governmental / Remaining Non-Profit Program Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	9	300	0.06	(349)
PY3 Q2	1	13	0.01	87
PY3 Q3	0	-	-	5
PY3 Q4	19	3,181	1.50	86
PY3 Total	29	3,495	1.56	(171)
CPITD Total	572	12,253	3.02	544

Table 16-2: Governmental / Remaining Non-Profit Program Sampling Strategy for PY3

Stratum Name	Reported Gross Savings	Strata Boundaries	Population Size	Assumed CV	Achieved Sample	Evaluation Activity
CFL0	1,315,111	n/a	366	0.5	98	On-Site + Survey+Meter
NSL0	1,943,150	100,000	15	0.5	6	On-Site
NSL1	0	500,000	0	0.5	0	On-Site
NSL2	0	n/a	0	0.5	0	On-Site
SLB0	109,480	100,000	8	1.0	2	On-Site
SLB1	0	500,000	0	1.0	0	On-Site
SLB2	0	n/a	0	1.0	0	On-Site
Prescriptive0	1,429	100,000	1	0.5	1	On-Site
Prescriptive1	0	500,000	0	0.5	0	On-Site
Prescriptive2	0	n/a	0	0.5	0	On-Site
Custom0	0	40,000	0	1.0	0	On-Site
Custom1	125,745	500,000	1	1.0	1	On-Site
Custom2	0	n/a	0	1.0	0	On-Site
SAL0	0	10,000	0	0.4	0	On-Site
SAL1	0	100,000	0	0.4	0	On-Site
SAL2	0	n/a	0	0.4	0	On-Site
Total	**3,494,914**		**391**		**108**	**-**

Table 16-3: PY3 Governmental / Remaining Non-Profit Program Summary of Evaluation Results for Energy

Stratum Name	Reported Gross Energy Savings	Realization Rate	Observed CV	Relative Precision	Verified Gross Energy Savings
CFL0	1,315,111	72%	0.6	8%	942,460
NSL0	1,943,150	96%	0.4	18%	1,860,138
NSL1	0	n/a	0.4	n/a	
NSL2	0	n/a	0.4	n/a	
SLB0	109,480	77%	0.6	51%	84,567
SLB1	0	n/a	0.6	n/a	
SLB2	0	n/a	0.6	n/a	
Prescriptive0	1,429	176%	1.6	0%	2,513
Prescriptive1	0	n/a	1.6	n/a	
Prescriptive2	0	n/a	1.6	n/a	
Custom0	0	n/a	0.4	n/a	
Custom1	125,745	137%	0.4	0%	172,650
Custom2	0	n/a	0.4	n/a	
SAL0	0	n/a	0.4	n/a	
SAL1	0	n/a	0.4	n/a	
SAL2	0	n/a	0.4	n/a	
Total	**3,494,914**	**88%**		**12%**	**3,062,327**

Table 16-4: PY3 Governmental / Remaining Non-Profit Program Summary of Evaluation Results for Demand

Stratum Name	Reported Gross Demand Savings	Realization Rate	Observed CV	Relative Precision	Verified Gross DemandSavings
CFL0	1,078	56%	0.6	8%	605
NSL0	445	102%	0.4	18%	455
NSL1	0	n/a	0.4	n/a	
NSL2	0	n/a	0.4	n/a	
SLB0	25	105%	0.6	51%	27
SLB1	0	n/a	0.6	n/a	
SLB2	0	n/a	0.6	n/a	
Prescriptive0	3	82%	1.6	0%	2
Prescriptive1	0	n/a	1.6	n/a	
Prescriptive2	0	n/a	1.6	n/a	
Custom0	0	n/a	0.4	n/a	
Custom1	9	151%	0.4	0%	14
Custom2	0	n/a	0.4	n/a	
SAL0	0	n/a	0.4	n/a	
SAL1	0	n/a	0.4	n/a	
SAL2	0	n/a	0.4	n/a	
Total	**1,561**	**71%**		**11%**	**1,103**

16.3 Impact Evaluation Net Savings

The impact evaluation effort is identical to the 'Small Commercial/Industrial' program's effort, discussed in section 11.3.

16.4 Process Evaluation

An independent process evaluation was not completed for this program for PY3. The process evaluation for Commercial / Industrial Small Sector Equipment Program applies to this program as well, since these programs have very similar characteristics, but are tracked separately for reporting by sector.

16.5 Financial Reporting

A breakdown of the program finances is presented in **Table 16-5**

Table 16-5: Summary of Governmental / Remaining Non-Profit Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$86	$82	$544
EDC Incentives to Trade Allies	$0	$0	$0
Subtotal EDC Incentive Costs	**$86**	**$82**	**$544**
Design & Development	$0	$0	$2
Administration[1]	$20	$81	$192
Management[2]	$3	$10	$18
Marketing[3]	$0	$0	$0
Technical Assistance	$0	$1	$3
Subtotal EDC Implementation Costs	**$24**	**$92**	**$215**
EDC Evaluation Costs	$1	$3	$7
SWE Audit Costs	$3	$5	$8
Total EDC Costs[4]	$114	$183	$772
Participant Costs[5]	$0	$684	$3,134
Total TRC Costs[6]		**$779**	**$3,355**
Total Lifetime Energy Benefits	$0	$2,342	$8,459
Total Lifetime Capacity Benefits	$0	$608	$1,438
Total TRC Benefits[7]	**$0**	**$2,950**	**$9,897**
TRC Ratio[8]	**0.00**	**3.79**	**2.95**

NOTES

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[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, EDC Implementation Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[10] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.