PECO Energy Efficiency and Conservation Plan (Program Years 2009 – 2012)

~~*Proposed Revisions to*~~

~~*PECO Energy Company's Approved*~~

~~*Energy Efficiency & Conservation Plan*~~

~~*July 15, 2011*~~*Revised August 18, 2011*[1]

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[1] Revisions approved pursuant to the Pennsylvania Public Utility Commission's August 18, 2011 Secretarial Letter issued in *Petition of PECO Energy Company For Approval of Minor Changes To Its Act 129 EE&C Plan Pursuant To The Commission's Expedited Review Process*, Docket No. M-2009-2093215.

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1 Overview of Plan

1.1 Summary Description of Plan, Objectives, and Overall Strategy[2]

In response to Pennsylvania Act 129 of 2008, PECO Energy Company (PECO) developed comprehensive energy efficiency and demand reduction programs, in collaboration with key stakeholders, to meet aggressive energy and peak demand reduction goals set by Act 129.

This Plan provides a comprehensive assessment that leads to the development of energy efficiency and demand reduction programs that will enable PECO to meet aggressive energy- and peak demand-reduction goals by the program years (PY) 2011 and 2013 set forth by the provisions of Pennsylvania Act 129.

The objectives of this Plan are in accordance with the goals specified in Act 129. These goals are summarized as follows:

- By 5/31/11, PECO shall achieve a 1% energy savings relative to baseline use between 6/1/09 and 5/31/10.
- By 5/31/13, PECO shall achieve a 3% energy savings relative to baseline use between 6/1/09 and 5/31/10.
- By 5/31/13, PECO shall achieve a 4.5% peak demand reduction during the top 100 hours of the baseline established during the time period 6/1/07 and 5/31/08.

Governor Rendell's Energy Independence Strategy and PECO's intent to step up its efforts in energy efficiency and demand reduction in response to Act 129 are in concert with utilities across the nation, which have renewed their commitment to an energy-efficient future. There is also the desire by a growing number of consumers to reduce energy use more broadly, to preserve the environment, and to live a "sustainable" lifestyle.

This Plan provides a detailed discussion of PECO's intentions for meeting the requirements of Act 129. The layout and organization of this Plan are in accordance with the Plan template as specified by the Pennsylvania Public Utility Commission (Commission). This filing is intended to modify certain existing Plan measures, to add new measures to the Plan not included in PECO's original filing and to shift funds from certain programs to the Compact Fluorescent Lamp Program.[2] PECO's Plan revisions are based on knowledge and experience gained during implementation of the Plan, and have been shared with key stakeholders. By proposing these revisions and additions, PECO seeks to expand opportunities for customers to participate in and achieve energy savings through Plan measures.

2 We note that PECO only has included in this revised Plan the modifications specifically blacklined below. No other changes to the Plan are currently being proposed.

1.2 Summary Description of Process Used to Develop the EE&C Plan

The process used to develop the EE&C Plan is illustrated in Figure 1 on Page 4. PECO initiated this process with an assessment of the existing market characteristics in PECO's service territory. This was primarily addressed through the following data acquisition activities:

- Collect existing data from PECO: All relevant and currently existing primary data sources were collected from PECO. This included the following:
  - General PECO characteristics
  - Customer-related data (e.g., historical billing data, marketing studies, etc.)
  - Load characteristics (e.g., load forecast, historical peak demand, load research, class load shapes, etc.)
  - Energy efficiency (EE) and Demand Reduction (DR) program information (e.g., previous PECO EE program pilots, previous DR programs, gas programs, evaluation studies, etc.)
  - Other information (e.g., avoided costs, discount rates, cost escalation rates, line loss factors, internal labor rates, etc.)
- Conduct saturation survey: PECO conducted an online survey of residential customers with the aim of improving the predictive accuracy of the market and program potential. A representative sample of residential customers was drawn to obtain the following information:
  - Demographic characteristics
  - Building characteristics
  - Customer behavior
  - Appliance/equipment saturation, including fuel decisions
  - Recent equipment purchases and conservation/energy-efficiency actions taken
  - Detailed technology inventories to correspond with energy-efficiency measures
  - Attitudinal characteristics

  A full summary of the saturation survey along with the results can be found in Appendix F-2.

- Conduct market research: PECO conducted focus groups with customers representing the residential and business sectors. The objective of the research was to understand the impact that new EE and DR programs might have on total use of, and peak demand for, electricity. As part of this assessment, insights were gleaned as to the way in which both residential and business customers are likely to respond to a wide variety of new programs and services that PECO would offer as part of the Act 129 compliance. A full summary of the market research can be found in Appendix F-3.

The next step in the process was to utilize the information obtained in order to create a representative profile of baseline characteristics. The baseline is the starting point from which PECO can begin to assess the potential for energy efficiency and demand response, develop appropriate programs that target that potential, and assess the cost-effectiveness of the various programs.

Figure 1 then illustrates two analysis pathways. The path on the left-hand side addresses the measure characteristics portion of the Plan. This is where a universe of energy efficiency and demand reduction measures was identified as possible candidates for eventual implementation in PECO's service territory. After a series of screens to "narrow" the list down to those measures that were most applicable and suitable given conditions in Southeastern Pennsylvania, each measure was characterized for typical savings, incremental cost and lifetime. Following the measure characterization, an economic screening of the remaining measures was conducted to screen those energy efficiency and demand reduction measures that were uneconomical.

The path on the right-hand side addresses the development of energy efficiency and demand reduction potential. The achievable potential is a subset of economic potential, which in turn is a subset of technical potential. Technical potential represents the maximum savings of all feasible energy efficiency measures regardless of economics and program participation. Economic potential represents the maximum savings of the measures that pass the economic screen and ignores program administration costs and customer preferences. Achievable potential, on the other hand, factors in expected program participation, customer preferences, and budgetary constraints. Achievable potential is established using market acceptance rates derived from programs with incentives that represent 100% of the incremental costs combined with high administrative and marketing costs. The achievable potential must be balanced against other constraints such as low participation rates, economic boundaries, and customer equity in the development of final program designs and savings targets. The results of the energy efficiency potential assessment study served as the basis for the development of energy efficiency programs. The full study can be found in Appendix F-1.

Figure 1 then illustrates the final elements of the study, which were to develop energy efficiency and demand reduction programs through a variety of means, including input from a group of outside stakeholders, from the results of the potential assessment and from benchmarking of industry best practices. The next step of the program development process entailed the development of the measure and program-level parameters that correspond to the programs. The parameters were derived from a number of sources, including the measure characterization and the model runs performed during the potential study, benchmarking from utility program best practices, and PECO's past program experience. The program-level parameters were used as inputs to conducting the TRC cost-effectiveness analysis that would determine the economic viability of each program.

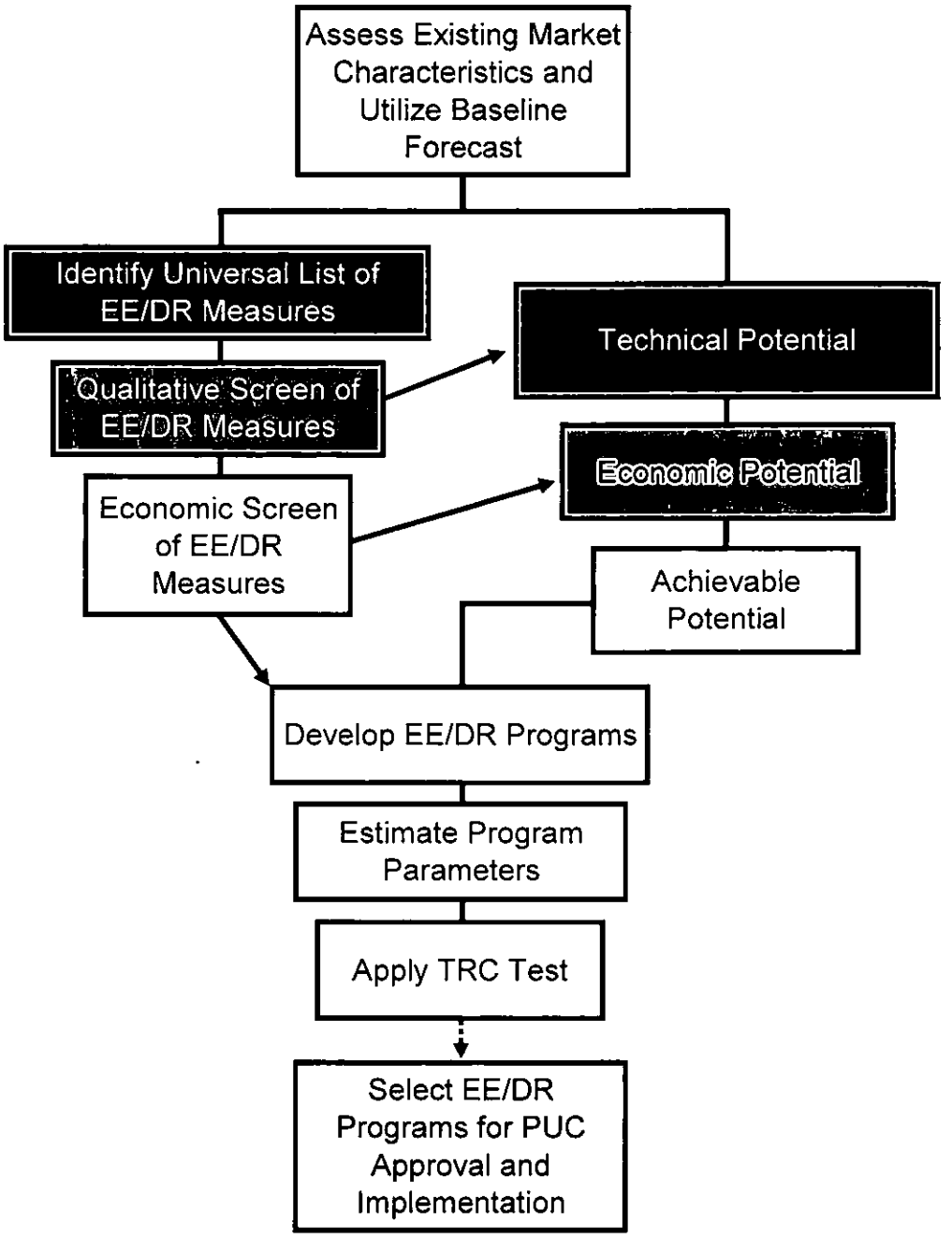


Figure 1: EE&C Plan Development Process

1.3 Summary Tables of Portfolio Savings Goals, Budget and Cost-Effectiveness

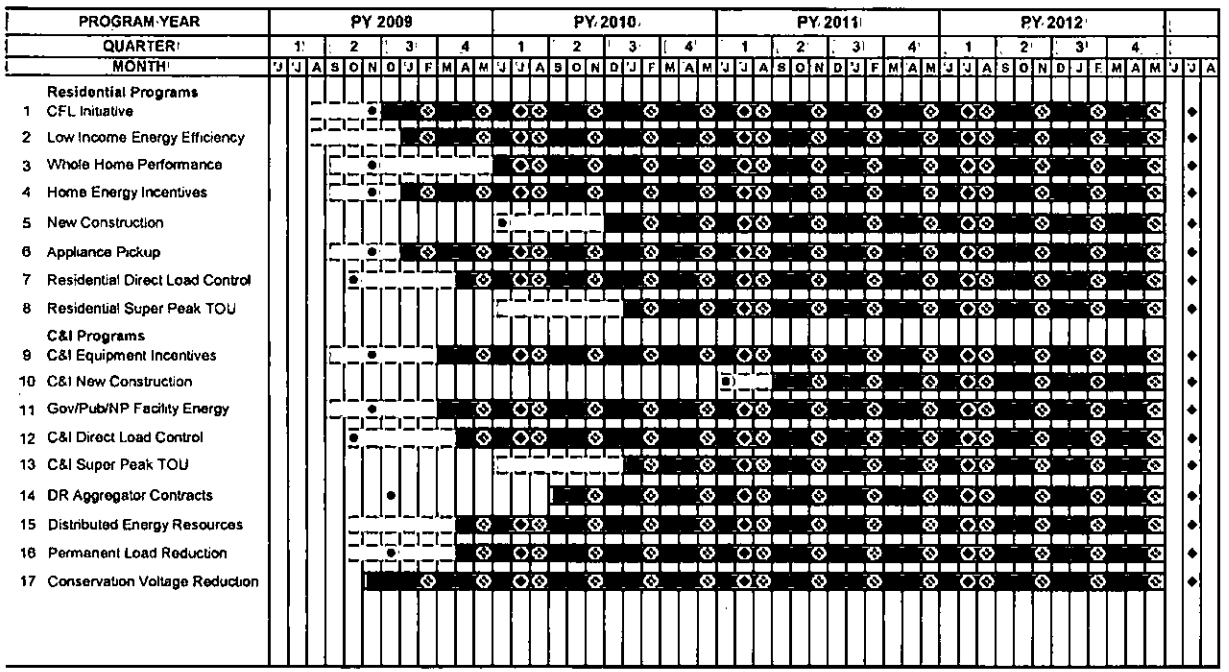
PECO EE/DR Program Summary

Program	Energy Savings (MWh)				Peak Demand Savings (MW)				Budget (Million $)						Total Participants (Cumulative by Year 4)	TRC Analysis					
	PY 2009	PY 2010	PY 2011	PY 2012	PY 2009	PY 2010	PY 2011	PY 2012	PY 2009	PY 2010	PY 2011	PY 2012	4-Year Total	Average Annual		Benefits (Million $)	Costs (Million $)	Net Benefits (Million $)	B/C Ratio	Levelized Cost of Saved Energy ($/kWh)	Levelized Cost of Reduced Peak Demand ($/kW-yr)
Energy Efficiency Programs																					
1. CFL Initiative	73,492	161,793	251,933	290,297	4.0	8.8	13.7	15.8	$5.5	$5.7	$5.8	$2.7	$19.7	$4.9	2,362,500	$181	$47	$113	3.40	$0.029	$537
2. Residential Low-Income Energy	8,086	22,239	49,479	79,660	0.4	1.5	3.2	5.3	$2.0	$4.8	$8.6	$12.2	$27.6	$6.9	218,627	$43	$25	$18	1.72	$0.055	$772
3. Residential Whole Home Performance	0	792	2,375	5,542	0.0	0.0	0.1	0.1	$0.2	$0.7	$0.9	$1.4	$3.3	$0.8	2,100	$5	$3	$1	1.42	$0.057	$2,242
4. Residential Home Energy Incentives	10,007	45,156	85,485	125,994	0.5	2.0	3.9	5.7	$3.4	$10.2	$12.7	$12.8	$39.1	$9.8	191,445	$136	$85	$51	1.60	$0.049	$1,085
5. Residential New Construction	*0*	*100*	*502*	*904*	*0.0*	*0.0*	*0.0*	*0.1*	*$0.0*	*$0.5*	*$0.9*	*$0.9*	*$2.4*	*$0.6*	*218*	*$3*	*$2*	*-$1*	*0.40*	*$0.195*	*$2,241*
6. Residential Appliance Pickup	7,494	29,977	52,460	74,844	1.4	5.8	10.1	14.4	$0.9	$2.7	$2.8	$2.9	$9.3	$2.3	55,500	$64	$6	$57	9.91	$0.010	$50
7. Commercial/Industrial Equipment Incentives	14,745	114,876	198,954	282,552	3.4	26.3	45.3	64.2	$3.7	$17.4	$20.5	$24.5	$66.1	$16.5	80,841	$214	$141	$73	1.52	$0.042	$199
8. Commercial/Industrial New Construction	0	0	8,750	25,000	0.0	0.0	1.1	3.0	$0.0	$0.0	$1.6	$2.7	$4.3	$1.1	100	$18	$8	$10	2.35	$0.023	$188
9. Government/Public Facility Energy Savings	9,920	68,743	127,565	186,651	2.3	15.7	29.0	42.6	$2.5	$11.0	$12.9	$15.1	$43.6	$10.9	275	$155	$93	$62	1.67	$0.038	$176
10. Renewable Resources (program removed per PUC decision)																					
Subtotal Energy Efficiency Programs	*121,755*	*443,677*	*777,505*	*1,071,644*	*12.0*	*60.0*	*106.4*	*151.2*	*$18.2*	*$53.1*	*$86.9*	*$76.1*	*$215.4*	*$53.8*	*2,911,604*	*$796.0*	*$410.8*	*$385.2*	*1.94*	*$0.038*	*$256*
Demand Reduction Programs																					
1. Residential Direct Load Control	0	2,756	4,416	6,069	0.0	32.9	53.1	73.4	$1.8	$9.9	$14.8	$20.1	$46.6	$11.6	131,838	$52	$45	$6	1.12	$0.535	$44
2. Residential Super Peak TOU	0	0	399	931	0.0	0.0	4.0	9.3	NA	NA	NA	NA	NA	NA	35,000	$6	$5	$1	1.23	$0.412	$41
3. Commercial/Industrial Direct Load Control	0	758	1,653	2,511	0.0	7.6	16.5	25.1	$1.2	$3.4	$5.3	$6.5	$16.3	$4.1	13,000	$16	$11	$5	1.41	$0.348	$35
4. Commercial/Industrial Super Peak TOU	0	0	594	1,386	0.0	0.0	5.9	13.9	NA	NA	NA	NA	NA	NA	7,000	$9	$7	$2	1.23	$0.393	$39
5. DR Aggregator Contracts	0	5,000	10,000	15,000	0.0	50.0	100.0	150.0	$0.2	$3.7	$7.3	$11.2	$22.4	$5.6	NA	$104	$95	$9	1.09	$0.444	$44
6. Distributed Energy Resources	0	15,000	27,300	39,000	0.0	20.0	35.0	50.0	$1.8	$4.1	$5.6	$6.6	$18.1	$4.5	NA	$59	$55	$4	1.08	$0.097	$76
7. Permanent Load Reduction	451	6,325	17,607	28,888	0.0	3.9	9.3	14.7	$0.4	$1.2	$1.8	$2.3	$5.8	$1.4	NA	$29	$19	$10	1.56	$0.045	$89
8. Conservation Voltage Reduction	0	110,000	110,000	110,000	0.0	11.3	11.3	11.3	$2.0	$2.0	$0.1	$0.1	$4.1	$1.0	NA	$113	$4	$109	26.70	$0.002	$24
Subtotal Demand Reduction Programs	*451*	*140,439*	*171,970*	*203,806*	*0.0*	*125.7*	*235.2*	*347.8*	*$7.5*	*$24.2*	*$35.0*	*$48.7*	*$113.3*	*$28.3*	*186,838*	*$388.2*	*$243.2*	*$145.0*	*1.60*	*$0.080*	*$49*
Grand Total – All Programs EEP	*122,206*	*584,116*	*949,475*	*1,275,350*	*12.0*	*185.7*	*341.6*	*498.9*	*$25.5*	*$77.3*	*$101.9*	*$121.8*	*$328.6*	*$82.2*	*3,098,441*	*$1,184.2*	*$654.0*	*$530.2*	*1.81*	*$0.048*	*$100*
PECO Goals		*393,850*		*1,181,550*				*355.0*	*$85.5*	*$85.5*	*$85.5*	*$85.5*	*$341.9*	*$85.5*							
Percent of Goal		*148%*		*108%*				*141%*	*30%*	*90%*	*119%*	*143%*	*96%*	*96%*							
Programs Subject to DSP Cost Recovery (note: only costs were moved below; all other parameters i.e., savings, remain in the EEP programs)																					
2. Residential Super Peak TOU	NA	NA	NA	NA	NA	NA	NA	NA	$0.0	$0.9	$1.3	$1.4	$3.6	$0.9	NA	NA	NA	NA	NA	NA	NA
4. Commercial/Industrial Super Peak TOU	NA	NA	NA	NA	NA	NA	NA	NA	$0.0	$0.9	$1.3	$1.4	$3.6	$0.9	NA	NA	NA	NA	NA	NA	NA
Total – DSP Programs	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*$0.0*	*$1.8*	*$2.6*	*$2.7*	*$7.2*	*$1.8*							

Appendix D contains the following data tables as required by the Commission's EE&C Plan template:

- Table 1: Portfolio Summary of Lifetime Costs and Benefits
- Table 2: Summary of Portfolio Energy and Demand Savings
- Table 3: Summary of Portfolio Costs

1.4 Summary of Program Implementation (Chart 1)



Legend
- Program Design period
- Program Operation period
- ● CSP placed under contract
- ◇ Quarterly report to Commission
- ◆ Annual report to Commission

1.5 Summary Descriptions of PECO's Implementation Strategy to Manage EE&C Portfolios

PECO will take a number of steps to ensure effective and Act 129-compliant implementation of this Energy Efficiency and Conservation Plan. These include:

- Implementation contracting: PECO will contract with an implementation conservation service provider (CSP) for each program or set of programs that has specific experience with utility program implementation and in working with the program's target market. This will make maximum use of expertise already developed, enable PECO to make the programs available, begin achieving savings as soon as possible, and allow PECO staff to manage the broad set of programs.
- Utilization of delivery channels: Each program in the plan calls for using all appropriate and available means of delivering program services, including supply of featured equipment, promotion and distribution of the products, and training and education. Depending on the program, these channels can include, but are not limited to, trade allies—equipment manufacturers and retailers, distributors, contractors, equipment installers, architects and engineers, facility auditors, and trade associations; government, community, and affinity groups; PECO field staff; PECO bill inserts, web pages devoted to the programs, and on-line audits; news media advertising; and CSPs, including industry and technology experts, as well as the implementation CSP.
- Inclusion of education: PECO will implement a general education campaign to inform customers and other stakeholders about the programs, PECO's commitment to reducing customer electricity use, and the benefits of energy efficiency. Additionally, each program in the plan includes an allowance for program-specific education. Depending on the program, these activities can include training seminars, fact sheets, case studies, on-line audits and energy profiles, home/facility site visits, and demonstration projects.
- Tracking database: PECO will contract with a database vendor to design a database to maintain the relevant data for each program. The database will utilize necessary protocols to ensure proper entry and maintenance of the data. It will be designed to allow program activity tracking and facilitate development of reports for PECO and the Commission. The implementation CSPs will enter data into the database regularly. The M&V vendor and Statewide Evaluator will be able to access the information in the database.
- Pre-launch design and preparation period: The implementation schedule for each program in the plan has a period explicitly included to allow PECO and the implementation CSP to properly prepare for the program launch. This period will be used to make refinements to the program, develop protocols and content for training, delivery channel and participant recruitment, educational activities, incentive applications, processing of incentives, reporting, and promotional events. The elements will be in place prior to full operation of the program. They will also be reviewed during process evaluations so that improvements may be incorporated during this plan cycle.
- Ongoing review of implementation practices: The plan explicitly addresses the challenges that each program will face in achieving success. Internal process reviews and

evaluations by the M&V contractor of the program protocols, procedures, participant satisfaction, and reporting will be conducted to identify and address issues that arise during program operation and to facilitate ongoing program improvement.

1.6 Summary Description of PECO's Data Management, Quality Assurance, and Evaluation Processes

PECO's Energy Efficiency and Conservation Plan ("EE&C Plan" or "the Plan) proposes development of and infrastructure for program implementation and tracking that identifies the data tracking and evaluation components, parties who will contribute to and/or use those components, and the relationships among them.

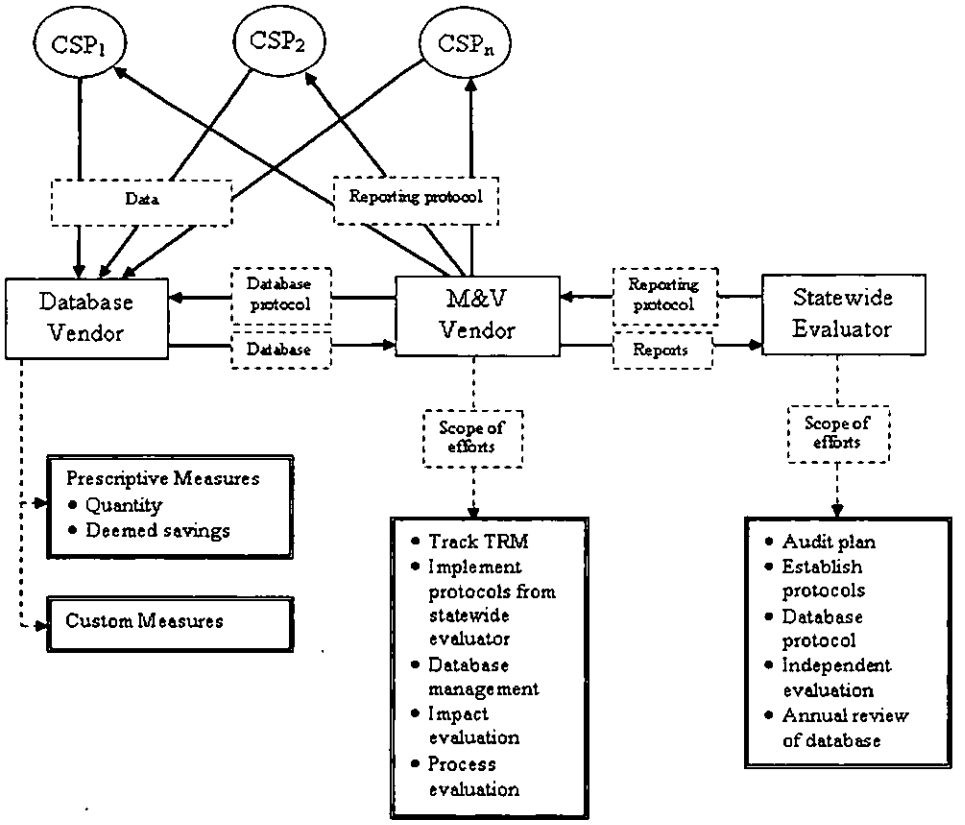


Figure 2: Program Documentation and Measurement, Verification and Evaluation Framework

There are four key contributors/users involved with data tracking and evaluation: the program implementation CSPs, a database vendor, a M&V contractor, and the Statewide Evaluator. PECO will contract with CSPs to implement the programs in the plan, with a database vendor to develop and maintain an appropriate tracking system for the programs, and with a M&V contractor to develop and implement a complete process and impact evaluation plan. The Commission will provide the Statewide Evaluator, who will also be able to access the database. They will all have quality assurance responsibilities.

PECO's quality assurance/quality control (QA/QC) approach addresses four areas critical to ensuring program implementation quality:

- Implementation CSP selection: PECO will contract with CSPs who have demonstrated experience in implementing programs for the specific target market associated with each program and thorough understanding of the measures and features of the program, experience in establishing relationships with upstream product suppliers and with providing necessary training for trade allies and participants, and experience and commitment to documenting activities and savings and to entering information into the program database.
- Development of program implementation and documentation protocols: PECO and the CSPs will develop specific protocols and procedures for the implementation and documentation of each program. These will govern all aspects of the program implementation, from procedures for site visits and audits to data collection and maintenance.
- Verification and documentation of activities and savings: Verification of project eligibility and proper installation, and operation of measures is important. Documentation of purchases and verifications done will ensure that programs are implemented in top quality fashion and will provide the basis for defensible program evaluations.
- Evaluation plans: PECO will contract with an experienced M&V vendor who will make independent assessment of the program performance. This contractor will be in place prior to the start of most programs and will develop a comprehensive process and impact evaluation plan. The M&V contractor will have interaction with the Statewide Evaluator to ensure that protocols are in alignment with state requirements.

1.7 Summary Description of Cost Recovery Mechanism

As required by the Act, PECO's EE&C Plan costs are recoverable through a §1307 cost-recovery mechanism. PECO has worked in collaboration with most of its key stakeholders to develop a mechanism to address several recovery issues (e.g., levelized charge, spending flexibility, and true-up process). The recovery mechanism includes four separate recovery charges, one for the Residential class (which includes low income customers), one for the Small Commercial/Industrial class, and one for the Large Commercial/Industrial class, and one for the Municipal Lighting class (street lights and traffic lights). For the Governmental/Institutional customers, who are defined in the Act, PECO does not have a separate recovery mechanism since this customer group has electric accounts that are already included in both the Small Commercial/Industrial and the Large Commercial/Industrial classes. Four separate charges were developed to ensure that the rate classes that finance the measures are the classes that receive the direct energy and conservation benefits. [3]

See Section 7 for a detailed description and estimated values for the cost recovery mechanism.

[3] EE&C Plan Implementation Order, Pg. 36

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2 Energy Efficiency and Conservation Program Summary Tables and Charts

2.1 Residential, Small C&I, Medium/Large C&I, Government Sector Summaries

Appendix D contains the following data tables as required by the Commission's EE&C Plan template:

- Table 4: Program Summaries

2.2 Plan Data; Cost-Effectiveness and Savings by Program Sector and Portfolio

Appendix D contains the following data tables as required by the Commission's EE&C Plan template:

- Table 1: Portfolio Summary of Lifetime Costs and Benefits
- Table 2: Summary of Portfolio Energy and Demand Savings
- Table 3: Summary of Portfolio Costs
- Table 4: Program Summaries

2.3 Budget and Parity Analysis

Appendix D contains the following data tables as required by the Commission's EE&C Plan template:

- Table 5: Budget and Parity Analysis Summary

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3 Program Descriptions

3.1 Discussion of Criteria and Process Used for Selection of Programs

3.1.1 Portfolio Objectives and Metrics that Define Program Success

The Energy Efficiency and Conservation (EE&C) program portfolio objectives are to achieve the requirements set forth in Act 129. This includes achieving (at a minimum) the following milestones:

- Achieve a 1% energy savings in PECO's load (approximately 393,850 MWh) by May 31, 2011 (the end of Program Year 2010 or PY 2010).
- Achieve a 3% energy savings in PECO's load (approximately 1,181,550 MWh) by May 31, 2013 (the end of PY 2012).
- Achieve a 4.5% reduction in PECO's peak demand sustained for the highest 100 peak hours (approximately 355 MW) by May 31, 2013 (the end of PY2012).
- Spend 2% of PECO's annual revenue or $85.5 million for a maximum of $341.9 million over the four-year period from June 1, 2009 to May 31, 2013.
- Achieve at least 10% of the total EE&C program portfolio energy savings through programs directed toward PECO's government and public sector/non-profit customers.

In addition to monitoring the above-referenced Act 129 metrics, PECO will define additional metrics for program success working in close consultation with its measurement and verification contractor. Below is a representative listing of questions that PECO intends to address over the course of its program implementation:

- Customer satisfaction: Are customers generally satisfied with the EE&C program offerings? Are there additional programs that could be offered in the future? Are all customer segments appropriately represented?

- Is PECO maximizing its market achievable potential for energy efficiency and demand reduction? Did PECO's programs reduce the energy cost burden of its customers by offering energy users, particularly the lowest income households, services that moderate the effects of energy price increases and volatility and provide access to cost-effective energy efficiency and demand response options?

PECO expects to utilize industry standard practices for measuring and evaluating these and other parameters with the ultimate aim toward critically assessing program success. Since these evaluation efforts will be conducted during the course of PECO's implementation efforts, PECO fully intends to carefully review the recommendations in real-time and, if appropriate, make mid-course corrections in its program delivery to potentially improve the effectiveness.

3.1.2 Process for Program Development

The process of developing energy efficiency and demand reduction programs involved an assessment process that is illustrated in Figure 3. The figure depicts the information flow that was used by PECO for facilitating the various stakeholder meetings held during the Plan development period in 2008/09.

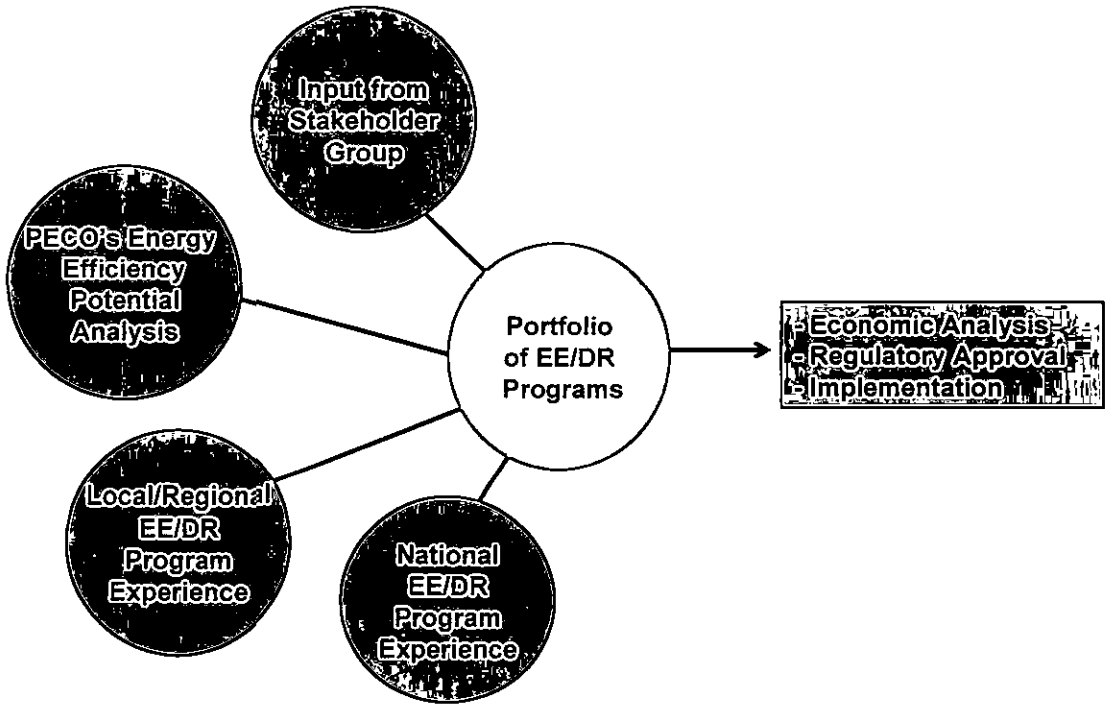


Figure 3: Process for Developing Energy Efficiency and Demand Reduction Programs

As indicated in the figure, several important information sources were evaluated during the process of formulating the PECO program portfolio as described in this chapter:

- PECO's Energy Efficiency Potential Analysis: The magnitude of PECO's energy efficiency achievable potential savings was a major consideration in the program development process. For each segment and end-use market, PECO reviewed the amount of achievable potential which might be obtained through programs. The results of the achievable potential ultimately led PECO's program development resources toward those segments and end-use markets that appeared to provide the greatest level of cost-effective savings. The energy efficiency potential study conducted by PECO for the benefit of this study can be found in Appendix F-1.
- Past Program Experience: This experience came from a variety of energy efficiency programs and initiatives that have been implemented by utilities and other third-party implementation entities from the Northeast and across the nation. PECO reviewed the various attributes of those programs to determine which ones might be applicable and transferable to conditions specific to the characteristics of the PECO service territory. A benchmark review of the best practices from various energy efficiency programs can be found in Appendix F-4. A benchmark review of the best practices from various demand reduction programs can be found in Appendix F-5.
- Stakeholder Process: Over the course of developing this Plan, PECO held a number of meetings with key stakeholders in the Act 129 implementation process. The stakeholders represent a broad constituency of interested parties. The stakeholders provided valuable insights into the various programs and measures that could be implemented as part of this

Plan. Many of those recommendations are represented in the programs that are presented here. A total of seven stakeholder meetings were held on the following dates:

- December 17, 2008 (Harrisburg)
- January 22, 2009 (Philadelphia)
- February 18, 2009 (Harrisburg)
- March 19, 2009 (Philadelphia)
- April 22, 2009 (Harrisburg)
- May 20, 2009 (Philadelphia)
- June 11, 2009 (Harrisburg)

Copies of the presentations made during those meetings can be found in Appendix F-9.

Once the portfolio of programs was developed, a series of parameters were created in order to conduct the TRC benefit-cost analysis. The key parameters for each energy efficiency and demand response program included:

- Number of projected new participants
- Unit-level energy savings and peak demand reductions (guided to a large extent by the Technical Reference Manual or TRM)
- Incentive levels
- Estimated equipment costs
- Program administration costs (internal PECO and external CSP costs)

The program development process concludes with the selection of appropriate programs (based on passage of the TRC and/or other factors such as sector applicability or measure/program compatibility). Once programs are selected for inclusion in the Plan, and assuming the Plan is approved by the Commission, PECO intends to implement the programs according to the schedule set forth in the Plan.[4]

3.1.3 Treatment of Measures in the Portfolio of Programs

This section describes the entire framework used to assess the savings, costs, and other attributes of energy efficiency and demand response measures ("Measures") – one measure at a time. Measures were subjected to a rigorous screening process and were ultimately bundled into the various programs. Three levels of screening were conducted:

- Level 1 – Universal Measure List
- Level 2 – Qualitative Screen
- Level 3 – Economic Screen

<u>Universal Measure List</u>

The first step of the measure savings assessment was to compile a list of energy efficiency and demand response measures that are available. The tables are separated by segment (residential,

[4] See Section 1.4, Chart 1

commercial, industrial). In total, there were 356 measures included in the universal measure list. Table 3.1 summarizes the number of measures by sector that was represented in the universal list of measures. Appendix F-6 provides a tabular listing of the universal list of energy efficiency and demand response measures.

Table 3.1: Universal List of Measures

Sector	Total Number of Measures in Universal List		
	Energy Efficiency Measures	Demand Response Measures	Total
Residential	118	6	124
Commercial	122	13	135
Industrial	87	10	97
Total	**327**	**29**	**356**

Qualitative Screen

The next step in the measure analysis was to conduct a qualitative screening of the measures. The purpose of the qualitative screen is to isolate measures that clearly do not belong in the portfolio of programs that PECO intends to offer. There are two sections to the screen. The first is the inapplicability screen, which determines whether or not each measure is applicable for implementation in the PECO service territory. If a measure is determined to have possible applications (by passing the inapplicability screen), then it would be further subjected to the qualitative screen. The qualitative screen assesses the appropriateness of each measure to the unique market conditions in the PECO service territory. Measures that failed the inapplicability and qualitative screens would not be included in further analyses.

Inapplicability Screening Criteria: Three inapplicability screening criteria were applied. If a measure met any of the three criteria, it would fail this section of the screen and be excluded from further measure-level analyses.

- Already widely implemented or required by building code: Certain measures may have already gained a high level of market penetration and saturation in the PECO service territory. This may be due to market transformation brought about by past and/or existing energy-efficiency programs. An example of such a measure might be T-8 fluorescent lamps in commercial buildings. Another possibility is that the technology may have reached a point in market maturity such that customers are selecting the efficient technology over a less efficient one. One example of this type of measure might be LED exit signs. Certain measures may already be required by building codes such that customers must select the measure in all new or replacement situations. An example of this type of measure might be duct insulation or hot water pipe insulation. These types of measures would already be included in the forecast baseline and there would be no additional energy-efficiency to be gained.
- Bad match to local condition: If a measure was considered to be irrelevant or not a good match to the PECO service territory's particular conditions, then it was not considered for measure-level analysis. An example of this type of measure is an evaporative cooler.

Summers in the PECO service territory are humid, and thus an evaporative cooler would not be able to function and provide the required cooling.

- Non-verifiable or indeterminable savings: If the savings impact or costs of the measure cannot be quantified such that an economic evaluation is both possible and reasonable, then the measure would not be considered any further in this study. Oftentimes, savings cannot be determined because they are too site-specific and the derivation of a savings estimate would involve making assumptions that would be difficult to verify or justify. These measures are more conducive to an assessment on a site-by-site basis. It should be noted that some of these measures might be suitable for customized programs.

Any measure that was determined to possess any of the three characteristics defined by the criteria above was eliminated from further consideration, and thus was not subjected to the qualitative screen that follows.

Qualitative Screening Criteria: The purpose of the qualitative screen is to assess the appropriateness of each measure to the unique market conditions that might be expected in the PECO service territory. PECO utilized four qualitative screen criteria that are described as follows:

- Technological Maturity: Is the technology currently available commercially? If not, will the technology be commercially available within the time period that is covered under this study?
- Market Maturity: Is the technology currently supported by the necessary market infrastructure and resources? If not, will the required support be commercially available within the time period that is covered under this study?
- Customer Acceptance: Does the measure reduce comfort, productivity, or the quality of electric service to the point that customers are unwilling to install it in important markets? For example, early low-flow showerheads had spray characteristics that were so unlike what customers were used to and thus were not well liked by customers, and thus market penetration was initially very low.
- Non-Energy Benefits: Does the measure provide additional value to the customer besides reducing energy consumption? Does the measure provide any beneficial environmental or community impacts that might enhance the quality of life?

In the qualitative screen, each measure was awarded one of three possible scores for each criterion. This scoring scheme provides some flexibility and allows measures with positive scores to override negative scores, rather than the measure being completely eliminated due to a single negative score. The three scores awarded are as follows:

- A plus sign ("+") was assigned where the measure's characteristics are highly positive or give it a distinct advantage for the given criteria. For example, water heater insulation in the residential market would receive a "+" score for technological maturity. This is because water heater insulation is a mature technology, thus consumers and utilities, alike, can be confident in implementing a measure that is proven or reliable.
- No symbol is an indication of a "neutral" score. The measure has neither advantages nor disadvantages over other measures for the given criteria.

- A negative sign ("–") was assigned where the measure's characteristics are strongly negative or create a distinct disadvantage for the given criteria. For example, microwave clothes dryers in the residential electric market would receive a "–" score for technological maturity. This is due to the fact that prototype microwave dryers, that were thought a few years ago to be a technology of the future, were found to have significant incompatibility problems with metal zippers, metallicized fabrics, and other metal objects in clothing. Thus, the technology is not currently available.

For each measure passing the inapplicability screen, the number of plus scores and minus scores would be counted and then compared. If the number of pluses equal or exceed the minuses, then the measure passed the qualitative screen. Measures passing both the applicability and qualitative screens are marked with a "Yes," while those that failed either the inapplicability or qualitative screens are marked "No."

The results of the qualitative screen are summarized in Table 3.2. The results of the screen indicate that of the 356 measures originally considered, 297 (or 83%) passed the qualitative screening. The qualitative screening analysis was performed for each measure for each of the sectors. Appendix F-7 provides a detailed tabular listing of the qualitative screening results.

Table 3.2: Summary of Qualitative Screen Results

Sector	Total Number of Measures Passing Qualitative Screen					
	Energy Efficiency Measures		Demand Response Measures		Total Measures	
	Number Passing	% of Total	Number Passing	% of Total	Number Passing	% of Total
Residential	95	81%	6	100%	101	81%
Commercial	104	85%	13	100%	117	87%
Industrial	69	79%	10	100%	79	81%
Total	**268**	**82%**	**29**	**100%**	**297**	**83%**

Economic Screen

Each measure passing the qualitative screen was further assessed in an economic screen. The economic screen uses a simplified TRC test to compare the lifetime benefits of each applicable measure (avoided cost times energy savings) with each measure's lifetime costs (incremental capital and installation costs and O&M costs) plus a cost burden to reflect the program administration needed to implement that measure. The lifetime benefits are obtained by multiplying the annual energy and demand savings for each measure by the avoided cost for each year, and discounting the dollar savings to present value equivalent basis. The measure savings, costs and lifetimes are obtained as part of the measure characterization.

The results of the economic screen are summarized in Table 3.3. The results of the screen indicate that of the 356 measures originally considered, 205 (or 58%) passed the economic screening. The economic screening analysis was performed for each measure for each of the sectors. Appendix F-8 provides a detailed tabular listing of the economic screening results.

Table 3.3: Summary of Economic Screen Results[5]

Sector	Total Number of Measures Passing Economic Screen					
	Energy Efficiency Measures		Demand Response Measures		Total Measures	
	Number Passing	% of Total	Number Passing	% of Total	Number Passing	% of Total
Residential	53	45%	6	100%	59	48%
Commercial	59	47%	9	100%	68	50%
Industrial	72	79%	6	100%	78	80%
Total	**184**	**55%**	**19**	**100%**	**205**	**58%**

[5] Customized measures in the industrial sector and all demand response measures are counted as passing the screen because they are cost-effective in some cases. In both the potential estimates and the program designs, the impact of such measures is tempered by considering applicability and technical feasibility. See Appendix F-1, Chapter 5 for a more detailed explanation of the modeling assumptions employed in the economic screening process.

3.2 Energy Efficiency Programs

A total of 9 energy efficiency programs were developed and assessed for this Plan.

1. CFL Initiative
2. Low Income Energy Efficiency
3. Residential Whole Home Performance
4. Residential Home Energy Incentives
5. Residential New Construction
6. Residential Appliance Pickup
7. Commercial/Industrial Equipment Incentives
8. Commercial/Industrial New Construction
9. Government/Public/Non-Profit Facility Energy Savings

The following program descriptions provide all of the details as specified in the PUC Plan template. The detailed backup assumptions for the programs can be found in Appendix E-1.

Definition of Program Years

The Program Year (PY) is defined as the year concluding on May 31. The initial Program Year commences with the Commission approval of the Energy Efficiency & Conservation (EE&C) Plan and concludes on May 31, 2010. The subsequent Program years commence on June 1 of the named year and conclude on May 31 of the following year. For example, Program year 2010 commences on June 1, 2010 and concludes on May 31, 2011.

Q1 in each PY is defined as the period from June 1 through August 31.
Q2 in each PY is defined as the period from September 1 through November 30.
Q3 in each PY is defined as the period from December 1 through February 28.
Q4 in each PY is defined as the period from March 1 through May 31.

3.2.1 EE Program 1—CFL Initiative

A. Program Title and Program Years

Program Name: CFL Initiative

Program Years: PY 2009 – PY 2012

B. Objectives

The purpose of the CFL initiative is to transition PECO customers to becoming consumers who are conscious about their energy use and see themselves as partners in meeting PECO's local/regional/national/world energy and environmental challenges—a "smart choices for our future" philosophy, while encouraging and facilitating their adoption of compact fluorescent lamps.

Planned as the first initiative for PECO's new energy efficiency activities, it was launched in October of 2009 as a precursor to the programs the Company will launch in 2010. The CFL initiative will achieve several objectives:

- Bring attention to PECO's commitment to energy efficiency
- Launch PECO's education and outreach activities
- Get customers accustomed to taking steps to improve their energy efficiency
- Deliver immediate contribution toward PECO's energy savings goals

The CFL Initiative is an excellent starting point for accomplishing these goals because the technology is proven, the products are readily available and can be easily installed by consumers, and the savings are immediate.

C. Target Market

The target market for bulb installations is all residential customers in PECO's service territory, approximately 1.4 million households.

An additional target market is CFL manufacturers and retailers. Delivery of the program incentives to the customers will rely heavily on participation of upstream bulb suppliers—manufacturers and retailers, who partner with PECO to provide qualifying bulbs to customers at discounted prices.

D. Program Description

The CFL Initiative aims to substantially increase the saturation of compact fluorescent lamps by providing them with discounts on the price they pay for lamps in retail outlets. The program will engage CFL suppliers—both manufacturers and retailers, to make ENERGY STAR® qualified bulbs available at reduced prices during the program period by providing customers with pass-through incentives, informational materials, and in-store displays to promote the products. Customers will see reduced in-store prices on qualifying bulbs.

The CFL Initiative will be the launch program in PECO's Energy Efficiency and Conservation Plan. More than any other program in the plan, it will be used as a primary vehicle for raising customer awareness about energy efficiency opportunities and PECO's commitment to helping

them act on those opportunities. The CFL Initiative will be used to educate customers about the benefits of adopting energy efficiency measures and behaviors in general and compact fluorescent lamps (CFLs) in particular, as well as to achieve significant savings toward the goals stipulated in Act 129.

The initiative has two key delivery components, designed to enable PECO to create the climate and infrastructure to successfully operate full-scale energy efficiency programs that offer services for all residential customers and their energy uses. The two components are:

- Giveaway Events—used to publicize the program and educate consumers regarding the benefits of CFLs, the features of the program, and energy efficiency overall
- Upstream Partnerships with In-Store Discounts—used to promote supply, affordability, and conversion to CFLs

Giveaway Events

PECO will launch the CFL Initiative during the first few months of the initial program year with a very focused campaign on the merits of CFLs in particular and energy efficiency in general. The objective is twofold: to bring attention to PECO's launch of energy efficiency programs and to encourage as many customers as possible to try out, and ultimately adopt, CFLs for many of their home lighting needs. Bulbs will be distributed at no charge to customers at events in the PECO service territory. In addition to distributing bulbs on event day, the campaign will include high profile promotion prior to the event that presents key, concise messages about PECO's commitment to improving customer energy efficiency and educational materials that include recommendations on best places to install the CFLs plus other low/no-cost ideas for saving energy.

CFL giveaways have been done in other parts of the country and world. As attention grabbers, they are successful. They also can produce immediate and significant savings. The key to making the giveaway effective beyond the event is to have a broader message behind it and having the timeframe very limited.

Upstream Partnership Price Discounts

Working upstream in the market, through partnerships with retailers and manufacturers, PECO will provide incentives for retailers to discount the price of eligible bulbs to customers. The objectives are to encourage retailers to stock CFLs so that customers can readily purchase various CFL types, to establish long-term relationships with these channels that will also help PECO's broader appliance rebate program succeed, and to increase consumer purchase and installation of CFLs. In addition to in-store price discounts, the upstream component will include in-store promotional and educational displays about ways to use CFLs to save energy and other energy-saving tips, and retailer staff training to ensure knowledge and consistency of the messages PECO wants conveyed.

The upstream incentives with in-store discounts activity has appeal as:

- An everyday approach very familiar to and proven effective with consumers
- Provider of discounts that retailers can promote in advertising to attract business
- A good way for PECO to foster partnerships and establish trust with local and chain retailers

Upstream incentives with in-store discounts for consumers have been used extensively across the country. They take several forms and go by several names, including: instant rebate or coupons, and point-of-purchase discounts or "sale" pricing. The defining feature is that the discount is immediate; there are no consumer mail-in requirements. Numerous CSPs offer turnkey services for implementation of this activity.

E. Implementation Strategy

PECO will administer the CFL Initiative through a CSP implementation contractor.

Channels for Program Delivery

The CFL Initiative is designed to achieve increased adoption of CFLs by residential customers through PECO partnerships with upstream market actors, namely retailers and manufacturers.

- Retailers will provide the direct contact with customers, offering in-store discounts on qualifying products and informational displays about the benefits of using them. PECO will partner with the CSP and retailers to deliver the program and will include financial incentives toward consumer discounts, cooperative promotions, education of both retailer staff and consumers, and customer discounts on qualifying products.
- Manufacturers will provide qualifying products to retailers. They may also contribute incentives to retailers, in addition to those provided by PECO, to promote specific models at different times throughout the program. Working through the CSP, PECO will partner with manufacturers for cooperative promotions, and contributions toward customer discounts on qualifying products.
- CSPs will implement the program on PECO's behalf and will provide retailer staff and consumer education to support both this program and the overall message of commitment to energy efficiency that PECO wants to spread.

Overview of Roles and Activities

The implementation CSP(s) will have full responsibility for delivery of all aspects of the program. Responsibilities fall into several activity areas:

- Upstream Partner Recruitment and Management: recruitment and negotiation of agreements with manufacturers and retailers (including local, urban retailers) for the provision of products and consumer discounts, fulfilling agreements with the upstream suppliers, ensuring partner performance of responsibilities and display of materials and appropriate product labeling to ensure that PECO's name is associated with the in-store promotions.
- Giveaway Event Management: including collaboration with upstream partners as appropriate, developing and procuring event site, procuring bulbs for distribution, collecting contact information from recipients to ensure PECO residency and enable program evaluation.
- Program Marketing: including development, production, and distribution of program materials for giveaway and discount campaigns, in collaboration with PECO and in collaboration with upstream participants as appropriate.
- Program Education and Outreach: including development of promotional giveaway and discount campaigns and in-store displays in collaboration with participating retailers.

- Incentive Processing: including accepting and validating sales data from participating retailers and/or manufacturers, and processing incentive payments to these participants.
- Program Performance Tracking and Improvement: including tracking distribution of CFLs, and reporting of program activities.
- Institute a recycling program that includes promotional materials, training for participating retailers and managing liability.
- Staff training about the program and qualifying products.

The implementer will also enable PECO to establish a direct relationship with each of the upstream participants. Direct and sustained relationships between PECO and the upstream participants will be very important for both the CFL activities and to help ramp up other programs in which these same upstream suppliers may participate, such as promotion of ENERGY STAR qualified appliance rebate programs.

Retailers are the channel actors that will interface with PECO's ultimate target market for this program: residential customers. In this role and as program partner participants, they will have responsibilities in several activity areas, including:

- Stock and sell bulbs at agreed-upon discount amounts.
- Display promotional and educational materials related to the products and the program, including use of end-cap displays and shelf labels.
- Track and report sales of qualifying products as specified in their participation agreement.
- Collaborate with PECO/CSP regarding product training, in-store promotions, and giveaway events to ensure successful program performance.

The giveaway events will be used mainly to publicize the program and PECO's broader energy efficiency campaign, bringing awareness of CFLs and PECO's commitment to their adoption by the consumer market. The selected CSP will organize, schedule, and conduct events at key locations in the PECO service territory at the outset of the program. These may be coordinated with participating retailers or stand-alone events. The goal of the initial publicity giveaways is to distribute up to 200,000 bulbs during the first few months of the initial program year.

For the upstream partnerships with in-store discounts for consumers, the implementation CSP will work with retailers and manufacturers to partner with PECO. Under this partnership, PECO will provide funds to mark down the prices of qualifying bulbs sold by participating retailers. The manufacturer/retailer will then discount the sale prices of bulbs to customers. The sizes of the PECO incentives to the participating suppliers and the ultimate customer incentives will be part of the participation agreement, as will the requirement that they provide sales data back to PECO. The in-store discounts may be offered by ongoing discounting or by having periodic discount events (sales) that they will advertise to consumers. PECO can also advertise and will have its name associated with any price discounts offered.

The agreements between PECO and participating suppliers will allow PECO to be assured that the program is effectively and cost-effectively increasing sales of CFLs. The agreements will stipulate how much incentive PECO will provide for each price-discounted bulb sold, stipulate any other requirements—such as minimum/maximum price discounts to be passed on to

consumers and/or maximum consumer purchase quantities allowable, how often sales must be reported and when PECO incentives will be paid.

Under this arrangement, the implementation CSP's fulfillment agent will obtain regular sales data from the retailers, including the product sales prices and discounts within those prices. This will allow monitoring of the CFL sales, necessary for program reporting, and provide the basis for PECO to reimburse retailers for the markdowns on bulb prices to customers. PECO will pay the markdown incentives to the entity that provides the sales data to PECO. That is, incentive payments could go to the CSP who collects the data from, and then reimburses, the retailers/manufacturers.

Education Overview

Education is an important component of the CFL Initiative. It has two goals:

- To generally introduce PECO's commitment to helping customers use electricity more efficiently in anticipation of its launch of additional energy efficiency and demand response programs.
- To specifically increase awareness and understanding of the benefits of using compact fluorescent lamps.

The educational component will include both general information – about why improving energy efficiency is important, how it can be achieved, and address concerns commonly held about investing in energy efficient products; and CFL-specific information – about how they work, what their benefits are, what customers can expect in the way of performance and savings, and PECO's role in making these products available at more affordable prices. PECO's implementation contractor, in conjunction with the upstream market participants, will develop specific educational materials and events for the CFL Initiative as part of the turnkey implementation contract.

F. Program Issues, Risks, and Risk Management Strategies

The CFL Initiative is designed to maximize ease of adoption by residential customers and enable education and promotion by PECO and CSPs. The key implementation issue is: how to deliver the program so that the design objectives are realized and the program is cost-effective.

The giveaway and upstream partnership price discount components will be launched during the initial program year as the implementation CSP(s) develop the necessary relationships with upstream suppliers and others.

For the giveaways, events are intended to publicize the availability of CFLs at discounted prices from participating retailers. They must be organized and conducted effectively to promote customer purchase and use of CFLs. Since the majority of bulbs installed under the program will be through purchases from participating retailers, the giveaway events may be connected or coordinated with these retailers. Examples include publicity tables outside the stores or "buy one get one free"-type promotions. Events may also be organized independent of retailers. The giveaway events must be high profile and each operated for a short time only—a few hours to a few days at most.

For the upstream partnerships with in-store discounts, the issue is how to structure the upstream incentives to be as efficient and cost-effective as possible. Upstream incentives can be provided by PECO in a variety of ways. The mechanism recommended for this program is for PECO to

provide a markdown on the retailer's bulb cost for each qualifying bulb that the retailer sells at a discounted price. That is, once a qualifying bulb is sold, PECO reimburses part of the retailer/manufacturer's cost. This "markdown" method means that PECO only pays out the incentives after customers receive the bulbs and provides PECO with assurance that incentives are only going towards actually purchased bulbs.

An alternative incentive mechanism is a bulb cost "buydown." With this, PECO would help retailers buy down the cost of acquiring qualifying bulbs from manufacturers. While this provides a strong incentive to stock qualifying products, and is sometimes necessary to gain participation of small stores, additional steps would need to be taken to ensure that the products shipped to these store locations via the buydown method are sold. For example, customers may fill out coupons with their name and address in order to provide the needed sales data.

While PECO's ultimate goal is to increase adoption of CFLs by all residential customers, the upstream activity will be rolled out incrementally. It is anticipated that the early upstream participants will be big-box stores (e.g., Home Depot, Lowe's) for a quick launch and national/regional chains (e.g., Ace Hardware and other local, urban retailers). Many of these retailers have participated in similar programs in other parts of the country, allowing them to be both more receptive and better prepared to offer in-store discounts under agreements with PECO. Additional retailers can be added over time, for example discount chains and wholesale clubs (e.g., Walmart, BJ's, and Costco). For example, they may have automated systems that enable instant recording of the sales of PECO-subsidized products right at the checkout register. Smaller stores may take longer to cultivate but will be equally eligible to participate. For instance, they may require customers to help them with the sales tracking by filling out a card at the checkout indicating the quantity of price-discounted product they buy. The CSP will have the flexibility to change products, incentives and retailers.

G. Ramp Up Strategy

PECO will contract with one or more implementation CSPs who have demonstrated success in developing strategies for and implementing CFL giveaway events and upstream partnerships with in-store discounts. They will be able to utilize their already-existing relationships with manufacturers and chain retailers to gain their participation quickly.

PECO requested and was granted expedited approval of the CFL Initiative program from the Commission and launched the program in October 2009. PECO executed a contract with the selected CSP immediately upon approval of the program by the Commission.

The PECO/CSP team will lay the groundwork for successful launch of the program by preparing the upstream market for the program with information and in-store displays, and developing marketing and education materials, and protocols for program activity and payment of incentives to upstream partners. The CSP(s) will be expected to utilize a "quick launch" process, whereby they can be up and running with a portion of the retailers in a short period of time and then expand the participation of manufacturers and retailers over time.

H. Marketing Strategy

The implementation CSP(s) will have demonstrated experience in CFL program marketing. In particular, the CSP will have experience working with upstream suppliers, ensuring that in-store information is displayed, staff is trained, etc.

I. Eligible Measures and Incentives

CFL Initiative Proposed Measures—Per-Unit Deemed Savings, Costs, and Potential Incentives

Measure	Annual kWh Savings	Peak-period kW Savings	Incremental bulb cost	Incentive
Standard CFL screw-in bulbs:				
13-watt CFL –Giveaway (compared to 60-watt incandescent)	43	0.002	$4.00	$4.00
13-watt CFL –Discount (compared to 60-watt incandescent)	43	0.002	$4.00	$1.00
Specialty bulbs:				
18-watt CFL 3-way and dimmable –Discount (compared to 75-watt incandescent)	52	0.003	$11.00	$2.00

Measures

The initiative features a variety of ENERGY STAR qualified bulbs. Focusing on bulbs keeps the initiative simple and easy for customers to install. Offering a good variety of bulbs provides opportunities to use CFLs in a variety of lighting applications, from standard ones (e.g. kitchen and porch fixtures) to specialty ones (e.g., decorative, three-way, dimmable). Including only ENERGY STAR products ensures that PECO's program will be associated with only high-quality products.

The per-unit kWh and kW savings are consistent with deemed savings provided in the TRM and include an "in-service rate" adjustment that reflects the market assumption that 84% of bulbs acquired through the program will be installed. These per-unit values are gross savings and do not include any free-rider or free-driver effects.

Incentives

PECO will provide incentives to help offset the cost of CFLs to customers. This will include discounts of up to 50% of the incremental retail price over incandescent bulbs for in-store discount promotions. It is expected that 100% of the incentives that PECO provides to the upstream suppliers will be passed on to customers as markdowns on their purchase price.

For the giveaways, which comprise far fewer of the bulbs distributed under the program, PECO will cover the entire cost of the bulb. That is, the incentive is, by definition, 100% of the customer cost.

J. Program Schedule

The CFL Initiative program will operate during program years (PY) 2009 through 2012. Each PY runs from June 1 of the year through May 31 of the following year. This program will be submitted for approval by the Commission in PY 2009 Q1 and rolled out to the public late in PY 2009 Q2. The following table provides a schedule of key milestones:

Proposed CFL Initiative Implementation Schedule

Milestone	Timing
Assign PECO program manager and staff	July 2009

Start program design	August 2009
Select and contract with program implementation CSP	July 2009
Complete program design	September 2009
Begin upstream supplier recruitment	Immediately upon execution of CSP implementation contract
Negotiation and signature of memoranda of understanding (MOUs) between PECO/CSP and participating manufacturers/retailers	Start immediately upon execution of CSP implementation contract and continue throughout program operation
CFL giveaway events	October 2009
Begin in-store discount promotions	October 2009
Prepare reports: Retail sales data required for payment of upstream incentives Reports to Commission	 Weekly/Monthly Quarterly, and annually each July 15th
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The evaluation methodology and data collection proposed for the CFL Initiative are guidelines that reflect current measurement and verification (M&V) practices. The ultimate M&V requirements for this program will conform with the state protocols, once they are published.

Metrics for Gauging Program Success

Primary:

- Number of bulbs distributed via giveaway
- Number of qualifying bulbs sold by participating retailers each year
- Energy savings associated with bulbs distributed via giveaway and in-store discounts; for comparison with annual goals
- Program implementation costs incurred; for cost-effectiveness monitoring
- Customer satisfaction with the program and the products

Secondary:

- Number of upstream participants who sign agreements
- Number of qualifying price-discounted bulbs that upstream participants commit to selling as part of agreement with PECO
- Sales increase and/or customer attitude change following educational and marketing campaigns (e.g., bill inserts) and upstream participants/implementation CSP promotions (e.g., in-store displays, flyers, product packaging).

Data Collection Approaches

Data for evaluating the program will likely come from the following sources:

- Sales data from participating upstream suppliers indicating the number and style of PECO-sponsored price-discounted bulbs sold each period (weekly or monthly); data will include information on sales location, and discounted and full retail prices of bulbs sold.
- Sales data from participating upstream suppliers on their pre-participation sales of bulbs that will be eligible for in-store discounts under the program.
- In-store, customer "intercept" surveys conducted before, during, and after promotional events; these may be conducted by both the program implementer and the M&V contractor.
- Follow-up surveys of residential customers contacted from customer information provided by the participating retailers and customer-provided information obtained during giveaway events.
- Surveys of residential customers from PECO customer information records, mainly to assess effectiveness of educational efforts to make customers aware of the program and PECO's involvement in promoting energy efficiency.

Impact Evaluation Methodology

The program will record energy savings and peak load reductions from the CFLs distributed via giveaways and in-store promotions using the per-unit deemed savings values in the TRM.

Almost all the bulbs will be distributed within the upstream partnership sales component of the program. Energy and demand impacts will be assessed through careful monitoring of sales data. Sales from promotion periods will be compared with pre-program and non-promotion period sales to assess the bulb purchase increases and associated deemed savings of the program. The deemed savings have an embedded "in-service rate" of 84% of on-site savings to account for the likelihood that not all bulbs will be immediately installed.

A relatively small number of bulbs will be distributed via giveaway events. Bulbs distributed in this way will be recorded using the same deemed savings as the purchased bulbs. For events integrated with in-store discounts, such as "buy one, get one free," participating retailers will provide records of the free bulbs distributed along with their purchased bulbs. For stand-alone events, where the CSP distributes bulbs independent of retailers, customers receiving bulbs will provide information that allows follow-up contact regarding their use of the bulb and additional bulbs purchases.

PECO will credit toward the program only savings from bulbs that are purchased during promotional event periods with participating upstream suppliers and from bulbs that are distributed during PECO giveaway events, with proper documentation. This means that any additional sales that may be induced by the program after these promotions—that is, spillover or free-driver effects, are not claimed by PECO under the program.

Post-sale surveys with participating customers will be used to review and revise as necessary the installation rate assumed in the deemed savings and the net-to-gross ratio accounting for free-riders and free-drivers. That is, the basis for adjustment of the net impacts will be participant self-reports. Customers will be asked to provide information regarding whether they would have purchased the bulbs without the PECO promotion, whether and where in the home they installed the bulbs, and whether they subsequently purchased additional bulbs at full cost. This outline of the self-report methodology for the assessment of net impacts describes only the basic approach.

The selected M&V contractor will develop the complete plan that ensures defensible measurement of savings in compliance with industry and state protocols.

Process Evaluation Methodology

Program process evaluation is important to ensure that the program is operating as intended and to provide information that can enable improvements in both the program design and implementation. Process evaluation will be undertaken and conducted throughout the program by the implementation and M&V contractors selected by PECO.

Process evaluation will assess customer understanding, attitudes about, and satisfaction with the program and with PECO's other educational activities and materials associated with the launch of PECO's EE&C Plan. The evaluations will make use of survey data collected by the implementation and M&V contractors. These surveys will include both customers known to have participated in the giveaway/discount program and eligible non-participants.

The M&V contractor will also help PECO assess the performance of the program design and delivery of the products and services featured in the program, including effectiveness of the marketing and educational materials, effectiveness of advertising and promotional campaigns and messages, and whether implementation milestones are met adequately and on schedule. These evaluations will use sales and promotion data maintained by the implementation CSP, information provided by PECO, and customer survey data.

L. Administrative Requirements

PECO will administer the CFL Initiative program through one or more CSP implementation contractors. PECO's role will be to ensure that:

- the CSPs plan and conduct the giveaway events, recruit upstream CFL suppliers, fulfill the terms of negotiated agreements with the upstream participants and pay agreed upon incentives to them, promote and monitor the program, and satisfy reporting and M&V support requirements, and
- PECO's educational and program messages are delivered accurately and clearly to maximize the effectiveness of, and customer satisfaction with the program.

The program is expected to operate with the following PECO/Contract staffing mix:

CFL Initiative Program—Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsible for final design and launch of program, and administering and overseeing CSP(s).	0.75 FTE in PY 2009 (0.75 yr. @ 1.0 FTE), 1.0 FTE in PY 2010 through PY 2012
Analyst/contract administrator: Responsible for administering and overseeing CSP(s) and providing other back-office support to the program manager.	0.25 FTE in PY 2009, 0.50 FTE in PY 2010 through PY 2012

M. Estimated Participation

Participation and measure adoption estimates were developed based on existing homes in PECO's service territory, assessment of the attainable market potential in the area, and the experience of other organizations that have operated this type of program.

CFL Initiative Program—Estimated Participation
(number of new bulbs distributed or sold/year)

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Standard CFLs (giveaway)	200,000	0	0	0	200,000
Standard CFLs (discount)	1,500,000	1,800,000	1,600,000	750,000	5,650,000
Specialty CFLs (discount)	0	200,000	400,000	250,000	850,000
Total bulbs	1,700,000	2,000,000	2,000,000	1,000,000	6,700,000

Assumptions and embedded analysis estimates used in the above estimates of bulb installations:

- PECO incentives cover up to 50% of incremental bulb costs over lumen equivalent incandescents for the discount component and 100% for the giveaway.
- Annual household participation rates ramp up as the program becomes established and then decrease as the standards in the Energy Independence and Security Act of 2007 start to take effect during PY 2012.
- Giveaway events will supply an average of two bulbs per customer participant; discount purchases of standard CFL bulbs, which can be single or multi-pack products, average four bulbs per participant, and specialty bulbs are one bulb per participant.
- The savings associated with the bulbs acquired by customers through the giveaway and discount activities include a "discounted" savings rate of 84%. That is, the bulb counts noted in the Estimated Participation table above are deemed to yield the savings noted in the Energy and Peak Demand Savings Estimates table.

N. Estimated Program Budget

Approval of the program is anticipated in PY 2009 Q1, with less than full year of program operation. The cost estimates reflect this timing.

CFL Initiative Program—Proposed Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$142,500	$216,300	$222,789	$229,473	$811,062
Implementation Contractor (Giveaway)	$250,000	$0	$0	$0	$250,000
Implementation Contractor (Discounts)	$402,390	$1,819,811	$1,961,803	$402,878	$4,586,881
Umbrella Costs	$126,903	$177,881	$183,217	$188,714	$676,715
Program-Specific Education	$112,500	$154,500	$159,135	$163,909	$590,044
Promotion	$1,917,489	$812,552	$537,622	$276,875	$3,544,537
M&V	$248,220	$217,957	$224,224	$104,060	$794,461
Incentives (Giveaway)	$799,999	$0	$0	$0	$799,999
Incentives (Discounts)	$1,500,000	$2,266,000	$2,546,160	$1,365,909	$7,678,069
Total	**$5,500,000**	**$5,665,000**	**$5,834,950**	**$2,731,818**	**$19,731,768**

The program costs were estimated using the following information and estimates:

- The values in the budget table include an escalation rate of 3% per year after PY 2009. The escalation applies to PECO admin labor, implementation, umbrella, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above
- CSP Implementation—Includes upstream recruitment and negotiations, sales tracking and incentive fulfillment, retail event organization and management, upstream participant training, store monitoring, program monitoring and improvement, tracking system entry, and reporting.
- Umbrella Costs—Each program in the plan will pay a proportional share of the costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development, EE&C Plan development costs and, for residential on-line energy audit.
- Program-Specific Education—Assumed education costs are $150,000 per full program year, with two bill inserts plus on-line and print materials in PY 2009 and some combination of bill inserts and materials in each year thereafter.
- Promotion—For media ads that address both the CFL Initiative and announce PECO's full array of energy efficiency products and services. This program includes the estimated cost of advertising both the CFL Initiative launch and PECO's entire set of energy efficiency programs in the following amounts: Tier 1 outlay of $1.9 million in PY 2009, Tier 2 outlay of $813 thousand in PY 2010, Tier 3 outlay of $538 thousand in PY 2011, and $277 thousand in PY 2012.

- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to equal 3% of total program budget (including incentives, excluding M&V).
- Incentives—The incentives budget is based on per-unit incentive and bulb distribution/purchase estimates. Overall, incentives represent 31% of the total program budget over the four program years.

O. Projected Energy Savings and Demand Reduction

The estimated energy savings and peak demand reductions are based on net annual per-unit kWh and kW values and an effective useful life value of 6 years as indicated in the TRM. For the remainder, savings estimates were developed using information and the savings calculator in the ENERGY STAR website and other secondary data such as Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region. These values were applied to the estimated number of bulbs distributed under the program each year. The savings noted in each year reflect the savings from bulbs obtained by customers through the program in that year plus the impact of bulbs still in operation from previous years.

Since the planning year runs June 1 through May 31 each year, PY 2009 is 8 months and PY 2012 runs through May 2013. The participation estimates reflect this timing, except the Giveaway that is proposed for October 2009 or within the first few months of the initial program year.

CFL Initiative Program—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
MWh Savings				
Giveaway	8,646	8,646	8,646	8,646
Discount	64,846	153,147	243,287	281,650
Total	73,492	161,793	251,933	290,297
Peak MW Reduction				
Giveaway	0.470	0.470	0.470	0.470
Discount	3.525	8.325	13.225	15.310
Total	3.995	8.795	13.695	15.780

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2009-PY 2010 timeframe (through May 2011): $0.069/kWh
- Savings Cost over the PY 2009-PY 2012 timeframe (through May 2013): $0.068/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.029/kWh

- Levelized Cost of Reduced Peak Demand: $537/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
CFL Initiative	$161	$47	$113	3.40

Q. Re-filing Plan Adjustment 09/15/10

The CFL Program has been extremely successful. Since its inception in October 2009 through July 2010, over 3.3 million discounted CFL bulbs have been sold resulting in over 154,000 MWh savings. These results have exceeded the Plan's projected 1.76 million in CFL sales and 88,000 in MWh savings.

PECO proposes to transfer $3.5 million into the CFL Program, with $1.7 million coming from the Residential New Construction Program and $1.8 million coming from the Whole Home Performance Program. This funding transfer will not impact the Energy Efficiency Program Charge (EEPC) or other rate classes as both the Residential New Construction Program and the Whole Home Performance Program are utilized and funded by the residential customer class.

The additional $3.5 million transferred to the CFL Program is expected to result in an additional 3.2 million discounted bulbs sold at retailers, 144,000 MWh energy savings and the demand reduction of 8 MW.

Proposed Funding Modification to Residential Programs

Residential Energy Efficiency Program	Budget ($ Millions)		
	Total	Proposed Budget	Variance
CFL Initiative	$19.7	$23.2	$3.5
Residential Whole Home Performance	$3.3	$1.5	-$1.8
Residential New Construction	$2.4	$0.7	-$1.7
Total -- Residential EE Program Proposed Revisions	***$25.4***	***$25.4***	***$0.0***

3.2.2 EE Program 2—Low-Income Energy Efficiency

A. Program Title and Program Years

Program Name: Low-Income Energy Efficiency

Program Years: PY 2009 – PY 2012

B. Objectives

The purpose of the Low-Income Energy Efficiency program is to educate and assist eligible residential customers with making their homes more energy efficient. The program builds upon the Low Income Usage Reduction Program (LIURP) objective: to make low-income customers' energy bills more affordable by helping to reduce energy usage.

C. Target Market

The target market for the low-income program is largely the same as LIURP. The eligible customer population is low-income residents in existing residential units that are provided with electricity by PECO and who are financially responsible for the electric bill payment. Customers must meet the following usage and income eligibility criteria for program participation. These vary a bit by program component.

- Market for Component 1: PECO residential customers with a household income at or below 200% of the federal poverty level (FPL) (same as LIURP limit of 200%). PECO will make a good faith effort to primarily focus on residential customers with a household income at or below 150% of the FPL for this program. Plus, LIURP requirements of household usage levels that exceed monthly average usage of 600 kWh per month for electric baseload (500 kWh for Customer Assistance Program (CAP) rate customers) for non-electric heating customers, 1,400 kWh per month for electric heating customers, and 50 ccf per month for natural gas customers. The definition of high-use customers may change depending on the results of the on-going programs.
- Market for Component 2: PECO customers who will participate in LIURP during PY 2009-2012.
- Market for Component 3: PECO residential electric customers eligible to participate in other weatherization programs for low-income residents.

Low-income new construction units are excluded from the eligible population.

D. Program Description

The Low-Income Energy Efficiency program will be modeled after PECO's existing LIURP. LIURP is a successful program that provides energy efficiency services and energy education to PECO's low-income customers to help them reduce their energy usage and increase the affordability of their energy bills.

The Low-Income Energy Efficiency program will focus on education and the installation of measures in homes that meet the LIURP criteria.

Following the recommendations from LIURP evaluation reports[6], the Low-Income Energy Efficiency program will expand the LIURP program and emphasize the following:

- Target the highest usage eligible customers, focusing on customers at or below 150% of the FPL, for program services.
- Expand installation of CFLs to include all lighting used for more than two hours a day.
- Address the high percentage of supplemental electric heating that may be due to many factors, including inoperable central heating systems.
- Continue customer energy education during the audits and in follow-up contacts and provide customers additional information about other energy efficiency programs.
- Conduct impact evaluations using techniques that isolate and estimate the energy bill effects of the program services provided to participants.

Participating households will receive two types of assistance:

- *In-home Audits and Education—These are on-site inspections and tests used to identify* the applicability of energy-savings measures the program offers and to educate residents about ways to reduce their energy usage.
- Direct Installation of Measures—Install measures to reduce energy use in the home at no charge to residents. This aspect of the LIURP-type program will be expanded to include additional cost-effective measures, bring services to more households, and partner with other weatherization service providers who serve PECO electric customers to install CFLs along with their weatherization improvements.

<u>In-Home Audits and Education</u>

- Trained auditors perform on-site audits (air leak testing and home inspection) and assess the energy performance of the house; i.e., identify where energy is used and where there are inefficiencies and determine which measures are appropriate to install.
- The auditors discuss the opportunities to reduce energy use and bills with residents.
- If the auditor identifies structural issues, the auditor will refer the customer to the Department of Community and Economic Development (DCED) for information and qualification to the DCED's weatherization programs. In addition, the auditor will provide a list of potential resources for the customer. PECO will work with its Universal Services Department and with the Universal Services Advisory Committee to help develop a referral process.
- Follow-up contacts with the participants reinforce the message of the benefits of energy-saving behaviors (e.g., turning off lights in unoccupied rooms) and adoption of energy-savings measures offered by the auditors.

<u>Direct Installation Components</u>

[6] *PECO Energy 2006 LIURP Evaluation Final Report*, prepared by APPRISE, April 2008; and *PECO Energy 2007 LIURP Evaluation Final Report*, prepared by APPRISE, April 2009.

Applicable measures will continue to be installed, at no cost to residents, in the same way as they have been in past LIURP programs. Additional measures for the Low Income Energy Efficiency program include:

- Focus mainly on measures consistent with PECO's current LIURP program. CFLs are now limited to four per household but, rather, include all lights used more than two hours daily. The program will expand CFL installations from an average of 4 bulbs to 10 bulbs per household.
- Increase emphasis on repair or replacement of non-working gas heating units to remove electric space heaters from use.
- Install ENERGY STAR appliances as applicable.

The expansion of the program to accommodate more participants has three components:

Component 1: By May 2013, double the number of participants over the 2008 LIURP level of 9,000 households—This will result in an additional 20,000 participants receiving installations by May 2013. This will be achieved by targeting households at or below 200% of the FPL with primary focus on households below 150% of the FPL.

Component 2: Increase the number of CFLs installed for LIURP participants—The LIURP program already installs four compact fluorescent lamps (CFLs) in each participant residence as part of its services. This new program will increase CFL penetration by installing an additional six lamps in each of the anticipated LIURP participants' residences, beginning in the latter part of PY 2009 and continuing through PY 2012 (May 2013).

Component 3: Include electric efficiency improvements with weatherization improvements provided through other weatherization programs. By partnering with companies that provide weatherization services to PECO electric customers in the low-income market, PECO will leverage those activities. The program will cover the cost of six CFL bulbs the program provider will install for each of its program participants during home visits made under the weatherization program. This will increase the reach of the PECO program by an additional 150,000 households, resulting in the installation of more than one million additional CFLs.

E. Implementation Strategy

The Low-Income Energy Efficiency program will provide similar services and providers will continue in the same roles as LIURP, but with added workload and funding, to allow the program to reach and perform those services to a greater number of households than in past years.

Channels for Program Delivery

The Low-Income Energy Efficiency program will deliver the program in the same manner as the LIURP, and utilize other weatherization companies, as appropriate, to reach the increased target number of households. In particular, the following channels will be used:

- LIURP staff and contractors

- Community groups, CAP staff to refer eligible participants, and other CSPs as necessary to provide audit and installation services
- Weatherization and other CSPs to install CFL bulbs
- In addition, PECO will encourage in its RFP process that bidding CSPs investigate opportunities to hire low income, unemployed workers through various programs throughout the State, such as the Pennsylvania Employment, Advancement and Retention Network and Philadelphia Workforce Development Corporation. PECO will include an additional scoring category in its RFP evaluation process for those CSPs that have a plan to utilize the services of welfare-to-work employment agencies, or hire unemployed workers.

Education Overview

The education component of LIURP will be continued and emphasized. Customers will also be provided with energy education materials to enhance their understanding of energy-saving behaviors and measures and to make them aware of other PECO energy efficiency and demand response programs, as well as other State and local resources available to assist them (e.g., Keystone HELP®).

Applicable Collaborative Resources

There are already several programs in place at the State level that provide qualified residents with loans and/or rebates to enable action on many commonly recommended measures. PECO can leverage these resources to expand or supplement benefits to its low-income customers. They include:

- Funding assistance possibilities via the American Recovery and Reinvestment Act of 2009 (ARRA) provisions:
  - Performance of residential energy audits, including auditor and installation training
  - Energy Efficiency & Conservation Block Grants to nonprofit organizations and State and local governmental agencies for the purpose of performing energy efficiency retrofits
- Keystone HELP—the Energy Efficiency Loan and Rebate Program offers especially favorable loan rates and rebates to Pennsylvania-resident homeowners with annual incomes below $150,000. Financial incentives are available for installation of high efficiency heating, air conditioning, insulation, windows, doors, geothermal and "whole house" improvements. This program is mainly funded by the Department of Environmental Protection, Pennsylvania Treasury Department and the Pennsylvania Housing Finance Agency and is administered by AFC First Financial Corporation, a Pennsylvania energy efficiency lender.

F. Program Issues, Risks, and Risk Management Strategies

The Low-Income Energy Efficiency program has the benefit of using and building on the existing LIURP infrastructure for outreach and delivery of services. This program will simply supplement that infrastructure to attain greater participation in improving the energy efficiency of homes in the low-income target market.

LIURP focuses on providing usage reduction services to low-income residents to ensure reduced consumption. Expansion of the program to reach eligible households beyond the LIURP target market (through Component 3 described above) will similarly use the infrastructure and staff employed by programs that offer weatherization improvements to low-income residents.

As such, there is little risk associated with this program. Attention will be given to ensuring that the LIURP and weatherization providers provide the services that funding from this program will enable and supply the documentation of activities that will meet the tracking and reporting requirements of this program.

G. Ramp Up Strategy

The infrastructure for delivering all services included in the Low-Income Energy Efficiency program is already in place. The only ramp up activities required will be the development of procedures for ensuring that the additional services made possible by funding from this program will be provided and the establishment of tracking and reporting procedures to ensure that activities and savings claims are appropriately documented.

H. Marketing Strategy

The Low-Income Energy Efficiency program will be marketed as part of the LIURP activities. Since the program will be an expansion of the existing LIURP program, PECO will develop new marketing strategies and collaborations that educate customers and engage them in taking advantage of the program. Budget is allocated to allow for additional reach of the LIURP marketing. For weatherization program customers, the CFL installations are an added benefit that the sponsors of those programs can promote as they see fit.

I. Eligible Measures and Incentives

The measure groupings and components are the same as used in the LIURP program. The table below identifies the measure groups and the program components in which they will be offered, (C1) = Component 1, (C2) = Component 2, (C3) = Component 3.

Low-Income Energy Efficiency Proposed Measures
—Per-Unit Savings and Installation Costs

Measures	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Incremental Cost	Unit Definition
Electric baseload - basic measures (C1)	775	0.095	5	$122	per installation
Electric baseload - major measures (C1)	1,504	0.183	12	$857	per installation

Measures	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Incremental Cost	Unit Definition
Electric heat – basic measures (C1)	382	0.047	5	$660	per installation
Electric heat – major measures (C1)	1,374	0.168	12	$2,088	per installation
Gas heat - basic electric measures (C1)	339	0.041	5	$1,661	per installation
Gas heat - major electric measures (C1)	1,705	0.208	12	$3,071	per installation
CFLs (C1) (C2) (C3)	43	0.002	6	$4	per lamp

The measure groups are defined as follows:

- Electric baseload - basic measures: include measures such as CFL, refrigerator removal, AC maintenance, faucet aerator, showerhead, water heater pipe insulation, water heater tank insulation, etc.
- Electric baseload - major measures: include measures such as AC replacement, refrigerator replacement, water heater replacement, and water heater timers
- Electric heat - basic measures: include same measures as the electric baseload basic measures plus duct and pipe insulation, programmable thermostats, etc.
- Electric heat - major measures: include same measures as the electric baseload major measures plus blower door guided air sealing, heat pump installation/replacement, and insulation installation
- Gas heat - basic electric measures: include measures such as CFLs, refrigerator removal, and AC maintenance
- Gas heat - major electric measures: include measures such as refrigerator replacement and AC replacement
- CFLs: standard "screw-in" compact fluorescent bulbs

The CFL measure savings, cost, and useful life values are the same as in the CFL Initiative program—TRM savings and life values and current prices in the PECO service territory. All other measures use values documented in the 2007 LIURP evaluation report.[7] All the savings are gross values and do not include any free-rider or free-driver effects.

The measures will be installed at no cost to the participants. That is, the incentives are equal to the full incremental cost of the measures. Incremental cost is the additional cost of a high-efficiency measure beyond a standard-efficiency alternative.

[7] *PECO Energy 2007 LIURP Evaluation Final Report*, prepared by APPRISE, April 2009.

J. Program Schedule

Because the Low-Income Energy Efficiency program will use the infrastructure of the existing LIURP program and that of the weatherization programs, it is anticipated that program services can be in operation by January 2010. The following schedule identifies key milestones for the program.

Proposed Low-Income Energy Efficiency Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	July 2009
Begin final program design	August 2009
Complete program design	December 2009
Pre-rollout program development: Develop procedures and protocols for delivery of services and activity tracking by LIURP and weatherization programs	November 2009
Program rollout: Launch services for LIURP components Launch services with weatherization program providers	January 2010 (PY 2009 Q3)
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The evaluation methodology and data collection proposed for the program are guidelines that reflect current measurement and verification (M&V) practices. The ultimate M&V requirements for this program will conform with the state protocols, once they are published.

Metrics for Gauging Program Success

- Number of measures installed in participating households
- Customer satisfaction with the program and the products
- Energy usage reduction and bill savings among participating households
- Program implementation costs incurred
- Weatherization program provider satisfaction with partnership

Data Collection Approaches

Program staff will collect data on program marketing, outreach, and service activities. The program will utilize a data tracking system to record and report program activities and achievements.

The data required for evaluating the program will depend on the methodology chosen. They will likely include the following sources and information:

- Program tracking system for measures installed and home characteristics
- Customer surveys regarding program awareness, satisfaction with the program, understanding and perceived savings from measures, household characteristics home operation behaviors, and use of the installed measures
- Periodic reviews and assessment of all components. Interviews with the program implementer, LIURP staff, PECO staff, and other weatherization program staff to identify problems and possible program services/implementation improvements
- Data maintained for M&V of LIURP program

Impact Evaluation Methodology

Since most of the services in the Low-Income Energy Efficiency program will be implemented using the LIURP model and staff, the impact evaluation will follow the methodology used for the LIURP program. The approach used by evaluators of that program has been a pre/post billing analysis, segmented for the different categories of customers and measure packages.

For the CFLs that will be installed by weatherization program service providers, savings can be evaluated through records of installations performed and follow-up surveys with recipient households to assess retention of the installations. The deemed per-unit savings from the TRM can be applied to the retained installations to obtain final savings estimates, based on PECO's understanding of using deemed savings as outlined in the TRM.

Process Evaluation Methodology

Program process evaluation is important to ensure that the program is operating as intended and to provide information that can enable improvements in both the program design and implementation. Process evaluations will be undertaken and conducted throughout the program by the implementation and M&V contractor selected by PECO. This will supplement the LIURP-type evaluations that will be conducted.

Process evaluation will assess eligible customers' understanding, attitudes about, and satisfaction with the program. They will make use of survey data collected, as described above, by the implementation and M&V contractors. These surveys will include both customers known to have participated in the program and eligible nonparticipants.

Interviews with program service providers will be conducted to assess satisfaction with the program and to identify problems and possible program services/implementation improvements. The data from the interviews will be used to identify problems/concerns with the partnerships and/or procedures for installing CFLs as part of weatherization programs and develop improvements. As noted above, these reviews will be conducted throughout the program operation period so that improvements can be incorporated into the implementation within this planning cycle.

L. Administrative Requirements

PECO will mainly administer the Low-Income Energy Efficiency program with the LIURP staff and through partnerships with weatherization program providers. The program is expected to operate with the following PECO/Contract staffing mix:

Low-Income Energy Efficiency Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsibilities include design and launch of program and coordination with operators of the weatherization programs	0.75 FTE in PY 2009, 1.0 FTE in PY 2010 through PY 2012

M. Estimated Participation

The planning years run June 1 through May 31 each year. Services in PY 2009 will be offered starting Q3 of that year. PY 2012 runs through May 2013. The participation estimates reflect this timing.

Low-Income Energy Efficiency Program—Estimated Participation (number of installations/year)

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Component 1 – LIURP-Like Participation	10,284	23,998	41,138	61,707	137,127 measures
Component 2 – Additional CFL Installations for LIURP Participants	27,000	54,000	54,000	54,000	189,000 lamps
Component 3 – Weatherization Programs Partnership	80,000	240,000	440,000	440,000	1,200,000 lamps

Notes:

- The estimated measure installations for Component 1 are the total number of projects for 20,000 additional LIURP-like participants over four years, including basic and major measure packages and CFLs to electric baseload, electric heat, and gas heat customers.
- The Component 2 estimates are the additional number of bulbs that will be installed for 31,500 LIURP customers over the four program years.
- The Component 3 estimates are the expected number of bulbs that will be installed for 150,000 weatherization program participants over four years. The ramp up in installations reflects the expectation that these new programs will take time to gain traction.

N. Estimated Program Budget

Low-Income Energy Efficiency Program—Proposed Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$112,500	$154,500	$159,135	$163,909	$590,044
Implementation Subcontractors	$304,797	$1,145,307	$2,624,612	$4,352,348	$8,427,063
Umbrella Costs	$172,120	$243,183	$250,478	$257,993	$923,774
Program-Specific Education	$75,000	$154,500	$159,135	$163,909	$552,544
Promotion	$100,000	$103,000	$106,090	$109,273	$418,363
M&V	$56,827	$140,981	$251,235	$354,227	$803,270
Incentives	$1,129,822	$2,898,882	$5,075,039	$6,760,129	$15,863,873
Total	**$1,951,066**	**$4,840,353**	**$8,625,724**	**$12,161,788**	**$27,578,931**

The program cost areas are the same as LIURP. The program will fund additional activities administered within the LIURP structure plus the cost of the bulbs to be installed by the weatherization program providers.

- The values in the budget table include an escalation rate of 3% per year after PY 2009. The escalation applies to PECO admin labor, implementation, umbrella, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above
- LIURP Subcontractors deliver education and installation services to participants in Components 1 and 2.
- Umbrella Costs—Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development, EE&C Plan development costs, and for residential on-line energy audit.
- Program-Specific Education—This provides funding for education similar to what LIURP provides.
- Promotion—This provides funding for promotion similar to what LIURP provides.
- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to equal 3% of total program budget (including incentives, excluding M&V costs).
- Incentives—This program provides direct installation of measures at no cost to participant. The "incentives" for this program are the PECO cost of measures (CFLs, appliances, replacement parts, and weatherization materials) installed under the direct install component. This excludes installation labor costs, already included in Subcontractor costs. Overall, incentives represent 58% of the total program budget over the four program years.

O. Projected Energy Savings and Demand Reduction

The savings are only those achieved from installations made for measures explicitly offered under the Low-Income Energy Efficiency program. Other measures recommended under the program but installed through participation in other PECO residential programs in this plan are included in those savings estimates and are not included here.

Low-Income Energy Efficiency Program—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
MWh Savings	6,096	22,239	49,479	79,660
Peak Demand Reduction (MW)	0.405	1.453	3.226	5.306

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2009-PY 2010 timeframe (through May 2011): $0.305/kWh
- Savings Cost over the PY 2009-PY 2012 timeframe (through May 2013): $0.346/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.055/kWh
- Levelized Cost of Reduced Peak Demand: $772/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Low-Income Energy Efficiency	$43	$25	$18	1.72

Q. Re-filing Plan Adjustment 09/15/10

PECO will provide a limited number of low-income customers with an energy-efficient refrigerator, thus replacing and removing the customer's existing inefficient unit. This measure is limited to customer locations that have not received Low-Income Usage Reduction Program ("LIURP") or LEEP weatherization. The old unit will then be recycled and disposed of in an environmentally friendly way. At the time of PECO's original EE&C filing kWh savings were not approved for this program. The kWh savings for the program have now been reviewed and approved by the SWE for future inclusion in the TRM and they are shown in the chart below:

Measure	Approved Plan kWh Savings	Approved Plan kW Savings	Revised Plan kWh Savings	Revised Plan kW Savings	Incentive
Refrigerator Replacement	N/A	N/A	1,102	0.137	100% of measure cost

3.2.3 EE Program 3—Whole Home Performance (WHP)

A. Program Title and Program Years

Program Name: Whole Home Performance

Program Years: Development: PY 2009; Operation: PY 2010 – PY 2012

B. Objectives

The purpose of the Whole Home Performance program is to help PECO's residential customers view the energy performance of their homes as more than the sum of independent decisions about individual components. It reflects the view that reducing residential energy use is more than a series of actions; it is an attitude and plan borne of knowledge. This is a "big picture" approach. The services are designed to bring customers to a more holistic view of home energy performance.

The program is part of a long-term strategy to raise awareness of home energy savings opportunities among residential customers and to help them take action using incentives offered by PECO and State programs. The Whole Home Performance (WHP) program will achieve several objectives:

- Improve customer understanding of how their homes use energy and how they can use it more effectively for less money
- Procure immediate energy savings through installation of low-cost energy-saving measures
- Encourage installation of additional energy-saving measures recommendations with additional incentives
- Develop a workforce trained in assessing and improving home energy efficiency that can, ultimately, transform the market
- Aid residential customers' perception of PECO as their partner in reducing home energy use

C. Target Market

The target market for the WHP program is residential customers served by PECO, approximately 1.4 million households. While the primary market is single-family homeowners, all residential customers are eligible to participate. Contractors who can provide quality audits and installation of recommended measures are also targeted for participation to deliver the program services.

D. Program Description

The WHP program is designed to go beyond providing financial incentives to residential customers and aims to make them well-educated energy consumers. The services the WHP will provide, including in-home audits and referrals to contractors and financial resources, aim to help them gain a better understanding of their home energy use and achieve savings while also improving the comfort of their homes.

ENERGY STAR has developed a robust approach and utility partnership mechanism that will help PECO promote the concept of focusing on the home as a system and helping customers think broadly about energy use and efficiency. The WHP follows this model.

As a program mainly designed to educate and empower residential customers to make energy-efficient home improvements, the WHP program contains a very limited set of measures: a package of low-cost measures and weatherization measures. And the WHP program claims little direct energy savings. Much of the potential energy savings will come from additional measures recommended by the home auditor and for which customers may obtain financial incentives from other PECO programs. These additional savings are included within the estimates for the programs that provide applicable incentives.

The WHP program has several components:

- Home Performance with ENERGY STAR (HPwES) Audits—These are comprehensive, on-site inspections and tests used to identify energy efficiency opportunities; audit reports contain specific recommendations, including expected costs, energy savings, and resource referrals.
- Direct Installation of Low-Cost Measures—During the HPwES audit visit, the auditor will install a package of low-cost energy-saving measures, at no additional charge to the customer, to immediately improve the energy performance of the house.
- Assistance with Additional Measure Installations—PECO will provide cash rebates to audit participants who install weatherization measures recommended from the audit, as well as assistance on how to access rebates offered under other PECO programs for additional recommended measures.
- Workforce Training and Participation—PECO will provide for the training and utilization of ENERGY STAR qualified auditors and contractors located within the community to provide WHP program services.

Home Performance with ENERGY STAR (HPwES) Audits

- Trained ES auditors perform on-site testing and inspection and, along with review of billing history, assess the energy performance of the house (where energy is used, where inefficiencies are); provide customers with itemized lists of energy efficiency improvements, their anticipated costs and savings, along with information on financial resources available to help defray first-costs.
- Audits will comply with the HPwES program. This means the assessments cover the entire home, including the air flow through the home, insulation, windows, heating and cooling systems, lighting and major appliances.

Direct Installation of Measures

- The auditor will install a package of low-cost measures, simple installations known to improve the energy efficiency of homes, during the HPwES audit.
- These measures will be installed at no additional charge to the audit participants.
- These installations will provide immediate benefit to participants and savings attributable to the program.

Assistance with Additional Measure Installations

Providing customers with help in implementing the audit recommendations is key to the success of the program. This includes offering resources that include both financial incentives and installation assistance.

- Cash-back incentives to install weatherization measures recommended during the audit, to improve home heating and cooling efficiency.
- Access to incentives available from other PECO programs to reduce the cost of installing remaining recommendations, from ENERGY STAR appliances and renewable systems.
- PECO will contract with a CSP who will manage and oversee that contractors are qualified/certified to install other measures recommended in the HPwES audit.

Workforce Training and Participation

PECO's participation as a HPwES sponsor requires PECO to make use of auditors qualified to perform the comprehensive, technical audits and contractors knowledgeable about ENERGY STAR products and other measures likely to be recommended in the audit report. This can be achieved through development of relationships with electrical and general contracting trade allies, and as well as community groups. Under the program, PECO will, through its CSP:

- Provide training to ensure the CSP's employees or contractors demonstrate an understanding of building science principles, which are the basis of the HPwES assessments, and understanding of the WHP programs.
- Ensure that the CSP's employees and/or contactors are be familiar with all the incentives programs available to customers as well as provide education to customers to enhance their understanding of the whole home approach.

E. Implementation Strategy

ENERGY STAR describes the HPwES program process as follows: It starts with a whole-house energy assessment and provides the infrastructure for homeowners to follow through and complete energy improvements and quality assurance. While the audit is a good first step, recommendations are unlikely to be implemented unless the homeowner knows whom to trust to complete the work or is unable to easily finance improvements. With this program, the contractor who performs the home assessment is also prepared to complete some or all of the recommended measures and/or work closely with participating contractors who can perform them. Contractors that are qualified to perform the assessments and make the improvements are key to making the program effective in spurring customers to make energy improvements.

Channels for Program Delivery

The WHP is designed to achieve increased awareness and adoption of energy efficiency opportunities by residential customers through partnerships with contractors.

- CSPs will implement the program on PECO's behalf. They will provide
    - Auditors to conduct the HPwES audits and install low-cost measures.

- HPwES audit services, including in-home inspection and testing (including equipment for blower door, duct leak, and customer-requested tests), billing data review and analysis, preparation and delivery of customer reports with specific energy-efficiency recommendations that include estimated cost, savings, and resources for obtaining loans/rebates; direct installation of low-cost measures; follow-up visits to verify savings.
- Home performance and software to analyze and record audit results, enable development of recommendations, and track customer actions.
- Trade allies will install additional measures recommended by the auditors but not installed during the audit (e.g., weatherization, appliances).

Overview of Roles and Activities

The implementation CSP will have full responsibility for delivery of all aspects of the program. Responsibilities fall into several activity areas:

- Audits and customer reports: ensuring that auditors prepare reports that are comprehensive and comply with HPwES guidelines.
- Recruitment and training of audit and installation contractors; verifying that all contractors on the qualified list have appropriate testing equipment and data analysis software.
- Monitoring of auditors who perform the HPwES audit and contractors who install recommended measures. This includes scheduling of home audit appointments and verification of inspections and measure installations.
- Program marketing: including development and distribution of program materials in collaboration with PECO and promotional campaigns in collaboration with upstream participants.
- Program education and outreach: including development of promotional campaigns and coordination with PECO to promote in coordination with on-line audits and incentive programs.
- Incentive processing: this includes payments to contractors for the installation of the low-cost measures during audits and to customers for installation of recommended weatherization measures.
- Program activity tracking: including tracking of audit requests, audit activities, customer actions, and incentive tracking.
- Reporting: development of documentation to meet reporting requirements for the Commission and for PECO to maintain its standing as a HPwES sponsor with ENERGY STAR.

Education Overview

Education is most of what the WHP program is about. Education will be both publicly distributed and customer-specific.

- The customer reports generated following the HPwES audits provide one-on-one educational opportunities. Using data from their own homes, residential customers will learn how they use energy and how they can use it more wisely.
- ENERGY STAR provides a website that educates customers and contractors about what the program does, and legitimizes the program to customers; and provides cases studies that present results from customers and contractors who have participated in the program.
- The workforce training provides an opportunity to educate equipment and construction contractors about the benefits of energy efficiency and about the program.

Applicable Collaborative Resources

There are already several programs in place at the State level that provide qualified residents with loans and/or rebates to enable action on many of the measures commonly recommended in the HPwES audit reports, as well as qualified contractor referral listings. These resources are available to PECO customers in addition to the benefits provided by this and other PECO programs. For example, Keystone HELP® offers both loans and rebates to Pennsylvania-resident homeowners. Financial incentives are available for installation of high efficiency heating, air conditioning, insulation, windows, doors, geothermal, and "whole house" improvements using Home Performance with ENERGY STAR. This program is mainly funded by the Department of Environmental Protection, Pennsylvania Treasury Department and the Pennsylvania Housing Finance Agency and is administered by AFC First Financial Corporation, a Pennsylvania energy efficiency lender.

Furthermore, the WHP program offers an opportunity to promote economic development through the creation of a trained workforce of ENERGY STAR qualified auditors and improvement contractors located within the community. The training costs associated with developing this workforce may be able to leverage American Recovery and Reinvestment Act of 2009 funds.

F. Program Issues, Risks, and Risk Management Strategies

ENERGY STAR and HPwES sponsors have been developing the whole home performance model for many years. They have identified barriers to success and strategies to surmount them. Ones reported by ENERGY STAR[8] include:

- Contractor Participation—A limited supply of qualified contractors with the skills to diagnose and market whole-house energy efficiency improvements can limit program potential. A solution is the development of a local network of qualified professionals to provide audit and installation services and to promote the program to residential energy customers. PECO, through it's CSP, will:
    - Offer technical training to participating home improvement trade contractors, including classroom and field sessions and cover building science principles, diagnostic testing and installation best practices. Consider including certification to ensure the training is effective and valuable as a selling point for the contractors. Organizations such as the Building Performance Institute (BPI) and RESNET® provide suitable training and certification.

[8] Adapted from www.energystar.gov/ia/home_improvement/HPwES_Utility_Intro_FactSheet.pdf.

- Offer sales and business process training to help contractors succeed in selling and delivering home performance services, including procedures for quality assurance, employee training, and understanding program incentives or financing.

- Consumer Financing and Incentives—The up-front costs of making the recommended improvements may limit customer participation in the program or delay projects unless customers have a way to get them done and to pay for them.
  - Some program sponsors partner with financial institutions to provide low-interest loans (e.g., Keystone HELP).
  - Some program sponsors offer cash rebates directly through the program or in collaboration with other program.
  - Additionally, having easy access to contractors who can complete the work provides incentive to act on the audit recommendations. Offering referrals or a list of qualified/participating contractors can be a help.
- Marketing and Consumer Education—Consumers may not be familiar with the whole-house approach and the benefits it can provide for improving comfort, as well as saving energy. Marketing activities can educate them about the benefits.
  - PECO will communicate known partner offers and make customers aware through bill inserts, web site or some targeted direct mail. These tactics can help educate homeowners about the benefits of the whole-house approach to energy improvements and how they can take advantage of the program.
  - More creative ideas could include sponsoring events, such as home improvement seminars or a home energy "makeover" contest. Launching the program with a contest where organizers award a whole-house energy efficiency retrofit to the winning contest participant provides a highly visible demonstration and attractive incentive.
  - The CSP will work to develop and enlist the help of participating contractors to promote and educate customers about the program.
- Quality Assurance—Consumers should be assured that the program offers reliable, high quality services. This is also a key requirement for maintaining PECO's sponsorship in the HPwES program.

  - The program should have a quality assurance plan to aid delivery of the program services, provide protocols for contractor reporting, and support program evaluation.
  - HPwES requires that participating contractors have sufficient training to perform program audits and installations and sets standards for the number of work inspections completed by participation contractors.

The proposed WHP program addresses these design and implementation issues, incorporating program components and activities that directly address the potential impediments to success, following the HPwES model.

G. Ramp Up Strategy

The WHP program will require considerable ramp up activity. That is, prior to launch of program services to residential customers, considerable preparations are required. Because of the structured nature of the program and requirements of PECO participation as a HPwES program sponsor, significant infrastructure needs to be built. Among the infrastructure components are:

- PECO sponsorship of HPwES program—Agreement with the ENERGY STAR program needs to be executed and requirements imposed by it must be met; PECO may want to participate in HPwES activities to make best use of the support the program provides to sponsors.
- Auditor/installation contractor training—Courses that provide the CSP's employees or contractors with skills qualifying them to perform the HPwES audits must be developed and scheduled; the existing commercial availability of training and even certification (e.g., by BPI and RESNET) provides the option of simply arranging for courses to be offered starting immediately upon approval of program and continuing through program operation.
- Qualified auditor/installation contractor referral mechanism—Implementation contractor must develop an adequate network of contractors to perform the WHP services and have a mechanism for ensuring that they are qualified to do the work.
- Audit scheduling and project tracking procedures—Procedures need to be developed regarding how and who a customer will contact to request an audit, how the scheduling of appointments will be handled, and how the information about the audit, the recommendations, and the installations will be tracked.
- Incentive processing procedures—Unlike many programs, this one will provide incentives of different types (direct installations and cash rebates) and to different parties (PECO customers and audit/installation contractors). Procedures that establish eligibility and documentation requirements and incentive levels/formulas need to be in place prior to program launch.

H. Marketing Strategy

ENERGY STAR provides various types of support to help HPwES sponsors develop and market the program successfully. These include:

- Assistance with market assessment and program design
- A marketing toolkit with customizable materials for advertising and language that best describes the program
- Guides for training contractors
- Case studies profiling the benefits

- National symposia for sponsors, to disseminate new information about the program and enable sponsors to share lessons learned

I. Eligible Measures and Incentives

Measures

While the WHP program will largely facilitate customer action on measures whose savings will be captured under other PECO programs, some measures will be directly installed for all program participants as part of the audit service. Additionally, the program will provide rebates for installation of recommended weatherization measures.

Whole Home Performance Measures—Per Unit Savings and Cost

Measure Packages	Annual kWh Savings[9]	kW Savings[9]	Useful Life of Measure (years)	Increm. Cost per Unit	Unit Definition
Low-Cost Measure Package:					
2 low-flow showerheads, 3 faucet aerators, 1 water heater blanket, hot water pipe insulation, 8 standard CFLs installed [9]	1,959	0.019	10	$286	per audit
Weatherization Measures:					
Sealing Air Leaks [9]	917	0.174	20	$415	per home
Duct Sealing & Insulation	446	0.348	14	$550	per home
Attic Insulation [9]	890	TBD	30	$2 per 1,000 sq. ft.	per home

The per-unit kWh, kW savings, and incremental costs are consistent with deemed savings provided in the TRM or other available and reliable sources, including the savings calculator in the ENERGY STAR website and Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region. These per-unit values are gross savings and do not include any free-rider or free-driver effects.

Incentives

Under this program, incentives are provided in several forms and to both PECO customers and contractors who provide the audit and direct installation services. Incentives go to customers in the form of direct installation of measures during the audit visit and in the form of rebates for installation of recommended weatherization measures.

Audit contractors are also eligible to receive incentives under this program. PECO will pay for the cost of materials for the measures that auditors install during the audits. This means that the auditor receives payment from the customer for the cost of the audit and from PECO for the cost of materials in the package of measures installed during the audit. Customers are also free to

[9] Protocols to be submitted to and approved by the SWE before moving forward.

contract with the same contractor to install additional measures, for additional cost, if the contractor offers this service.

Whole Home Performance Program—Allocation of Costs and Incentives

Measure	Costs	Incentives
HPwES Audit with package of measures installed during audit	Customer pays auditor for audit, estimate = $300	Customer receives installation of measures worth $286 Audit contractor receives measure cost reimbursement
Sealing Air Leaks	estimate = $415 per home	Rebate to customer = up to 25% of incremental cost
Duct Sealing & Insulation	estimate = $550 per home	Rebate to customer = up to 25% of incremental cost

J. Program Schedule

Proposed Whole Home Performance Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	January 2010
Start program design	January 2010
Select and contract with program implementation CSP	February 2010
Complete program design	May 2010
Pre-rollout program development: Sign program sponsor partnership agreement with Home Performance with ENERGY STAR CSP ramps up and conducts auditor/contractor training and recruitment	 September 2009 February 2010
Program rollout: Launch consumer marketing and outreach Perform audits and improvements	 June 2010 June 2010 – May 2013
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission Reports to comply with HPwES sponsorship requirements	 Monthly throughout program implementation period Quarterly, and annually each July 15th Annually, through December 2013 or longer
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The evaluation methodology and data collection proposed for the WHP program are guidelines that reflect current measurement and verification (M&V) practices. The ultimate M&V requirements for this program will conform with the State protocols, once they are published.

Metrics for Gauging Program Success

Primary:

- Improvement in customer understanding of the whole-house approach to improving energy efficiency
- Number of HPwES audits completed
- Number of audits that result in documented energy efficiency improvements in this and other PECO programs
- Number of participating audit and energy efficiency improvement contractors
- Customer satisfaction with the program and the products

Secondary:

- Energy usage reduction in homes that have had home performance audits
- Program implementation costs incurred

Data Collection Approaches

Under the HPwES program partnership, PECO will collect and submit data that meet the ENERGY STAR reporting requirements. The participating contractors who conduct the audits and/or perform the energy improvements will provide much of the data. Per ENERGY STAR, contractors should provide at least the following:

- Name and address of homeowner
- Home assessment summary report
- Results of assessment and diagnostic tests
- Recommended improvements
- Estimated cost of improvement
- Estimated energy savings
- Summary of completed improvements and test-out results

Data will also be collected through surveys of PECO residential customers and participating contractors to aid the process and impact evaluation, assess participant satisfaction, and identify opportunities for program improvement. The surveys may be conducted by the implementation and M&V contractors.

Customer billing data prior to and following program participation will be required to assess energy use and improvement opportunities, and assess and/or verify savings for the payment of customer incentives.

The program will have a tracking system to house the program activity information and enable regulatory and ENERGY STAR reporting.

Impact Evaluation Methodology

ENERGY STAR has developed a complete model for the design of the HPwES program and tracking of its results. It calls for establishment of a pre-participation energy use "baseline" based

on customer bills, followed by post-participation tracking of energy use through bills. This, together with information on exact measures installed during the audit and additional weatherization measures installed as provided by the installation contractors, would allow assessment of customer energy savings.

The M&V contractor will determine the appropriate means of estimating savings attributable to the program; that is, net savings, including both free-ridership and spillover. Spillover may be particularly relevant to this program. Because the major thrust of the program is to encourage customers to think about the home as an entire system and consider how the structure, from roof to basement and all their energy-using equipment, affects the energy performance of the home, it would not be surprising to find that customers continue to make additional energy-related improvements on their own (i.e., without PECO incentives) after participation in WHP.

Process Evaluation Methodology

The WHP is a relatively complex program, involving home visits, direct installation of measures, delivery of an audit report with additional recommendations, and even subsequent installations with either the CSP implementation contractor or other contractors. Process evaluations throughout the program will be critical to ensure that the program is operating as intended and to provide information that can enable improvements in both the program design and delivery of services.

Process evaluations will assess customer understanding, attitude about, and satisfaction with the program and with PECO's other educational activities and materials. They will obtain feedback from the contractors who perform installations and audits. The evaluations will make use of survey data collected by the implementation and M&V contractors. Process evaluation will be conducted throughout the program by the implementation and M&V contractors selected by PECO.

L. Administrative Requirements

PECO will administer the WHP program through a CSP implementation contractor. PECO's role will be to ensure that:

- the CSP performs all the activities and provides the monitoring and tracking required for PECO to satisfy all the conditions of its HPwES sponsorship with ENERGY STAR
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program

The program is expected to operate with the following PECO/Contract staffing mix:

Whole Home Performance Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsibilities include design and launch of program.	0.375 FTE in PY 2009 (0.75 yr @ 0.5 FTE), 0.5 FTE in PY 2010 through PY 2012
Analyst/contract administrator: Responsible for administering and overseeing CSP and providing other back-	0.25 FTE in PY 2009 (0.5 yr @ 0.5 FTE), 0.5 FTE in PY 2010 through PY 2012

office support to the program manager.	

M. Estimated Participation

Participation and measure adoption estimates were developed based on projected existing homes in PECO's service territory and an assessment of the attainable market potential in the area, as well as the experience of other organizations that have offered this type of program.

Whole Home Performance Program—Estimated Participation (number of households/year)

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Audits with low-cost measures installed	0	250	500	1,000	1,750
Audit participants who also install air leak sealing	0	25	50	100	175
Audit participants who also install duct insulation/sealing	0	25	50	100	175

Notes:

- All audit participants are assumed to have the full package of low-cost measures installed. That is, this participation estimate only includes homes likely to receive these measures. Audits that may be conducted without installation of low-cost measure package are not estimated or included in this count.
- The estimate of customers who will install recommended weatherization measures, in addition to the low-cost measures installed during the audit, is 10% of audit participants each year. The participants who install air leak sealing and who install duct insulation/sealing may be different customers.

N. Estimated Program Budget

Whole Home Performance Program—Proposed Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$86,250	$139,050	$143,222	$147,518	$516,040
Implementation Contractor (CSP)	$0	$66,526	$153,844	$351,525	$571,895
Umbrella Costs	$20,859	$29,046	$29,917	$30,815	$110,637
Program-Specific Education	$75,000	$154,500	$159,135	$163,909	$552,544
Promotion	$0	$206,000	$212,180	$218,545	$636,725
M&V	$18,211	$67,511	$86,308	$125,176	$297,205
Incentives	$0	$79,990	$164,779	$339,445	$584,214
Total	**$200,320**	**$742,623**	**$949,384**	**$1,376,933**	**$3,269,260**

The program costs were estimated using the following information and estimates:

- The figures in the table above include a cost escalation of 3% per year. The escalation applies to PECO admin labor, implementation, umbrella, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above

- CSP Implementation—Includes auditor/installer training, audit scheduling, program activity tracking and incentive fulfillment, education and outreach, event organization and management, installation inspection, program monitoring and improvement, tracking system entry, and reporting
- Umbrella Costs—Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development, EE&C Plan development costs, and for residential on-line energy audit.
- Program-Specific Education—Assumed education costs for this program are $150,000 per program year.
- Promotion—Estimated at $200,000 per year in PY 2010 through PY 2012.
- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to be relatively high due to complexity of program and ENERGY STAR verification requirements. Set to 10% of total program budget (including incentives, excluding M&V costs).
- Incentives—This includes incentives that will go to the CSP for direct installations during audits and to customers who install recommended weatherization measures. Overall, incentives represent 18% of the total program budget over the four program years.

O. Projected Energy Savings and Demand Reduction

The savings estimates were developed using information and the savings calculator in the ENERGY STAR website, other secondary data such as Commonwealth Edison Company's 2008-2010 Energy Efficiency and Demand Response Plan, and Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region. These values were applied to the estimated number of measures rebated under the program each year.

The savings targets for the WHP program are only those achieved from the low-cost measure installations made during the HPwES audits. Additional recommended measures installed through participation in other PECO residential programs in this plan, such as Home Energy Incentives, are accounted for within those program savings.

Whole Home Performance Program—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	0	792	2,375	5,542
Peak Demand Reduction (MW)	0.000	0.018	0.053	0.124

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2010 timeframe (through May 2011): $1.191/kWh
- Savings Cost over the PY 2010-PY 2012 timeframe (through May 2013): $0.590/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.057/kWh
- Levelized Cost of Reduced Peak Demand: $2,242/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Whole Home Performance	$5	$3	$1	1.42

Q. Re-filing Plan Adjustment 09/15/10

Pending the development of appropriate protocols, PECO is proposing to modify the WHP program to include an initial pilot of 50 electric-heated homes with a focus on PECO rate Residential Heat (RH) customers. The purpose of the pilot is to assess potential program savings and to ascertain the breadth and depth of actions customers are taking around energy efficiency. The pilot will include pre- and post-testing consistent with the ENERGY STAR program. The results of the pilot will be used to structure the future program.

Currently, it is anticipated that WHP program protocols will be approved by the SWE and a vendor selected in the second quarter of 2011. Consistent with this projection, PECO plans to launch the WHP program during the third quarter of 2011.

In view of the timing for implementation of the WHP program, there is an opportunity to achieve savings more immediately by shifting a portion of its funding to the CFL Program. Accordingly, PECO is proposing to transfer $1.8 million of the program's $3.3 million budget to the CFL Program.

Proposed Funding Modification to Residential Programs

Residential Energy Efficiency Program	Budget ($ Millions)		
	Total	Proposed Budget	Variance
CFL Initiative	$19.7	$23.2	$3.5
Residential Whole Home Performance	$3.3	$1.5	-$1.8
Residential New Construction	$2.4	$0.7	-$1.7
Total -- Residential EE Program Proposed Revisions	***$25.4***	***$25.4***	***$0.0***

R. Other Utilities' Experience with This Program

While the market for this comprehensive assessment and referral service is not yet well developed, ENERGY STAR has developed a robust approach and utility partnership mechanism, HPwES, that will help PECO promote the concept of focusing on the home as a system and helping customers think broadly about energy use and efficiency.

Similar successful programs include:

- PA Home Energy Program—operates in partnership with the West Penn Power Sustainable Energy Fund; provides HPwES audits and customer incentives linked to percent reduction in energy usage. PA Home Energy aims to expand the program if funding permits.
- Georgia Interfaith Power & Light—offers HPwES audits for a fee through a network of trained contractors; recommendations include ones homeowners can do themselves; some contractors deduct the audit price from the cost of improvements they implement for the customers.

Austin Energy—in 2005 had more than 70 participating contractors who provided Home Performance with ENERGY STAR services for customers who completed 1400 projects.While fewer than 30 utilities across the country currently operate a HPwES program, the utility sponsors have grown steadily since its inception in 2005, as have the number of customer participants. HPwES does not track all the audits performed, only those that result in projects (installations of recommended measures). The average number of participants who installed recommended measures, not just audits per sponsor is about 500 per year. About half of the sponsors report fewer than 50 projects per year. And most completed almost no projects their first year. PA Homes, sponsored by West Penn Power/Allegheny, reported 10 projects in 2008; and the Energy Coordinating Agency completed 3 projects in 2008 (2008 was their first year in operation). But, again, this only counts audits that resulted in installation of the recommended measures, and it is unknown if these programs install any measures as part of the audit.

3.2.4 EE Program 4—Home Energy Incentives (HEI)

A. Program Title and Program Years

Program Name: Home Energy Incentives

Program Years: PY 2009 – PY 2012

B. Objectives

The purpose of the HEI program is to increase the penetration of ENERGY STAR appliances and other high-efficiency measures in the homes of PECO's residential customers. The program enables the adoption of these energy efficiency measures by offering cash rebates for the purchase and installation of qualifying home equipment for lighting fixtures, heating, cooling, appliances, and shell improvements.

The program has several objectives:

- Increase consumers' awareness of the breadth of energy efficiency opportunities in their homes.
- Make significant contribution to PECO's energy savings goals.
- Demonstrate PECO's commitment to and confidence in the measures' performance and their ability to reduce home energy use.
- Strengthen customer trust in PECO as their partner in saving energy.
- Align incentives with other EDCs, where possible.

The HEI program is well-suited for accomplishing these objectives because the rebate-eligible measures are proven technologies about which customers can readily find supporting information; customers are familiar with cash-back rebates from other types of purchases they make, and the itemized list of included measures affords PECO the opportunity to strengthen relationships with upstream suppliers and influence stocking decisions. Furthermore, focus groups conducted in preparation of the program plan indicate that both general residential and low-income customers will be receptive to a prescriptive program such as this.

C. Target Market

The target market for the HEI program is all residential customers in PECO's service territory and, in particular, those customers with existing equipment that needs replacing or who can be persuaded to replace early. The target market includes customers in existing single-family homes or multifamily dwellings who are either replacing existing equipment or are purchasing equipment for the first time. Both owners and renters are eligible to participate in the program.

D. Program Description

This is a retrofit and renovation program, designed to upgrade existing equipment to higher levels of efficiency.

The HEI program is designed to encourage and assist residential customers in improving the energy efficiency of their homes through a broad range of energy efficiency options that address all major end uses. This program offers cash rebates to residential customers who install high-

efficiency electric equipment and engages equipment suppliers and contractors to promote the rebate-eligible equipment.

The program will promote and provide rebates to help defray the cost of high-efficiency models of common home equipment, with a focus on ENERGY STAR qualified appliances. Featuring ENERGY STAR equipment helps ensure that high-quality measures will be installed, which adds savings reliability and reduces the likelihood of customer dissatisfaction.

Rebates

- Customers purchase and install qualified products from retailers and/or contractors.
- Customers or their contractors submit rebate form to PECO (or the implementation CSP) with information that documents the qualifying sale/installation. The forms allow customers to see the exact rebate they can receive.
- PECO/CSP mails rebate checks to customers.

E. Implementation Strategy

PECO will administer the HEI program through a CSP implementation contractor.

Channels for Program Delivery

This program will be delivered mainly through direct contact between PECO and its customers but offers opportunities for working with trade allies and other upstream suppliers.

- PECO develops awareness through direct marketing—e.g., bill inserts, newsletters, website, broadcast and print media, direct mail; and pays the participant rebates.
- The Residential Whole Home Performance program is a natural channel for this program. The audit recommendations will include resource information for the recommended measures, including rebates available under this HEI program.
- The Residential New Construction program is also a natural channel for this program. That program will offer rebates for the installation of packages of measures, rather than individual measures. Owners or builders who participate in the new construction program will be made aware of additional measures that can be installed after construction to further improve the home performance, including installation of ENERGY STAR appliances such as clothes washers or additional lighting fixtures.
- Retailers and equipment contractors/installers may be engaged to promote awareness of and use rebate offers to help sell qualifying equipment; they may also provide or pre-fill rebate forms to help customers obtain rebates. These allies are most likely to include:
    - Residential air conditioning and heating equipment dealers and installers
    - High-efficiency clothes washer and dishwasher dealers
    - Small electrical equipment dealers
- CSPs will implement the program on PECO's behalf, providing assistance with PECO's direct marketing; working with upstream suppliers to stock qualifying measures, promote the program, and assist with rebate applications; providing rebate fulfillment services; and tracking and reporting program activities and achievements toward goals.

Overview of Roles and Activities

The implementation CSP(s) will have full responsibility for delivery of all aspects of the program. Responsibilities fall into several activity areas:

- Development of upstream supplier network to stock and promote program
- Program marketing and education: including development and distribution of program materials in collaboration with PECO and upstream allies; and promotional campaigns in coordination with on-line audits, and the Whole Home Performance program
- Rebate processing: fulfillment house to receive, review and verify applications; and pay or submit to PECO to pay rebates
- Program performance tracking and improvement: including tracking availability of qualifying products, rebate submittals and payments, opportunities to improve the program
- Reporting: including reporting of program activities to meet regulatory and internal requirements, in particular progress toward program goals.

The program is designed so that customers can easily submit rebate applications on their own. However, equipment suppliers and contractors can be very instrumental in achieving program success. Using the rebates and ENERGY STAR quality assurance as selling points, these allies can increase sales of qualifying equipment. They can further assist by aiding in the submittal of the rebate application. Across the country, many retailers will print out an extra receipt, suitable for submittal with the application; provide the customer with the appropriate rebate application; some may even help fill out and submit it.

Education Overview

Under the program, PECO will educate local dealers and contractors about program procedures and benefits. To further promote good communication, PECO may conduct seminars to familiarize participating dealers and contractors with the structure and procedures of the program. Handouts will likely include specific information about rebate schedules and lists of qualifying high-efficiency models.

Consumer education will be combined with program awareness activities. Through the use of bill inserts, newsletters, on-line information, and direct mail, customers will receive educational information regarding the benefits of and opportunities to save money on energy efficiency upgrades.

Applicable Collaborative Resources

Several other sources of financial assistance are available to consumers to enable home energy efficiency improvements.

- Keystone HELP® Energy Efficiency Loan and Rebate program and Renovate and Repair Loan program offer loans and rebates to Pennsylvania-resident homeowners. Financial incentives are available for installation of high efficiency heating, air conditioning, insulation, and windows. This program is mainly funded by the Department of Environmental Protection, Pennsylvania Treasury Department, and the Pennsylvania Housing Finance Agency; and is administered by AFC First Financial Corporation, a

Pennsylvania energy efficiency lender. Keystone HELP also provides qualified contractor referral listings.

- Nonprofit organizations and state and local governmental agencies have access to grants under the American Recovery and Reinvestment Act of 2009 (ARRA) for the purpose of performing energy efficiency retrofits.

F. Program Issues, Risks, and Risk Management Strategies

The use of prescriptive rebates, that is, fixed per-unit incentives for a specific list of measures, is perhaps the approach with the most history among utility-sponsored energy efficiency programs. Because the measures on the list are well defined and the per-unit rebates are fixed, it is easily understood by customers and easy to administer.

G. Ramp Up Strategy

PECO will contract with an implementation CSP immediately upon approval of the program by the Commission. The PECO/CSP team will lay the groundwork for successful launch of the program by preparing the upstream market for the program with information and in-store displays or labels for qualifying appliance models, and developing marketing and education materials, rebate forms, and protocols for program activity and rebate processing.

H. Marketing Strategy

PECO will select a CSP with experience in promoting residential retrofit incentive programs. In particular, the CSP will have experience working with upstream suppliers; ensuring that in-store information is displayed; processing rebate applications; and ensuring that payment is made for measures that meet the purchase, installation, and documentation requirements.

I. Eligible Measures and Incentives

Home Energy Incentives Proposed Measures—Per-Unit Deemed Savings, Costs, and Incentives

Measure	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
ENERGY STAR room AC	98	0.059	10	$50	$25	per room AC
ENERGY STAR central AC – 16 SEER - 3 tons	536	0.418	14	$533	$300	per CAC
ENERGY STAR air-source heat pump - 15 SEER - 3 tons	1,045	0.298	12	$850	$325	per heat pump
ENERGY STAR air-source heat pump - 16 SEER - 3 tons	1,502	0.418	12	$1,275	$400	per heat pump
ENERGY STAR Most Efficient refrigerator	72-100[10]	0.013	13	$65	$50	per appliance
ENERGY STAR Most Efficient freezer	52-83[10]	0.011	13	$65	$50	per appliance
ENERGY STAR Most Efficient clothes washer	93.7 [11]	0.015	11	$350	$50	per appliance
ENERGY STAR heat pump water heater	1,914-2,202 [12]	0.175-0.202 [12]	10	$850	$300	per water heater
High-efficiency electric water heater .95 Energy Factor (EF)	217 [12]	0.0199 [12]	14	$50	$25	per water heater
ENERGY STAR LED lamps	31-61 [13]	0.00266--.0036 [13]	20	$35	up to 50% of incremental cost	per lamp
ENERGY STAR High-efficiency gas furnace (fuel switching from BB)	12,000	0.000	18	$3,338	$1,000	per furnace
Measure	**Annual kWh Savings per Unit**	**kW Savings per Unit**	**Useful Life of Measure (years)**	**Increm. Cost per Unit**	**Incentive per Unit**	**Unit Definition**
ENERGY STAR High-efficiency gas furnace (fuel switching from HP)	10,000	0.000	18	$2,138	$550	per furnace
ENERGY STAR High-efficiency gas water heater (fuel switching)	4,100	0.100	13	$744	$250	per water heater
Ground-source heat pump	1,531	0.055	30	$2,163	$217	per ton

10 Per Pennsylvania Technical Reference Manual (TRM) – kWh is dependent on appliance model number.

11 Weighted average of deemed values in the TRM using the results from the PECO territory Residential Saturation Survey PECO EE&C filing dated July 1, 2009 Volume IV of V Appendix F-2.12 Per Interim TRM Measure Protocol

13 Represents a range of kWh and kW based on Custom Measure Protocol approved by the SWE.

Measures

The measures eligible for incentives under this program are prescriptive. That is, all eligible measures will be defined and listed for customers. Custom measures are not part of this program.

Incentives

Incentives will be paid in the form of cash-back rebates. Incentives for the individual measures range from 10% to 100% of the incremental measure cost, with the majority covering less than 40%. Incremental cost is the additional cost of a high-efficiency measure beyond a standard-efficiency alternative. Varied incentive rates are consistent with other program practices. This generally reflects the variation in the maturity of measure adoption by consumers. Furthermore, when the program design is finalized, the rebate application form can allow for incentives that vary even within a measure. For example, for central air conditioning, higher incentives will be offered for higher SEER levels.

J. Program Schedule

The HEI program will operate during PY 2009 through PY 2012. This program will be submitted for approval by the Commission in PY 2009 Q1, prepared for operation during PY 2009 Q2, and rolled out to the public during PY 2009 Q3. The following table provides a schedule of key milestones:

Proposed Residential Home Incentives Implementation Schedule

Key Milestone	Timing
Assign PECO program manager and staff	July 2009
Start program design	September 2009
Select and contract with program implementation CSP(s)	November 2009
Complete program design	December 2009
Pre-rollout program development: Develop upstream network Develop in-store, on-line information Prepare marketing materials and rebate forms Develop activity and rebate processing protocols	September – December 2009
Program rollout: Launch consumer education, marketing, and outreach All program services	 January 2010 January 2010 – May 2013
Prepare reports:	

Documentation of program activities and progress toward goals by CSP Reports to Commission	Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The evaluation methodology and data collection proposed for the HEI program are guidelines that reflect current measurement and verification (M&V) practices. The ultimate M&V requirements for this program will conform with the state protocols, once they are published.

Metrics for Gauging Program Success

Primary:

- Number of measures purchased/installed
- Energy savings associated with purchased/installed measures
- Customer satisfaction with the program and the products
- Program implementation costs incurred

Secondary:

- Distribution of measure popularity and cost-effectiveness of the program
- Increase in number and variety of suppliers who stock qualified products

Data Collection Approaches

- Impact Evaluation
    - Tracking system data for all projects
    - On-site inspection of a sample of projects to verify operation as reported
    - Customer surveys to assess likelihood of purchase without availability of program services and incentives and identify post-participation purchases outside the program (free-rider and free-driver impacts)
- Process Evaluation—Evaluation of program design and implementation will be conducted by gathering and analyzing data through a variety of surveys and interviews, including:
    - Surveys of target market customers (participants and nonparticipants)
    - Surveys of appliance suppliers and service providers who participate and/or promote the program
    - Interviews with the implementation CSP and PECO program staff
    - Review of program documents and tracking system data

Impact Evaluation Methodology

The program will record energy savings and peak load reductions from the rebate applications processed, using the per-unit deemed savings values. Because measures are established technologies and data are available demonstrating the reliability of savings, it will not be necessary to conduct customer-level billing analyses or metering studies. However, some projects will be inspected for independent verification of installation and operation as reported. This is assumed based on PECO's understanding of using deemed savings as outlined in the TRM.

PECO will credit toward the program only savings from rebated measures. This means that any additional purchases that may be induced by the program but not rebated—that is, spillover or free-driver effects, are not claimed by PECO under the program. Post-surveys with participating customers will be used to estimate the net-to-gross ratio accounting for free-riders and free-drivers. Customers will be asked to provide information regarding whether they would have purchased the rebated items without the PECO promotion, whether they installed the items, and whether they subsequently purchased additional rebate-eligible items at full cost. This outline of the self-report methodology for the assessment of net impacts describes only the basic approach. The selected M&V contractor will develop the complete plan that ensures the appropriate measurement of savings in compliance with industry and State protocols.

Process Evaluation Methodology

Program process evaluation is important to ensure that the program is operating as intended and to provide information that can enable improvements in both the program design and implementation. Process evaluation will be undertaken and conducted throughout the program by the implementation and M&V contractors selected by PECO.

Process evaluation will assess customer understanding, attitudes about, and satisfaction with the program and with PECO's other educational activities and materials associated with the launch of PECO's EE&C Plan. The evaluations will make use of survey data collected by the implementation and M&V contractors. These surveys will include both customers known to have participated in the program and eligible nonparticipants.

Interviews with program service providers will be conducted to assess satisfaction with the program and to identify problems and possible program services/implementation improvements.

The M&V contractor will also help PECO assess the performance of the program design and delivery of the products and services featured in the program, including effectiveness of the marketing and educational materials, effectiveness of advertising and promotional campaigns and messages, effectiveness of the trade ally involvement, and whether implementation milestones are met adequately and on schedule. These evaluations will use sales and promotion data maintained by the implementation CSP, information provided by PECO, and customer survey data.

L. Administrative Requirements

PECO will administer the HEI program through a CSP implementation contractor. PECO's role will be to ensure that:

- the CSP performs all the activities associated with delivery of all components of the program

- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program.

The program is expected to operate with the following PECO staffing mix:

Home Energy Incentives Program—Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsible for final design and launch of program.	1.125 FTE in PY 2009 (0.75 yr. @ 1.5 FTE), 1.5 FTE in PY 2010 through PY 2012
Analyst/contract administrator: Responsible for administering and overseeing CSP and providing other back-office support to the program manager.	0.5 FTE in PY 2009, 1.0 FTE in PY 2010 through PY 2012

M. Estimated Participation

Participation and measure adoption estimates were developed based on existing homes in PECO's service territory and an assessment of the attainable market potential in the area, as well as the experience of other organizations that have offered this type of program.

Home Energy Incentives Program—Estimated Participation (number of installations/year)

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Attic / roof insulation	1,165	4,095	4,700	4,720	14,680
ENERGY STAR windows	1,165	4,095	4,700	4,720	14,680
ENERGY STAR room AC	641	2,253	2,585	2,596	8,075
ENERGY STAR dehumidifier	117	410	470	472	1,469
ENERGY STAR central AC	685	2,406	2,762	2,773	8,626
ENERGY STAR air-source heat pump	59	205	235	236	735
ENERGY STAR refrigerator	1,457	5,119	5,875	5,900	18,351
ENERGY STAR freezer	379	1,331	1,528	1,534	4,772
ENERGY STAR clothes washer	1,311	4,607	5,288	5,310	16,516
ENERGY STAR dishwasher	1,064	3,737	4,289	4,307	13,397
ENERGY STAR lighting fixtures	2,330	8,190	9,400	9,440	29,360
ENERGY STAR heat pump water heater	362	1,270	1,457	1,464	4,553
High-efficiency electric water heater	362	1,270	1,457	1,464	4,553
LED lamps	3,495	12,285	14,100	14,160	44,040
ENERGY STAR Programmable thermostat	548	1,925	2,209	2,219	6,901
ENERGY STAR High-efficiency gas furnace (fuel	105	369	423	425	1,322

switching from BB)					
ENERGY STAR High-efficiency gas furnace (fuel switching from HP)	47	164	188	189	588
ENERGY STAR High-efficiency gas water heater (fuel switching)	804	2,826	3,243	3,257	10,130
Whole-house fan	1,165	4,095	4,700	4,720	14,680
White roof	1,165	4,095	4,700	4,720	14,680
Ground-source heat pump	268	942	1,081	1,086	3,377

N. Estimated Program Budget

Approval of the plan is anticipated in PY 2009 Q2, resulting in less than a full year of program operation during the first program year. The cost estimates reflect this timing.

Home Energy Incentives Program—Proposed Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$228,750	$355,350	$366,011	$376,991	$1,327,101
Implementation Contractor	$500,356	$1,860,445	$3,627,636	$3,441,939	$9,430,377
Umbrella Costs	$255,555	$359,367	$370,148	$381,252	$1,366,323
Program-Specific Education	$150,000	$309,000	$318,270	$327,818	$1,105,088
IT Enablement Costs	$20,872	$21,498	$22,143	$22,808	$87,322
Promotion	$479,128	$1,008,502	$508,307	$523,556	$2,519,492
M&V	$98,273	$297,193	$368,955	$372,144	$1,136,565
Incentives	$1,661,970	$6,013,758	$7,108,136	$7,353,255	$22,137,119
Total	**$3,394,904**	**$10,225,113**	**$12,689,606**	**$12,799,763**	**$39,109,387**

The program costs were estimated using the following information and estimates:

- The figures in the table above include a cost escalation of 3% per year. The escalation applies to PECO admin labor, implementation, umbrella, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above
- CSP Implementation—Includes upstream network development; rebate application tracking and incentive fulfillment; contractor and retailer education and outreach; program monitoring and improvement, tracking system entry, and reporting.
- Umbrella Costs—Each program in the plan will pay a proportional share of the costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development, EE&C Plan development costs, and for residential on-line energy audit.
- Program-Specific Education—Assumed education costs for this program are $300,000 per full program year, with bill inserts plus on-line and print materials in PY 2009 and some combination of bill inserts and materials in each year thereafter.

- Promotion—For media ads to promote the program. This is a large program within the residential sector and will be heavily advertised. Cost is estimated at nearly $500,000 in PY 2009 (not a full operating year), $1 million in PY 2010, and $500,000 annually in PY 2011 and PY 2012.
- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to equal 3% of total program budget (including incentives, excluding M&V costs), which is at the low end of the industry average because no metering or bill analysis will likely be required.
- Incentives—The total incentives are based on the estimated savings in each program year. Overall, incentives represent 57% of the total program budget over the four program years.

O. Projected Energy Savings and Demand Reduction

The estimated energy savings and demand reduction are based on annual per-unit kWh and kW values and effective useful life values indicated in the TRM, where available. For the remainder, savings estimates were developed using information and the savings calculator in the ENERGY STAR website, other secondary data such as Commonwealth Edison Company's 2008-2010 Energy Efficiency and Demand Response Plan, and Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region.

These values were applied to the estimated number of measures rebated under the program each year. The savings noted in each year reflect the savings from measures installed by customers through the program in that year plus the impact of measures still in operation from previous years.

Home Energy Incentives—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
MWh Savings	10,007	45,156	85,485	125,994
Peak MW Reduction	0.451	2.035	3.853	5.679

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2009-PY 2010 timeframe (through May 2011): $0.302/kWh
- Savings Cost over the PY 2009-PY 2012 timeframe (through May 2013): $0.310/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.049/kWh
- Levelized Cost of Reduced Peak Demand: $1,095/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Home Energy Incentives	$136	$85	$51	1.60

Q. Re-filing Plan Adjustment 09/15/10

Based on PECO experience with Smart Home Rebates measures in the first program year, the overwhelming popularity of certain rebates, and the SWE's recommendation of recognizable kWh savings, PECO has requested changes and additional measures as specified in Section 3.2.4.I and the table below. The following measures were not included in PECO's Plan, but are approved in the TRM, have Interim TRM Protocols, or are under final review with SWE.

Eligible Measures and Incentives

Measure	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
High-efficiency electric water heater .93 EF	133	0.0122	14	$50	$25	per water heater
High-efficiency electric water heater .94 EF	175	0.0161	14	$50	$25	per water heater

3.2.5EE Program 5—Residential New Construction

A. Program Title and Program Years

Program Name: Residential New Construction

Program Years: PY 2010 – PY 2012

B. Objectives

The purpose of the Residential New Construction program is to greatly improve the energy efficiency of all newly constructed and reconstructed facilities in the PECO service territory.

The program has the following objectives:

- Make valuable contributions toward achievement of PECO's energy savings and demand reduction goals.
- Produce a permanent improvement in "standard" design practices among building designers and owners that will continue without the need for short-term incentives.

C. Target Market

The eligible market for this program is all new single-family homes constructed in PECO's service territory along with buildings that are completely renovated or reconstructed. The target market for participation in the program is residential designers, builders, developers, and owner-builders.

While the energy and peak load savings resulting from this program will be accrued by the homeowners of units that include measures installed under the program, and all residential customers who are building new homes are eligible to participate, the key target market of the program are the trades people most responsible for the design and equipment decisions—builders, developers, and contractors.

D. Program Description

The Residential New Construction program is designed to accelerate the incorporation of energy efficiency in the design, construction, and operation of single-family homes and renovated or reconstructed homes. Upstream designers/builders and owner-builders will be offered education on and rebates for the installation of high efficiency end-use equipment and building envelope measures in new residential dwellings.

Consistent with the ENERGY STAR model for home construction, this program takes a "whole home" approach, encouraging designers, builders, and home buyers to think of home performance in total, rather than in terms of the efficiency of individual components. It focuses on raising the standards of all components, from building shell through appliances and fixtures.

The program has the following components:

- Education—teach the new home market stakeholders, and renovation contractors/developers about the benefits of energy-efficient home design and inform them of PECO incentives available for the installation of an energy-efficiency shell and equipment.
- Rebates—offer rebates to builders or homeowners for the incorporation of high efficiency end-use equipment and building envelope measures in new residential dwellings; higher rebates are offered to homes that meet higher efficiency standards.

Education

- Develop seminars and materials to address the factors that generally prevent homebuilders' from incorporating energy efficiency into homes; e.g., reliability, cost-effectiveness.
- Offer this training to builders, developers, contractors and others, including builders of tract homes, renovation contractors and developers, real estate agents, and lenders.
- Set up demonstration homes to familiarize the community, from builders to homeowners, with the high-efficiency measures.

Rebates

The program will offer rebates that encourage the installation of measures that improve home energy performance as a whole, using ENERGY STAR recommended design practices, materials, and appliances. The packages include progressively more and higher efficiency measures, providing opportunities for builders of homes in many price categories to participate. The packages combine a number of measures offered for retrofits under other residential programs into new housing design; many are more cost-effective to install as part of new construction.

The rebate-eligible measure packages are:

- Bronze Package—(4 measures) ENERGY STAR central AC, ENERGY STAR lighting fixtures, high-efficiency electric water heater, programmable thermostat
- Silver Package—(8 measures) Bronze Package measures plus: Attic / roof insulation, wall insulation, floor/foundation insulation, ENERGY STAR refrigerator
- Gold Package—(11 measures) Silver Package measures plus: ENERGY STAR windows, ENERGY STAR clothes washer, ENERGY STAR dishwasher
- Platinum Package—(12 measures) Gold Package measures with ENERGY STAR heat pump water heater instead of high-efficiency water heater, plus: LED lamps

The program will be most effective if the rebates are directed to new home builders rather than to the eventual new homeowners, though owner-builders are eligible to receive them.

E. Implementation Strategy

PECO will administer the Residential New Construction program through a CSP implementation contractor.

Channels for Program Delivery

Because they are the key decision makers in new home design, it will be advantageous for PECO to work "upstream"— mainly with designers, builders and developers, but also with real estate agents and mortgage lenders. By doing so, PECO can teach these trade allies about the benefits of energy-efficient home design and inform them of the financial incentives PECO will offer for the installation of energy-efficiency equipment.

- PECO develops awareness through direct marketing—e.g., newsletters, website, direct mail; and pays the participant rebates.
- Designers, Builders, and Developers—Trades people are key decision makers for building shell and systems, and determining the appliances installed in new homes. In order for the program to be effective, PECO must educate them on how and why to upgrade their building practices. Once convinced, these construction influencers can promote the program and the efficiency benefits to new homebuyers as well as to their suppliers and subcontractors. Some utility programs are designed to encourage builders to pass the incentives they receive for installing high-efficiency measures on to homebuyers. These trades people are both participants and delivery channels for the program.
- Mortgage Lenders—In addition to the participation of local builders, it will be important for PECO to enlist the help of mortgage lenders in promoting the sale of energy-efficient homes. Other utilities with similar new construction programs have obtained the cooperation of lenders who have agreed to offer favorable financing terms for energy-efficient homes. Real Estate Agents—To encourage Realtors to promote energy-efficient homes, it would be extremely beneficial if PECO were to clearly identify qualifying homes, and perhaps offer cooperative advertising dollars to realtors selling such homes.
- CSPs will implement the program on PECO's behalf, including providing assistance with PECO's direct marketing; recruiting and providing education to upstream channels; providing rebate fulfillment services; and tracking and reporting program activities and achievements toward goals.

Overview of Roles and Activities

The implementation CSP will have full responsibility for delivery of all aspects of the program. Responsibilities fall into several activity areas:

- Identification and recruitment of upstream market stakeholders for program participation and delivery channel activities
- Education: including development and operation of training seminars for designers, builders, and developers; development and operation of demonstration homes; and development and distribution of educational publications
- Marketing: including development and distribution of program materials in collaboration with PECO and upstream trades people who will be both program participants and promoters
- Rebate Processing: fulfillment house to receive, review and verify applications; and either pay or submit rebates to PECO for payment
- Program Performance Tracking and Improvement: including rebate submittals and payments, opportunities to improve the program

- Reporting: including reporting of program activities to meet regulatory and internal requirements, in particular progress toward program goals

The upstream market stakeholders, including the designers, builders, developers, real estate agents, and mortgage lenders will receive education about energy-efficient home construction and benefits. They will also have the following roles as delivery channels:

- Designers, builders, and developers who participate in training seminars can distinguish themselves to prospective homebuyers as qualified or certified energy-efficient providers. Ones who also receive rebates for installing rebate-eligible measures can pass some or all of these incentives along to buyers.
- Builders and real estate agents educated about the features and advantages of energy-efficient homes will, in-turn, serve as ambassadors for the program and can use the advantages as a selling point.
- Lenders can offer homebuyers larger loan amounts and/or lower interest rates than they would have otherwise qualified for, towards the purchase of certified energy-efficient homes. These are referred to as "energy efficient mortgages."

Education Overview

Education is a key component of the Residential New Construction program. The market will change through training, education and demonstration. The program will increase confidence in the performance and benefits of increased energy efficiency (better performance, lower fuel bills, reduced maintenance, etc.). Designers and builders will be encouraged to implement more energy-efficient strategies to increase energy efficiency through the program. Emphasis on the additional benefits of comprehensive energy efficiency improvements and continual maintenance to retain savings will demonstrate an overall cost-effectiveness that can be achieved without the need for financial incentives over the longer term. Ongoing deployment of these strategies will become "standard" practice by these same designers and builders in additional projects, affecting long-term market transformation.

To accomplish this, the program will offer several forms of education:

- Training seminars will be taught by experts in specific aspects of high-efficiency home design and construction. Many utilities offer these no-fee sessions on an ongoing basis. In addition to teaching key principles and an understanding of the program, they provide PECO with an excellent opportunity to develop strong relationships and build trust with this influential group.

  PECO might consider linking the training activities with national certification efforts, such as the ENERGY STAR rating system, to provide visibility and continuity. The ENERGY STAR performance levels should be targeted as the minimum technical standards. Additional linkages with nationwide certification programs for residential builders, inspectors, lighting designers, continuing education for architects and engineers, and programs recognizing other energy experts should be explored.

- Publications with technical information, practical advice, and persuasive messages will be developed. These can be included in newsletters directed to the design/build/sales community, published in trade journals, sent in direct mail, distributed at seminars, and made available on a PECO website page designed for this audience.

- Demonstration homes are effective in encouraging the community's involvement. PECO will work with communities to set total savings goals. This demonstration program will work to incorporate the use of the existing Home Energy Rating System (HERS). Demonstration homes will also promote and educate home builders, sellers, and buyers in regards to energy efficiency measures that can be incorporated into their homes, allowing them to see different types of upgrades such as lighting, window and water heaters in operation. One of the goals will be to increase the education of builders of tract homes, real estate agents and lenders about the value of a home rating system. The program will also promote energy efficiency mortgages through the local lending community.

Applicable Collaborative Resources

- Keystone HELP Energy Efficiency Loan & Rebate Program—financial incentives are available to Pennsylvania-resident homeowners for installations of high efficiency heating, air conditioning, insulation, and windows that are made by qualifying contractors. This program is mainly funded by the Department of Environmental Protection, Pennsylvania Treasury Department and the Pennsylvania Housing Finance Agency and is administered by AFC First Financial Corporation, a Pennsylvania energy efficiency lender. Keystone HELP also provides qualified contractor referral listings.

F. Program Issues, Risks, and Risk Management Strategies

Currently, several market barriers inhibit the participation in new construction programs. All of the implementation activities—the educational component, together with outreach and marketing of the program, will address the following barriers to achieve the educational and energy savings goals of the program:

- Perception of Increased Cost: Many designers and builders feel that increased building performance costs more, and that it is not cost-effective.
- Risk Aversion: The building industry is particularly slow to adopt new technologies or solutions. Designers prefer to install systems and build buildings using familiar technologies. Liability issues are also a concern.
- First Cost vs. Lifecycle Cost Considerations: Building developers are only concerned with first cost considerations as they must build the house within a pre-determined budget. As such, they are reluctant to consider the higher cost high-efficiency equipment that would have to be passed onto the homeowner through a higher cost of the home.
- Limited Technical Information: Designers and owners have limited familiarity with new products, technologies and their applications, and their associated benefits that extend beyond energy savings (comfort, durability, health, productivity and maintenance).
- Inadequate Operational Procedures: Building systems are usually not tested to ensure that they perform as designed and owners fail to implement an ongoing maintenance and quality assurance procedure to properly operate the equipment.

PECO may take additional steps to encourage participation and satisfaction with the program. Some of these might include:

- Recognition of builders who meet or exceed the program requirements through press releases and other advertisements

- Offering an annual award for the most energy-efficient residential design
- Providing an incentive bonus for builders to install a "whole home" package of measures
- Working with communities to site a demonstration home and set community savings goals

G. Ramp Up Strategy

Prior to program launch, considerable effort needs to go into preparing the ground for the success of the program, including:

- Need to develop relationships within the design/build community
- Need to develop or arrange for offering of training on best practices for design and construction of new homes
- Need to develop or arrange for training of builder realtors in promotion and sales of energy efficient new homes

H. Marketing Strategy

PECO will select a CSP with experience in promotion through trade allies associated with builders and design firms. The implementation CSP will utilize established trade ally channels for educating and establishing stakeholder awareness of the benefits of designing, building and promoting the sale of energy efficient homes.

I. Eligible Measures and Incentives

Residential New Construction Proposed Measures—Per-Unit Savings, Costs, and Incentives

Measure Packages	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Incremental Cost per Unit	Incentive per Unit	Unit Definition
Bronze Package	1,812	0.305	16	$727	$364	per home
Silver Package	3,419	0.318	17	$2,852	$1,426	per home
Gold Package	4,495	0.415	16	$6,257	$3,129	per home
Platinum Package	7,018	0.419	16	$7,162	$3,581	per home

Measures

To encourage participants to take the comprehensive approach, rebates will be offered for packages of measures, rather than individual pieces of equipment or systems. The comprehensive energy package approach maximizes energy savings, avoids "cream skimming" (that is, where participants take the easiest and most lucrative measures), and reduces lost energy-saving opportunities.

Incentives

The proposed incentives are designed to cover 50% of the incremental measure costs. Incremental cost is the additional cost of a high-efficiency measure beyond a standard-efficiency alternative.

J. Program Schedule

The Residential New Construction program will be submitted for approval by the Commission in PY 2009 Q1, prepared for operation during PY 2010 Q2, and rolled out to the public during PY 2010 Q3. It will operate during PY 2010 through PY 2012. The following table provides a schedule of key milestones:

Proposed Residential New Construction Implementation Schedule

Key Milestone	Timing
Assign PECO program manager and staff	Anticipated June 2010
Start program design	June 2010
Select and contract with program implementation CSP	June 2010
Complete program design	November 2010
Pre-rollout program development: Build designer/builder network Develop designer/builder training curriculum and schedule Develop marketing strategies Develop procedures for tracking activities and documenting results	September – November 2010 (PY 2010 Q2)
Program rollout:	December 2010 (PY 2010 Q3)
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The evaluation methodology and data collection proposed for the Residential New Construction program are guidelines that reflect current measurement and verification (M&V) practices. The ultimate M&V requirements for this program will conform with the state and local protocols, once they are published.

Two key issues for evaluation of new construction programs are:

- Determination of whether the program attracts builders who were already building homes that meet the program requirements.
- An assessment of whether promotional and marketing efforts are in fact effective.

Metrics for Gauging Program Success

- Number of projects completed

- Energy savings associated with homes built through participation in the program
- Number of seminar attendees and/or trades people certified in energy-efficient building principles
- Increase in receptivity/adoption of energy-efficient building practices by designers, builders, and developers to measure the effectiveness of the marketing and education activities

Data Collection Approaches

The data required for evaluating the program will depend on the methodology chosen. They will likely include the following sources and information:

- Billing and/or metered use data
- Engineering estimates of measure savings
- Local weather data
- Program tracking system for measures installed, rebates paid, and home characteristics
- Upstream and homeowner surveys regarding program awareness, satisfaction with the program, understanding and perceived savings from measures, household characteristics home operation behaviors, program influence on design and construction decisions
- Program implementer/PECO staff surveys

Impact Evaluation Methodology

The impact evaluation will conform with the state protocols, once they are published. Some possible approaches are described below.

The impact evaluation will use a variety of techniques to obtain data on energy consumption in new residential buildings, but will focus on the effect of the program on building practices. PECO will compare a sample of homes completed under the program with a control sample of non-program homes, preferably built by the same builders either before they entered the program (a before-after analysis) or at the same time but not as part of the program (a side-by-side analysis). The before-after analysis will be preferable, but it may be difficult to locate the necessary homes. Therefore, a side-by-side analysis will probably be the more viable option. Although this approach will allow evaluation personnel to assess the effect of the program on building practices, the results will not be generalized to other builders not participating in the program. The alternative, which is to use a control sample of buildings built by other builders, would introduce additional "noise" into the analysis.

The analysis techniques will include performing engineering analyses on a sample of program and non-program homes "as built", metering these same program and non-program homes to calibrate the engineering estimates, and conducting a billing analysis of weather-adjusted energy consumption for a larger sample of program and a comparable group of non-program homes. To complete the engineering analysis and metering study for the program, detailed data on each home, including occupant characteristics, appliance stock, and structural features, will be required. Similar, but less detailed, information will be gathered using an occupant survey for the homes included in the statistical billing analysis.

A similar approach to sampling program and non-program buildings will be used to evaluate impacts for multifamily units. Metering may be conducted at the whole building level and a sample of units will be carefully selected to provide end-use data on location and structural differences (two-bedroom versus one-bedroom, etc.) for units within a multifamily complex.

Process Evaluation Methodology

Program participants, local inspectors, and program implementation staff will be interviewed for the process evaluation. These interviews will focus on the construction and inspection processes of residences built to new standards. Site visits will be conducted as part of the engineering and metering data collection; additional site visits may be added at a later date if any installation problems are identified. Site visits will be used to determine if measures were installed as expected and to gather data for the engineering analysis of the homes as built. In addition to obtaining information on customer characteristics, the customer survey will ask questions about the effectiveness of program promotional activities, customer satisfaction with their homes, and whether the participants have encountered any problems with their new equipment.

During the PY2010, the process evaluation will focus on program implementation, administration, and delivery. Interviews will be used to determine if the program is encouraging new construction practices and if the upstream market stakeholders and homeowners are finding the program informational and promotional materials useful. If there are difficulties in obtaining participation during the first year, the evaluation may be expanded to include focus group interviews with a larger sample of designers, builders, developers, and new homeowners.

During the PY2011, the process evaluation will assess how well program changes recommended during the first-year process evaluation are being implemented. The second-year process evaluation will also continue to examine the program implementation and delivery process to determine if additional changes are required.

L. Administrative Requirements

PECO will administer the Residential New Construction program through a CSP implementation contractor. PECO's role will be to ensure that:

- the CSP performs all the activities associated with delivery of all components of the program
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize builder and customer satisfaction with the program.

The program is expected to operate with the following PECO/Contract staffing mix:

Residential New Construction Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsible for final design and launch of program, and administering CSP.	0.5 FTE in PY 2010 through PY 2012
Analyst/contract administrator: Responsible for administering and overseeing CSP and providing other back-office support to the program manager.	0.25 FTE in PY 2010, 0.5 FTE in PY 2011 and PY 2012
Engineer: Responsible for assisting and reviewing CSP and participant estimates of project cost and savings	0.25 FTE in PY 2010, 0.5 FTE in PY 2011 and PY 2012

M. Estimated Participation

Participation and measure adoption estimates were developed based on projected new home additions in PECO's service territory, assessment of the attainable market potential in the area, as well as the experience of other organizations that have offered this type of program.

Residential New Construction Program—Estimated Participation (number of homes/year)

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Bronze Package	0	6	24	24	**54**
Silver Package	0	6	24	24	**54**
Gold Package	0	6	24	24	**54**
Platinum Package	0	6	24	24	**54**
Total	**0**	**24**	**96**	**96**	**216**

This program is expected to be offered to the public starting in December 2010 (PY 2010 Q3). With the necessary lead time for home construction, it is anticipated that relatively few projects will be completed before the end of PY 2010. The participation estimates reflect this expectation.

N. Estimated Program Budget

Each PY runs from June 1 of the year through May 31 of the following year. Final plan development will begin in PY 2010, with launch later in that program year. The cost estimates reflect this timing.

Residential New Construction Program—Proposed Budget

Budget	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$0	$146,775	$222,789	$229,473	$599,037
Implementation Contractor	$0	$103,000	$106,090	$109,273	$318,363
Umbrella Costs	$19,109	$25,441	$26,204	$26,990	$97,744
Program-Specific Education	$0	$77,250	$159,135	$163,909	$400,294
Promotion	$0	$51,500	$106,090	$109,273	$266,863
M&V	$0	$45,649	$83,671	$86,181	$215,500
Incentives	$0	$52,524	$216,398	$222,890	$491,812
Total	**$19,109**	**$502,139**	**$920,377**	**$947,988**	**$2,389,613**

The program costs were estimated using the following information and estimates:

- The figures in the table above include a cost escalation of 3% per year. The escalation applies to PECO admin labor, implementation, umbrella, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above
- CSP Implementation—Includes network development and recruitment, awareness and education, marketing, rebate processing, program tracking and improvement, and reporting, as described above.
- Umbrella Costs—Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development, EE&C Plan development costs, and for residential on-line energy audit.
- Program-Specific Education—This will include training seminars, publications, and at least one demonstration home. Assumed education costs for this program are $150,000 per full program year.
- Promotion—PECO's CSP will utilize established trade ally channels for educating stakeholders. Outreach will include advertising in trade magazines and sponsorships at targeted trade expos. Costs include promotion materials and advertising placement. These are estimated at $100,000 per full program year.
- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to equal 10% of total program budget (including incentives, excluding M&V costs).

- Incentives—The total incentives are based on the estimated savings in each program year. Overall, the incentives represent 21% of the total program budget over the four program years.

O. Projected Energy Savings and Demand Reduction

The savings estimates were developed using information and the savings calculator on the ENERGY STAR website, other secondary data such as Commonwealth Edison Company's 2008-2010 Energy Efficiency and Demand Response Plan, and Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region. These values were applied to the estimated number of measures rebated under the program each year. The savings noted in each year reflect the savings from measures installed by customers through the program in that year plus the impact of measures still in operation from previous years.

Residential New Construction Program—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
MWh Savings	0	100	502	904
Peak MW Reduction	0.000	0.009	0.044	0.079

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2009-PY 2010 timeframe (through May 2011): $5.188/kWh
- Savings Cost over the PY 2009-PY 2012 timeframe (through May 2013): $2.643/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.195/kWh
- Levelized Cost of Reduced Peak Demand: $2,241/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Residential New Construction	$1	$2	-$1	0.40

Q. Re-filing Plan Adjustment 09/15/10

As originally proposed in PECO's Plan, the Residential New Construction Program had been designed to increase the use of energy efficiency measures and standards in the design, construction and operation of single family homes and renovated or reconstructed homes. Education and rebates would be offered to designers/builders and owner/builders for the installation of high efficiency end-use equipment and building envelope measures.

In the time that has passed since filing and approval of PECO's Plan, building codes and standards have changed and become more stringent, making it more difficult to achieve incremental energy savings. Some of the changes include codes requiring Insulated Ceiling (IC) rated recessed lighting fixtures be sealed and caulked, 50% of the permanent lighting fixtures be high-efficiency, expansion of the building thermal envelope sealing, and door and window u-factors changing from u-0.40 to u-0.35.

Since the new home construction activity has slowed and the 2009 building codes and guidelines make it more difficult to achieve incremental energy savings, as part of its plan revision, PECO is recommending transferring funds from the Residential New Construction Program to the CFL Program. Specifically, PECO recommends moving $1.7 million of the program's $2.4 million budget to the CFL Program. The remaining $700,000 will be used to provide incentives to builders for installing high efficiency HVAC and appliances in residential new construction.

Proposed Funding Modification to Residential Programs

Residential Energy Efficiency Program	Budget ($ Millions)		
	Total	Proposed Budget	Variance
CFL Initiative	$19.7	$23.2	$3.5
Residential Whole Home Performance	$3.3	$1.5	-$1.8
Residential New Construction	$2.4	$0.7	-$1.7
Total -- Residential EE Program Proposed Revisions	***$25.4***	***$25.4***	***$0.0***

3.2.6EE Program 6—Appliance Pickup

A. Program Title and Program Years

Program Name: Appliance Pickup

Program Years: PY 2009 – PY 2012

B. Objectives

The purpose of the Appliance Pickup program is to eliminate a very inefficient usage of electricity in homes: the retention of refrigerators, freezers, and room air conditioners for use as secondary units. This is a two-pronged goal: to remove existing secondary units from operation and to prevent existing primary refrigerators, freezers, and room air conditioners from being retained and used as secondary units when customers purchase new units.

The program has several objectives:

- Transform attitudes about retaining older, less efficient refrigerators, freezers, and room air conditioners as secondary units.
- Accrue energy savings and demand reductions toward PECO's goals.
- Demonstrate PECO's commitment to good stewardship of the environment by sponsoring proper disposal of units.

Appliance Pickup is well-suited for accomplishing these objectives because: consumers are more willing than ever to help safeguard the environment and adopt behaviors that save energy without compromising their lifestyles. The program makes it convenient and cost-effective for customers to dispose of these older units, overcoming a past barrier to getting rid of them.

The focus groups conducted in preparation of this plan indicated that many residential customers, including low-income customers, would participate in this program, especially if they have assurance that the units will be disposed of properly and there are financial incentives.

C. Target Market

The eligible population for the Appliance Pickup program is all residential customers in PECO's service territory.

The target market of residential customers for the Appliance Pickup program has a short-term and a longer-term component. Respectively, these are residential customers who currently own and operate secondary refrigerator, freezer, or room air conditioning units and customers who are purchasing new replacement units.

D. Program Description

The Appliance Pickup program is designed to eliminate retention of old refrigeration equipment from operation as secondary units in homes and to provide safe disposal of these units. The program offers free pickup of units from residences plus customer incentives and education about the benefits of secondary unit disposal, to encourage their participation.

In addition to educating residential customers about the benefits of secondary unit disposal, the program provides services to enable disposal of the units. The two program components are:

- Customer Incentives—including complimentary removal of existing or potential secondary units from customer's home, plus payment of a small incentive for each unit removed
- Environmental Disposal of Units—including removal of CFCs for the refrigerant, the preparation of the refrigerant for reclamation or recycling, and the recycling of other materials such as the metal and plastic components

Customer Incentives

- Pickup of units from homes will be by appointment directly with the service provider.
- CSP mails incentive checks to customers after units have been removed.
- To qualify, refrigerator, freezer, or room air conditioning units must be in working condition, meet minimum size requirements, and be readily accessible for removal.
- Households are eligible to receive rebates for up to two refrigerators and one freezer, per program year. Room air conditioners are eligible as part of refrigerator or freezer pick up.

Environmental Disposal of Units

- Units will be removed to a collection facility and disassembled for environmentally responsible disposal of CFCs and recycling of remaining components.

E. Implementation Strategy

PECO will administer the Appliance Pickup program through a CSP implementation contractor. The selected CSP will have a demonstrated record of providing exactly the services to be offered in this program and responsibly disposing of the units.

Channels for Program Delivery

- PECO develops awareness through direct marketing—e.g., bill inserts, newsletters, website, broadcast and print media, direct mail; and pays the participant incentives.
- Appliance dealers are excellent channels to provide information about this program because they interact with the target market at the time of replacement purchase decisions. Since many dealers offer free removal of existing units to close a sale, utilizing the services of the program contractor to remove the old units can save them money.
- The CSP will implement the program on PECO's behalf, including providing assistance with PECO's direct marketing and advertising, providing consumer education, recruiting participants, providing rebate fulfillment services, tracking program activities, and reporting activities and achievements toward goals.
- The Appliance Pickup program will be also be promoted to participants of the Home Energy Incentives and the Whole Home Performance programs.
- PECO will look to partner with other EDCs for potential cost efficiencies.

Overview of Roles and Activities

The appliance dealer channels can provide information about and facilitate participation in the program. And instead of incurring the cost of removing the old units themselves, they can coordinate or help customers schedule appointments with the appliance removal contractor.

The implementation CSP will have full responsibility for delivery of all aspects of the program. Responsibilities fall into several activity areas:

- Development of facilities and protocols for removal and disposal of qualifying units
- Program marketing and education: including development and distribution of program materials in collaboration with PECO; education and engagement of appliance dealers; and program promotion
- Scheduling of pickups from customer homes, verification of unit qualification for complimentary removal and incentive payment, pickup and proper disposal of units
- Rebate Processing: fulfillment house to receive, review and verify documentation; and either pay incentives or submit incentives to PECO for payment
- Program performance tracking and improvement: including tracking of unit qualification, removal and disposal; rebate submittals and payments; and opportunities to improve the program
- Reporting: including reporting of program activities to meet regulatory and internal requirements, in particular progress toward program goals

F. Program Issues, Risks, and Risk Management Strategies

The Appliance Pickup program is perhaps the simplest program to operate. PECO will select an implementation CSP with a demonstrated record of providing the services to be offered in this program and responsibly disposing of the units. It is likely that a single provider can be engaged to perform or subcontract for performance of all the necessary services.

Experience at other utilities and discussions with contractors, however, suggest that the cost effectiveness of this program hinges on volume. Unit disposal costs can be reduced by ensuring higher volumes. The implementation CSP will need to use extensive and effective marketing to obtain the volumes.

Removal of old units requires site-to-site pickups. If the distances involved in more remote pickups will significantly increase unit costs, the program can target particular urban regions and be marketed community by community with mailings and local newspaper and radio advertisements. Customer demographic data, such as the appliance saturation survey conducted in preparation of this plan, can be used determine if some areas have greater-than-average saturations of secondary refrigerators, freezers, and room air conditioners. If so, these areas would be effective places to initiate this component of the program.

G. Ramp Up Strategy

While the Appliance Pickup program is relatively simple and readily understandable to customers, it will nonetheless take time for customers to gain comfort with and trust in the program. Participation targets for the first year of operation are low. Once the message is disseminated, it is anticipated that acceptance will grow rapidly and steadily.

H. Marketing Strategy

PECO will select a CSP with experience providing appliance pickup as a fully turnkey program, including a marketing strategy. The implementation CSP will have already developed outreach

strategies and educational materials to market the program. This is a well-established type of program, operated by experienced CSPs whose ability to succeed rests on the volume of participants they can recruit.

I. Eligible Measures and Incentives

Appliance Pickup Proposed Measures—Per-Unit Deemed Savings and Incentives

Unit Savings & Incentives	Annual kWh Savings per Unit	kW Savings per Unit	Incentive per Unit	Unit Definition
Refrigerator - removal of second unit	1,659	0.2057	up to $35	per appliance
Freezer - removal of second unit	1,659	0.2057	up to $35	per appliance
Refrigerator/Freezer – replacement	1,205	0.1494	up to $35	per appliance

In addition to cash incentives, customers receive the added benefit of no-cost removal of units from their homes. Often, consumers must pay an additional cost for removal and safe disposal when replacing old primary units.

J. Program Schedule

The Appliance Pickup program will be submitted for approval by the Commission in PY 2009 Q1, prepared for operation during PY 2009 Q2, and rolled out to the public during PY 2009 Q3. The program will operate during PY 2009 through PY 2012. The following table provides a schedule of key milestones:

Proposed Appliance Pickup Implementation Schedule

Key Milestone	Timing
Assign PECO program manager and staff	July 2009
Start program design	September 2009
Select and contract with program implementation CSP	November 2009
Complete program design	December 2009
Pre-rollout program development: Establish disposal site(s) and procedures CSP develop relationships with appliance retailers Develop procedures for tracking activities and documenting results	September – December 2009
Program rollout: Launch consumer marketing and outreach Pick up and dispose of units	 January 2010 January 2010 – May 2013
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The evaluation methodology and data collection proposed for the Appliance Pickup program are guidelines that reflect current measurement and verification (M&V) practices. The ultimate M&V requirements for this program will conform with the state protocols, once they are published.

Metrics for Gauging Program Success

- Number of existing secondary units removed
- Number of primary units replaced and prevented from operation as secondary units
- Energy savings associated with removed units
- Customer satisfaction with the program
- Program implementation costs incurred

- Increase in awareness and receptivity to secondary appliance turn-in

Data Collection Approaches

Data for evaluating the program will come from the following sources:

- Engineering or TRM estimates of measure savings
- Local weather data
- Follow-up surveys of residential customers contacted from customer information provided on the rebate applications and from PECO customer information system (for nonparticipants)
- Tracking of dealers engaged in promoting the program and assisting customers with rebate application submittal
- Program implementer/PECO staff surveys

Impact Evaluation Methodology

The program will use deemed per-unit savings estimates to determine savings. The impact evaluation can either accept these values or use engineering estimates to calculate the savings associated with the reduction in refrigerator, freezer load, and air conditioner loads that result from the program. Additional data will be obtained from program records and a survey of program participants. The additional data will include information on customer operating conditions before the units are recycled as part of the program.

Post-participation surveys with participating customers will be used to review and revise as necessary the net-to-gross ratio accounting for free-riders and free-drivers. Customers will be asked to provide information regarding whether they would have disposed of the qualifying units without the PECO incentives, and whether they subsequently disposed of additional units on their own.

The critical issue in the impact evaluation will be the acquisition of valid and reliable survey data. The process evaluation will be used to monitor the data-tracking system that the recycling contractor uses to ensure the validity of the impact evaluation calculations. This outline of the self-report methodology for the assessment of net impacts describes only the basic approach. The selected M&V contractor will develop the complete plan that ensures defensible measurement of savings in compliance with industry and state protocols.

Process Evaluation Methodology

The process evaluation will focus on program delivery, administration, implementation and customer response. Key issues will include assessment of the marketing and promotional efforts, monitoring of the contractor data-tracking system, and implementation procedures to ensure that the program is being implemented as designed.

The data collection techniques for the process evaluation will include in-person interviews with utility staff and the recycling contractors, on-site inspection of a sample of participant homes, and a survey of sample of participant homes. The interviews will focus on program implementation and administrative procedures. Site visits will be used to review contractor implementation procedures.

The participant survey will include questions on customer characteristics, equipment operating conditions, reasons for participation, program satisfaction, and response to promotional efforts.

In the first year of the program, the focus of the process evaluation will be to assess if the program is operating as planned and if the contractor is carefully maintaining records on program-related equipment. In the second year, the process evaluation will assess how well any program recommendations from the first-year process evaluation are being implemented. In subsequent years, the evaluation will continue to monitor program implementation.

L. Administrative Requirements

PECO will administer the Appliance Pickup program through a CSP implementation contractor. PECO's role will be to ensure that:

- the CSP performs all the activities associated with delivery of all components of the program
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program.

The program implementation contractor is expected to operate a complete turnkey program with minimal assistance from PECO staff. PECO staffing is limited to:

Appliance Pickup Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsible for final design and launch of program, and administering and overseeing CSP.	0.375 FTE in PY 2009 (0.75 yr. @ 0.5 FTE), 0.5 FTE in PY 2010 through PY 2012

M. Estimated Participation

Estimated household participation is based on a combination of electric equipment saturation and demographic data from the saturation survey conducted in preparation of this plan, as well as the experience of other utilities that have offered this type of program.

Participation and measure adoption estimates were developed based on existing homes in PECO's service territory, an assessment of the attainable market potential in the area, and the experience of other organizations that have offered this type of program. This includes information from experienced vendors, who confirmed that the estimates of units to be removed under the program are quite attainable.

Appliance Pickup Program—Estimated Participation
(number of units removed/year)

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Room AC units	500	1,500	1,500	1,500	5,000
Refrigerators	3,350	10,050	10,050	10,050	33,500
Freezers	1,700	5,100	5,100	5,100	17,000

N. Estimated Program Budget

Each program year (PY) runs from June 1 of the year through May 31 of the following year. Approval of the plan is anticipated in PY 2009 Q2, with less than full year of program operation. The cost estimates reflect this timing.

Appliance Pickup Program—Proposed Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$56,250	$77,250	$79,568	$81,955	$295,022
Implementation Contractor	$505,000	$1,560,450	$1,607,264	$1,655,481	$5,328,195
Umbrella Costs	$62,576	$87,138	$89,752	$92,445	$331,911
Program-Specific Education	$0	$0	$0	$0	$0
Promotion	$101,000	$312,090	$321,453	$331,096	$1,065,639
M&V	$27,797	$79,810	$82,204	$84,670	$274,482
Incentives	$189,250	$584,783	$602,326	$620,396	$1,996,754
Total	**$941,874**	**$2,701,521**	**$2,782,566**	**$2,866,043**	**$9,292,004**

The program costs were estimated using the following information and estimates:

- The figures in the table above include a cost escalation of 3% per year. The escalation applies to PECO admin labor, implementation, umbrella, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above
- CSP Implementation—Includes customer and appliance dealer recruitment, education, rebate processing, unit pickup and recycling, program tracking and improvement, and reporting as described above.

  Experience with other programs suggests that the average cost of all the above implementation activities is $100 per refrigerator or freezer removed and $25 per room air conditioner removed at the same time as refrigerator or freezer.
- Umbrella Costs—Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development, EE&C Plan development costs, and for residential on-line energy audit.
- Program-Specific Education—These are already included in the general education portion of the Umbrella Costs and the CSP Implementation costs noted above.
- Promotion—Implementation contractor will perform all required promotion. Experience with other programs suggests that the cost of promotion averages out to about $20 per pickup, the value included in this budget.
- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to equal 3% of total program budget (including incentives, excluding M&V costs), at the low end of industry average because no metering or bill analysis will likely be required.

- Incentives—The total incentives are based on the estimated savings in each program year. Overall, the incentives represent 21% of the total program budget over the four program years.

O. Projected Energy Savings and Demand Reduction

The estimated energy savings and demand reduction are based on annual per-unit kWh and kW values and effective useful life values indicated in the TRM, where available. For the remainder, savings estimates were developed using information and the savings calculator in the ENERGY STAR website, other secondary data such as Commonwealth Edison Company's 2008-2010 Energy Efficiency and Demand Response Plan, and Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region. These values were applied to the estimated number of measures rebated under the program each year. The savings noted in each year reflect the savings from appliances removed through the program in that year plus the impact of appliances removed from previous years.

Appliance Pickup Program—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
MWh Savings	7,494	29,977	52,460	74,944
Peak MW Reduction	1.441	5.764	10.087	14.410

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2009-PY 2010 timeframe (through May 2011): $0.122/kWh
- Savings Cost over the PY 2009-PY 2012 timeframe (through May 2013): $0.124/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.010/kWh
- Levelized Cost of Reduced Peak Demand: $50/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Appliance Pickup	$64	$6	$57	9.91

Q. Re-filing Plan Adjustment 09/15/10

Based on a review by the SWE, the kWh savings associated with a recycled room air conditioning ("A/C") unit changed from 1,147 kWh, which was utilized in PECO's approved Plan, to 353 kWh. Accordingly, PECO is proposing that the rebate amount for this measure be reduced to better align with the approved kWh savings.

Proposed Changes to Recycled Window A/C Unit Rebate Amount

Measure	Current Incentive	Proposed Incentive	Approved Plan kWh savings	Revised kWh Savings	kW
Appliance Recycling – Room Air Conditioner Pick up with refrigerator or freezer	$25	$10	1,147	353	0.6395

3.2.7 EE Program 7—Commercial/Industrial Equipment Incentives

A. Program Title and Program Years

Program Name: Commercial & Industrial Equipment Incentives

Program Years: PY 2009 – PY 2012

B. Objectives

The purpose of the Commercial & Industrial Equipment Incentives program is to increase awareness of energy savings opportunities and assist customers in acting on those opportunities to decrease energy usage in commercial and industrial facilities and in master-metered multifamily residential buildings.

This program is designed for retrofit and replacement projects. (The Commercial & Industrial New Construction program addresses major renovation and new facility construction projects.)

The program has several objectives:

- Increase consumers' awareness and understanding of the breadth of energy efficiency opportunities in their facilities.
- Make it easier for customers to adopt more energy-efficient equipment and equipment maintenance.
- Make a significant contribution to attainment of PECO's energy savings goals.
- Demonstrate PECO's commitment to and confidence in the measures' performance and their ability to reduce business customer energy use.
- Strengthen customer trust in PECO as their partner in saving energy.
- Align incentives with other EDCs, where possible.

Results of focus groups conducted in preparation of the program plan indicate that commercial and industrial customers in general, and business customers in particular, are the most comfortable with this type of program and most said they would likely participate.

C. Target Market

The eligible customer population for the Commercial & Industrial Equipment Incentives program is all existing commercial and industrial accounts, including master-metered multifamily housing facilities, provided with electricity by PECO, except for government, public, and non-profit facilities (see the Government/Public/Non-Profit Facility Energy Savings program).

There are approximately 153,400 business accounts in this sector overall, with the following makeup:

- Small businesses—145,000 accounts with demand <100 kW
- Medium C&I facilities—6,500 accounts with demand 100-500 kW
- Large C&I facilities—1,900 accounts with demand >500 kW

Within the target market, the focus for this program is the equipment retrofit or change-out market; that is, customers with existing equipment that needs replacing or who can be persuaded to replace their equipment early.

D. Program Description

The Commercial & Industrial Equipment Incentives program is designed to encourage and assist nonresidential customers in improving the energy efficiency of their existing facilities through a broad range of energy efficiency options that address all major end uses and processes. This program offers incentives to customers who install high-efficiency electric equipment and engages equipment suppliers and contractors to promote the incentive-eligible equipment.

The program has the following components, to accommodate the variety of customer needs and facilities in this sector:

- Two types of financial incentives for installation of energy efficient equipment:
  - Prescriptive Incentives—deemed per-unit savings for itemized measures; easy and appropriate for relatively low-cost or simple measures
  - Custom Incentives—paid on fixed per kWh or kW basis; more complex process and appropriate for larger and more complex projects, often with multiple measures
- Measures and assistance for different types of commercial and industrial customers:
  - Small Business track—specialized outreach to promote and enable mostly prescriptive measures best suited to smaller facilities, with eligibility to install custom measures as well. In addition, PECO will offer each small business three CFLs free of charge
  - Medium and Large Commercial & Industrial tracks—emphasis on flexibility of custom projects to address variety of business and industrial process energy improvements, with availability of prescriptive measures
- Customer referrals to qualified audit providers who can help customers identify appropriate and cost-effective retrofit opportunities

<u>Prescriptive Measure Incentives</u>

- Quick and easy incentive application for measures with known and reliable energy savings. No pre-approval required.
- Customers purchase and install qualified products from retailers and/or contractors.
- Customers or their contractors submit incentive form to PECO with information that documents the qualifying sale/installation. The form allows customers to see the exact incentive they can receive. PECO mails rebate checks to customers or their contractors.
- The prescriptive incentives are cash-back rebates that generally cover a portion of the incremental cost of the qualifying models; that is, the cost premium of qualifying models over less-efficient models available.

Custom Project Incentives

- Provides financial incentives on projects not suitable for prescriptive incentives because of size or multiple types of equipment involved.
- More complex offering, with the following services and requirements:
  - Review design/specification and savings estimates for completeness and applicability of incentives
  - Pre- and post-project inspections to estimate and verify savings
  - Incentives paid on a fixed $/kWh basis
- Examples of custom projects include chiller replacements, air compressor improvements, , and experimental technologies.

Drop Shipment of CFLs for Small Businesses

- Designed to promote awareness of the program, educate business customers on the ease and benefits of using CFLs, and encourage additional energy efficiency actions by small businesses.
- PECO will offer to provide each small business with three CFL bulbs, at no charge to the customer.
- Promote through direct mail about the offer with a mail-back coupon that allows customers to select from an array of standard and specialty lamps.
- Upon receipt of mail-back coupon, the three bulbs will be mailed directly to the customer.

E. Implementation Strategy

PECO will administer the Commercial & Industrial Equipment Incentives program through a CSP implementation contractor.

Channels for Program Delivery

Effective implementation of the program depends on all aspects of the delivery working effectively. This includes making qualifying products available, distributing information about the products and the program, promoting the program adequately, and educating those influential in making product selection and purchasing decisions.

- Product Supply
  - Equipment suppliers—Vendors are influential in equipment selection in commercial and industrial facilities. They can be and should be engaged to recommend rebate-eligible models of equipment for retrofit and replacement projects. As appropriate, the incentives for equipment purchased under the program can be split or directed to these vendors.
  - Other trade allies—Installation and maintenance contractors can provide services associated with some of the qualifying measures, such as HVAC diagnostic tune-ups, identifying and sealing air and duct leaks, and refrigeration system maintenance.

Again, as appropriate, incentives offered on qualifying measures can be directed to or split with these providers to encourage them to promote program participation.

- Program and Product Information Distribution
  - Trade allies—As both deliverers of program products and potential participants in the program, all vendors of the qualifying equipment and service measures should be engaged to receive and also provide to their public sector clients information about the program measure benefits, how the program works, and assistance with the incentive process.
  - Utility staff—While PECO will engage a CSP to implement the program, the staff has ongoing contact with all key account customers. The staff will provide information about the program benefits, measures, and process.
  - Conservation service providers—The implementation CSP will develop and distribute information about the qualifying products and participation assistance by establishing and leveraging existing relationships with the product and service suppliers.
- Program Promotion
  - Trade allies—All vendors of the qualifying equipment and service measures should be engaged to make their clients aware of the program and encourage their participation by recommending high-efficiency equipment models and diagnostic services.
  - Facility auditors—Part of auditors' services can and should include making customers aware of this program and the incentives available for installation of high-efficiency measures.
  - Bill inserts to all and direct mail to subsegments within this target market; e.g., small businesses.
  - CSP—A key responsibility of the implementation CSP is outreach and effective promotion of the program to the target market.
- Education: Opportunities to educate both the trade allies, who themselves are potential participants and delivery channels, and facility managers include:
  - Bill inserts and/or direct mail
  - Trade publication articles on the benefits of specific measures, technologies, and diagnostic tune-ups, as well as whole facility assessments
  - Trade industry meetings leveraged to include product and program education as part of them
  - Workshops provided by government agencies for commercial and industrial businesses to understand how to improve energy use in their facilities
  - Facility audit reports
  - CSPs (includes industry and technology experts) who meet individually with facility decision makers during outreach and project development

<u>Overview of Roles and Activities</u>

The implementation CSP will have full responsibility for delivery of all aspects of the program. Responsibilities fall into several activity areas:

- Development of relationships with equipment and maintenance suppliers to make incentive-eligible equipment and services available and to promote their participation in the program
- Program marketing: including development and distribution of program materials and assistance with direct mail or other promotion in collaboration with other PECO contractors
- Participant recruitment and assistance: including assisting customers and contractors with selection of measures and incentive application submittal, assisting customers and contractors with development of estimates and documentation for approval of custom measure projects
- Rebate processing: including a fulfillment house to receive, review and verify applications; and either pay or submit the financial incentives to PECO for payment
- Program performance tracking and improvement: including tracking availability of qualifying products, rebate submittals and payments, and opportunities to improve the program
- Reporting: including reporting of program activities to meet regulatory and internal requirements, including progress toward program goals

Education Overview

The program will provide and leverage education provided by other groups to ensure that program channels and participants have the understanding and tools to make the program successful. These are mainly focused on educating equipment suppliers and contractors, and include:

- Training sessions for trade allies and other product supply and program and product distribution providers—these are to provide both technical information regarding the applicability and benefits of the measures promoted under the program, information about how the program works, and their role in and incentives for having their customers participate in the program.
- Since referrals to auditors who can help identify energy efficiency opportunities is part of the program, having trained and qualified auditors available is important. Many utility-sponsored programs rely upon outside training organizations to ensure that auditors are well-versed in building science principles and whole-building concepts for energy performance. The Building Performance Institute (BPI) and Residential Energy Services Network (RESNET) have set widely-used standards for auditor training and already offer training sessions within Pennsylvania.

Applicable Collaborative Resources

Several other sources of technical and financial assistance are available to commercial and industrial energy users to enable energy efficiency improvements. Among them:

- Pennsylvania Department of Environmental Protection (DEP) offers workshops and other assistance to help small businesses improve energy efficiency at their facilities. The

services are sponsored by DEP's Office of the Small Business Ombudsman in partnership with the Electrotechnology Application Center, the Pennsylvania Technical Assistance Program and the PADEP Pollution Prevention/Energy Efficiency Roundtable. Funding for the Energy Management Workshop is provided through a U.S. Department of Energy grant.[10]

- Energy Efficiency & Conservation Block Grants—being made available under the American Recovery and Reinvestment Act of 2009 to fund or extend funding of energy improvements throughout the state. In particular, these funds may be used for the following activities relevant to this market and this program:[11]
  - Commercial building energy audits
  - Financial incentive programs and mechanisms for energy efficiency improvements such as energy savings performance contracting, on-bill financing, and revolving loan funds
  - Energy efficiency and conservation programs for buildings and facilities
  - Energy distribution technologies that significantly increase energy efficiency, including distributed resources, combined heat and power, and district heating and cooling systems

F. Program Issues, Risks, and Risk Management Strategies

There are several issues associated with providing an energy efficiency program to commercial and industrial customers. Key ones are identified below, along with how the Commercial & Industrial Equipment Incentives can address them.

- This is a very diverse market sector, both in size and makeup. The inclusion of multiple tracks, for smaller businesses and for larger commercial and industrial customers, provides the structure to develop specific outreach activities and educational/promotional messages that resonate with each group. Such activities and measures need to be developed more explicitly during the final program design, for small businesses in particular.
- The energy uses of industrial customers are also diverse and often site-specific. The implementation contractor must have expertise to understand or engage the services of process experts to assist industrial customers in particular with project development as well as to perform pre- and post-installation inspections.
- Equipment vendors and installation contractors have considerable influence in equipment purchase decisions. This effectively makes these trade allies part of the participant target market. To engage them in promoting and having their clients' projects participate in the program, it may be necessary and appropriate to structure the incentive payments so that part or all the incentive is directed to them or split with the customer.

G. Ramp Up Strategy

PECO will contract with an implementation CSP immediately upon approval of the program by the Commission. Since this program has several diverse components and addresses a complex

[10] http://www.depweb.state.pa.us/news, April 2009.
[11] http://www.eecbg.energy.gov/#lc1, April, 2009.

and diverse market, a relatively long time is allocated to developing activity and incentive protocols, educational materials, and development of relationships with equipment vendors and contractors who supply this market. All the elements to encourage and support immediate participation will be in place prior to the program launch.

H. Marketing Strategy

PECO will select an implementation CSP with experience in promoting commercial and industrial retrofit incentive programs. In particular, the CSP will have experience in working with equipment suppliers and contractors, ensuring that they are aware of and understand the program; in working with customers, ensuring they understand the program and measure benefits, and can advise them on project development; and in processing incentive applications, ensuring that payment is made for measures that meet the purchase, installation, and documentation requirements. And this experience needs to extend to all types of customers, from small businesses to large industrial process facilities.

I. Eligible Measures and Incentives

Measures

Both prescriptive and custom measures are eligible for incentives under this program. Prescriptive measures offered and associated rebates will be defined and listed for customers. Custom projects, consisting of energy-saving measures not listed or involving multiple systems are also eligible. The proposed measures for small business and general commercial and industrial customers are included in the tables below.

Incentives

On average, incentive levels provided to customers/contractors under this program for installation of rebate-eligible prescriptive measures are about 33% of the incremental measure costs. Incremental cost is the additional cost of a high-efficiency measure beyond a standard-efficiency alternative. Custom measure incentive levels are set commensurate with other utility-sponsored programs, and are generally a lower percent of incremental costs.

Commercial & Industrial Equipment Incentives Proposed Measures—Per-Unit Savings, Costs, and Incentives

Small Business Customers (< 100 kW)	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
SB - ENERGY STAR room AC	98	0.059	10	$50	$17	per RAC
SB - Small packaged and split system AC	127	0.099	14	$118	$39	per ton cooling
SB - Small air-source heat pump	348	0.099	12	$283	$94	per ton cooling
SB - High-efficiency cooling - packaged units - 11 EER - 10 tons	100	0.065	15	$49	$16	per ton cooling
SB - High-efficiency cooling - packaged units - 11.5 EER - 10 tons	149	0.097	15	$76	$25	per ton cooling
SB - High-efficiency cooling - packaged units - 12 EER - 10 tons	194	0.126	15	$103	$34	per ton cooling
SB - High-efficiency air-source HP - 11 EER - 10 tons	407	0.081	15	$146	$49	per ton cooling

Small Business Customers (< 100 kW)	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
SB - High-efficiency air-source HP - 11.8 EER - 10 tons	656	0.131	15	$252	$84	per ton cooling
SB - Ground-source heat pump	1503	0.300	30	$1,238	$40	per ton cooling
SB - HVAC tune-up	2600	1.622	5	$2,650	$883	per HVAC unit
SB - HVAC optimal start/stop	1142	0.159	15	$1,125	$375	per control point
SB - CFL bulbs	153	0.036	3	$5.00	$2.50	per lamp
SB - CFL fixtures	276	0.066	6	$100	$50	per fixture
SB - High-efficiency lighting - T-8	112	0.027	10	$85	$14	per fixture
SB - High-efficiency lighting - T-8 U-tube	112	0.027	10	$85	$14	per fixture
SB - High-efficiency lighting - T-5	465	0.111	10	$120	$40	per fixture
SB - High-efficiency lighting – HID	270	0.064	6	$60	$20	per fixture
SB - LED exit signs	307	0.035	15	$104	$34	per sign
SB - Occupancy sensors	35	0.008	8	$60	$20	per sensor
SB - White roofs	0.105	0.00003	20	$0.21	$0.07	per roof ft^2
SB - Premium-efficiency motors	90	0.011	20	$5.00	$1.70	per hp
SB - Custom measures	50,000 kWh per project	7 kW per project	15	$0.75	$0.08	per kWh saved or an equivalent based on the appropriate units
SB - CFL bulbs - drop ship package of 3 bulbs	459	0.109	3	$10	$10	per CFL package

Medium C&I Customers (> 100 kW, < 500 kW)	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
MC&I - High-efficiency cooling - packaged units - 10.1 EER - 30 tons	105	0.068	15	$49	$16	per ton cooling
MC&I - High-efficiency cooling - packaged units - 11 EER - 30 tons	206	0.134	15	$103	$34	per ton cooling
MC&I - High-efficiency cooling - packaged units - 11.5 EER - 30 tons	255	0.165	15	$134	$45	per ton cooling
MC&I - High-efficiency air-source HP - 10.1 EER - 30 tons	590	0.118	15	$146	$49	per ton cooling
MC&I - High-efficiency air-source HP - 11 EER - 30 tons	916	0.183	15	$247	$82	per ton cooling
MC&I - Ground-source heat pump	1503	0.300	30	$1,238	$40	per ton cooling
MC&I - HVAC tune-up	7800	4.866	5	$7,950	$2,650	per HVAC unit
MC&I - HVAC optimal start/stop	3427	0.478	15	$1,500	$500	per control point
MC&I - CFL bulbs	153	0.036	3	$5.00	$2.50	per lamp
MC&I - CFL fixtures	276	0.066	6	$100	$50	per fixture
MC&I - High-efficiency lighting - T-8	112	0.027	10	$85	$14	per fixture
MC&I - High-efficiency lighting - T-8 U-tube	112	0.027	10	$85	$14	per fixture
MC&I - High-efficiency lighting - T-5	465	0.111	10	$120	$40	per fixture
MC&I - High-efficiency lighting - HID	270	0.064	6	$60	$20	per fixture
MC&I - LED exit signs	307	0.035	15	$104	$34	per sign
MC&I - Occupancy sensors	35	0.008	8	$60	$20	per sensor
MC&I - White roofs	0.105	0.00006	20	$0.21	$0.07	per roof ft^2
MC&I - Premium-efficiency motors	35	0.004	20	$5.70	$1.90	per hp
MC&I - Energy management control system	3.523	0.000	15	$0.62	$0.21	per bldg. ft^2
MC&I - Custom measures	80,000 kWh per project	15 kW per project	15	$0.50	$0.08	per kWh saved or an equivalent based on the appropriate units

Large C&I Customers (> 500 kW)	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
LC&I - High-efficiency cooling - packaged units - 10.1 EER - 30 tons	105	0.068	15	$49	$16	per ton cooling
LC&I - High-efficiency cooling - packaged units - 11 EER - 30 tons	206	0.134	15	$103	$34	per ton cooling
LC&I - High-efficiency cooling - packaged units - 11.5 EER - 30 tons	255	0.165	15	$134	$45	per ton cooling
LC&I - High-efficiency air-source HP - 10.1 EER - 30 tons	590	0.118	15	$146	$49	per ton cooling
LC&I - High-efficiency air-source HP - 11 EER - 30 tons	916	0.183	15	$247	$82	per ton cooling
LC&I - Ground-source heat pump	1503	0.300	30	$1,238	$40	per ton cooling
LC&I - HVAC tune-up	7800	4.866	5	$7,950	$2,650	per HVAC unit
LC&I - HVAC optimal start/stop	3427	0.478	15	$1,000	$333	per control point
LC&I - CFL bulbs	153	0.036	3	$5.00	$2.50	per lamp
LC&I - CFL fixtures	276	0.066	6	$100	$50	per fixture
LC&I - High-efficiency lighting - T-8	112	0.027	10	$85	$14	per fixture
LC&I - High-efficiency lighting - T-8 U-tube	112	0.027	10	$85	$14	per fixture
LC&I - High-efficiency lighting - T-5	465	0.111	10	$120	$40	per fixture
LC&I - High-efficiency lighting – HID	270	0.064	6	$60	$20	per fixture
LC&I - LED exit signs	307	0.035	15	$104	$34	per sign
LC&I - Occupancy sensors	35	0.008	8	$60	$20	per sensor
LC&I - White roofs	0.105	0.00006	20	$0.21	$0.07	per roof ft^2
LC&I - Premium-efficiency motors	35	0.004	20	$5.70	$1.90	per hp
LC&I - Variable speed drives	2137	0.514	20	$485	$75	per hp
LC&I - Energy management control system	4	0.000	15	$0.62	$0.21	per bldg. ft^2
LC&I - Custom measures	240,000 kWh per project	40 kW per project	15	$0.33	$0.07	per kWh saved or an equivalent based on the appropriate units

J. Program Schedule

The Commercial & Industrial Equipment Incentives program will be submitted for approval by the Commission in PY 2009 Q1, prepared for operation during PY 2009 Q2/Q3, and rolled out to the public during PY 2009 Q4. The program will operate from the latter part of program year PY 2009 through PY 2012. The following table provides a schedule of key milestones:

Proposed Commercial & Industrial Equipment Incentives Implementation Schedule

Key Milestone	Timing
Assign PECO program manager and staff	July 2009
Start program design	September 2009
Select and contract with program implementation CSP	November 2009
Complete program design	February 2010
Pre-rollout program development: Prepare marketing materials and incentive applications Develop activity and incentive processing protocols Identify qualified auditors	September 2009 – February 2010
Program rollout: Launch consumer marketing and outreach All program services	March 2010 (PY 2009 Q4)
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The evaluation methodology and data collection proposed for the program are guidelines that reflect current measurement and verification (M&V) practices. The ultimate M&V requirements for this program will conform with the state protocols, once they are published.

Metrics for Gauging Program Success

Primary:

- Number of program measures installed
- Energy savings associated with installed measures
- Customer satisfaction with the program and the products
- Program implementation costs incurred

Secondary:

- Distribution of measure popularity and cost-effectiveness of program, to enable program improvement
- Number and variety of suppliers/contractors who stock qualified products

Data Collection Approaches

Data for evaluating the program will come from the following sources:

- Impact Evaluation
  - Tracking system data for all projects
  - On-site inspection and metering of a sample of projects to verify operation as reported
  - PECO customer energy consumption data for engineering or statistical analyses of impacts
- Process Evaluation

  Evaluation of program design and implementation process will be conducted by gathering and analyzing data through a variety of surveys and interviews, including:
  - Follow-up surveys of C&I customers contacted from customer information provided on the incentive applications and from PECO customer information system (for nonparticipants)
  - Surveys of upstream suppliers engaged in promoting the program and assisting customers with project development and incentive application submittal
  - Interviews with the implementation CSP and PECO program staff
  - Review of program documents and tracking system data

Impact Evaluation Methodology

The program will record energy savings and peak load reductions from the rebate applications processed. For prescriptive measures, recorded savings will use the per-unit deemed savings values. Because prescriptive measures are established technologies and data are available demonstrating the reliability of savings, it will not be necessary to conduct customer-level billing analyses or metering studies on these projects. However, some number of projects will be inspected for independent verification of installation and operation as reported.

For custom measure projects, the gross savings need to be estimated based on engineering models and estimates. The M&V assessment will necessarily require pre/post building simulation modeling, billing analyses and/or metering to verify the project savings. For program impact assessment, this can be accomplished through verification of a sample of projects that account for a large portion of the reported savings and are most representative of projects by the different target market segments.

PECO will credit toward the program only savings from rebated measures. This means that any additional purchases that may be induced by the program but not rebated—that is, spillover or free-driver effects, are not claimed by PECO under the program. Assessment of free-rider and

free-driver effects, if deemed appropriate, may be conducted using customer billing and survey data in conjunction with established M&V methodologies and procedures.

Process Evaluation Methodology

Evaluation of the program implementation is important to ensure that the program is operating as intended and to provide information that can enable improvements in both the program design and implementation. Process evaluation will be undertaken and conducted throughout the program by the implementation and the M&V contractor(s) selected by PECO.

Process evaluation will assess customer understanding of, attitudes about, and satisfaction with both the program and with PECO's broader educational activities. The evaluations will make use of survey data collected by the implementation and M&V contractors. These surveys will include both customers known to have participated in the program and eligible nonparticipants. The diversity of customers in this target market, including small businesses, master-metered multifamily housing facilities, general office as well as specialty facilities, and factories, means that survey content and fielding will need to accommodate a wide variety of participation experiences.

Interviews with program service providers will be conducted to assess satisfaction with the program and to identify problems and possible program services/implementation improvements.

The M&V contractor will also help PECO assess the performance of the program design and delivery of the products and services featured in the program, including effectiveness of the educational materials, effectiveness of promotional campaigns and messages, effectiveness of the trade ally involvement, and whether implementation milestones are met adequately and on schedule. These evaluations will use sales and promotion data maintained by the implementation CSP, information provided by PECO, and customer survey data.

L. Administrative Requirements

PECO will administer the Commercial & Industrial Equipment Incentives program through a CSP implementation contractor. PECO's role will be to ensure that:

- the CSP performs all the activities associated with delivery of all components of the program
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program.

The program is expected to operate with the following PECO staffing mix:

Commercial & Industrial Equipment Incentives Program—Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsible for final design and launch of program.	0.75 FTE in PY 2009 (0.75 yr. @ 1.0 FTE), 1.0 FTE in PY 2010 through PY 2012
Analyst/contract administrator: Responsible for administering and overseeing CSP and providing other back-office support to the program manager.	0.5 FTE in PY 2009, 1.0 FTE in PY 2010 through PY 2012
Engineer: Provide assistance to customers,	0.5 FTE in PY 2009, 1.0 FTE in PY 2010

contractors, and implementation CSP to ensure proper estimation of project savings and review of audit results and recommendations.	through PY 2012

M. Estimated Participation

Participation and measure adoption estimates were developed based on the existing stock of commercial and industrial facilities in PECO's service territory and assessment of the attainable market potential in the area, and the experience of other organizations that have offered this type of program.

Commercial & Industrial Equipment Incentives Program—Estimated Participation (number of installations/year)

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Small Business:					
Prescriptive measures	10,875	91,821	56,821	56,821	**216,339**
Custom projects	20	135	135	135	**425**
Medium C&I:					
Prescriptive measures	11,088	55,720	55,720	55,720	**178,248**
Custom projects	11	68	68	68	**215**
Large C&I:					
Prescriptive measures	5,706	28,989	28,989	28,989	**92,672**
Custom projects	7	41	41	41	**130**

Notes about the above participation estimates:

- Small business prescriptive measures includes estimated participation by 20% of accounts, each receiving three CFL lamps, in PY 2010.
- Multiple prescriptive measures may be installed by the same customer; therefore the installation estimates do not equate to number of customers who will participate.

N. Estimated Program Budget

Approval of the plan is anticipated in PY 2009 Q2, resulting in less than a full year of program operation in the first program year. The cost estimates reflect this timing.

Commercial & Industrial Equipment Incentives Program—Proposed Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$247,500	$432,600	$445,578	$458,945	$1,584,623
Implementation Contractor	$737,238	$4,141,285	$7,387,460	$10,806,332	$23,072,316
Umbrella Costs	$312,175	$364,620	$375,559	$386,825	$1,439,179
Program-Specific Education	$150,000	$309,000	$318,270	$327,818	$1,105,088
IT Enablement Costs	$20,872	$21,498	$22,143	$22,808	$87,322
Promotion	$229,128	$460,027	$243,082	$250,374	$1,182,610
M&V	$140,741	$668,252	$789,095	$940,657	$2,538,745
Incentives	$1,842,479	$10,998,767	$10,957,415	$11,286,138	$35,084,800
Total	**$3,680,134**	**$17,396,050**	**$20,538,602**	**$24,479,898**	**$66,094,683**

The program costs were estimated using the following information and estimates:

- The values in the budget table include an escalation rate of 3% per year after PY 2009. The escalation applies to PECO admin labor, implementation, umbrella, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above
- CSP Implementation—Includes cost of providing the following:
  - Participant recruitment and assistance—including customers as well as equipment suppliers and contractors, technical and incentive application assistance, and pre/post-installation inspections
  - Rebate processing and fulfillment
  - Program monitoring and tracking—including recording and reporting of activities, providing required data for PECO's tracking system and regulatory reporting, complaint resolution, and process tracking and improvements
- Umbrella Costs—Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.
- Program-Specific Education—Assumed education costs for this program are $150,000 in PY 2009 and $300,000 per full program year, using fact sheet bill inserts, additional mail and on-line materials, and articles in trade publications. This is a program that includes diverse and complex measures, processes, and customers.
- Promotion—This is a large program within the nonresidential sector. In addition to the attention given to it in the promotion of PECO's overall Energy Efficiency umbrella campaign, direct mail marketing will be utilized for both the education and acquisition of eligible customers to ensure maximum participation rates are achieved. This program-specific promotion is estimated at $250,000 per program year, including PY 2009 (starting January 2010); plus direct mail of coupons to all small business customers to request CFLs in PY 2010.

- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to equal 4% of total program budget (including incentives, excluding M&V costs).
- Incentives—The incentives budget is based on per-unit incentive allowances and estimated number of installations. Overall, the incentives represent 54% of the total program budget over the four program years.

O. Projected Energy Savings and Demand Reduction

The estimated energy savings and demand reduction are based on annual per-unit kWh and kW values and effective useful life values provided in the TRM, where available. For the remainder, savings estimates were developed using information and the savings calculator in the ENERGY STAR website, other secondary data such as Commonwealth Edison Company's 2008-2010 Energy Efficiency and Demand Response Plan, and Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region.

Prescriptive measure per-unit values and customer per-project values were applied to the estimated number of installations rebated under the program each year. The savings noted in each year reflect the savings from measures installed by customers in that year plus the impact of measures still in operation from previous years.

C&I Equip. Incentives—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	**PY 2010**	**PY 2011**	**PY 2012**
MWh - Small Business - Prescriptive	3,101	35,402	51,650	67,707
MWh - Small Business - Custom	1,000	7,750	14,500	21,250
MWh - Small Business - Total	**4,101**	**43,152**	**66,150**	**88,957**
MWh - Medium C&I - Prescriptive	5,060	32,128	59,196	86,072
MWh - Medium C&I - Custom	880	6,320	11,760	17,200
MWh - Medium C&I - Total	**5,940**	**38,448**	**70,956**	**103,272**
MWh - Large C&I - Prescriptive	3,024	21,756	40,488	59,122
MWh - Large C&I - Custom	1,680	11,520	21,360	31,200
MWh - Large C&I - Total	**4,704**	**33,276**	**61,848**	**90,322**
MWh Total	**14,745**	**114,876**	**198,954**	**282,552**

Peak MW - Small Business - Prescriptive	0.826	8.935	13.220	17.460
Peak MW - Small Business - Custom	0.140	1.085	2.030	2.975
Peak MW - Small Business - Total	**0.966**	**10.020**	**15.250**	**20.435**
Peak MW - Medium C&I - Prescriptive	1.208	7.553	13.899	20.199
Peak MW - Medium C&I - Custom	0.165	1.185	2.205	3.225
Peak MW - Medium C&I - Total	**1.373**	**8.738**	**16.104**	**23.424**
Peak MW - Large C&I - Prescriptive	0.772	5.577	10.383	15.166
Peak MW - Large C&I - Custom	0.280	1.920	3.560	5.200
Peak MW - Large C&I - Total	**1.052**	**7.497**	**13.943**	**20.366**
MW Total	**3.390**	**26.256**	**45.297**	**64.224**

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2009-PY 2010 timeframe (through May 2011): $0.183/kWh
- Savings Cost over the PY 2009-PY 2012 timeframe (through May 2013): $0.234/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.042/kWh
- Levelized Cost of Reduced Peak Demand: $199/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	**Lifetime Costs**	**Net Benefits**	
C&I Equipment Incentives	$214	$141	$73	1.52

Q. Plan Re-filing Adjustment 09/15/10

Based on the analysis of, and PECO's consultation with its Conservation Service Provider, KEMA Services, Inc. ("KEMA"), PECO is proposing to add several measures, currently not in the Pennsylvania TRM, (outlined in the table below) to the Commercial/Industrial Equipment Incentives Program and the Government/Public/Non-Profit Facility Energy Savings Program. KEMA's experience in executing energy efficiency programs in other jurisdictions has shown that adding the proposed set of measures extends the reach of energy efficiency efforts and savings to grocery stores, food service establishments, small business customers, and non-profit institutions. The addition of these measures to the Plan will not impact the total cost of the programs as the incentives can be funded under the approved budget.

PECO is requesting to have the following measures added to the Plan. These measures are for C&I, as well as Governmental customers.

Proposed Commercial/Industrial/Governmental/Non-Profit Measures:

~~Strip curtains on walk-in coolers/freezers~~	~~139~~	~~0.010~~	~~4~~	~~$7.77~~	~~$4~~	~~per sq ft~~
Anti-sweat heater controls	402	0.007	12	$80	$45	per linear foot
EC motor for walk-in coolers	401	0.044	15	$250	$50	per motor
EC motor for reach-in refrigerated cases	345	0.033	15	$185	$45	per motor
Evaporator fan controls	478	0.060	16	$291.50	$70	per motor
~~Automatic door closers for walk-in coolers~~	~~960~~	~~0.139~~	~~8~~	~~$156~~	~~$70~~	~~per closer~~
~~Automatic door closers for walk-in freezers~~	~~2,360~~	~~0.322~~	~~8~~	~~$156~~	~~$100~~	~~per closer~~
~~Refrigerated display case night cover~~	~~105~~	~~0.000~~	~~5~~	~~$35~~	~~$5~~	~~per linear foot~~
LED refrigerated case lighting	375	0.061	16	$266	$50	per door
ENERGY STAR solid door freezer	1,725	0.057	12	$805	$150	per freezer
ENERGY STAR glass door freezer	5,923	0.676	12	$1,000	$400	per freezer
High efficiency ice maker 101-200 lbs/day	1,029	0.118	12	$296	$100	per ice maker
High efficiency ice maker 201-300 lbs/day	1,551	0.177	12	$312	$150	per ice maker
High efficiency ice maker 301-400 lbs/day	1,840	0.210	12	$559	$175	per ice maker
High efficiency ice maker 401-500 lbs/day	2,004	0.229	12	$981	$200	per ice maker
High efficiency ice maker 501-1000 lbs/day	3,176	0.363	12	$1,485	$300	per ice maker
High efficiency ice maker 1001-1500 lbs/day	5,019	0.573	12	$1,821	$400	per ice maker
High efficiency ice maker > 1500 lbs/day	5,585	0.638	12	$2,194	$500	per ice maker
~~Hot food holding cabinet~~	~~3,299~~	~~0.603~~	~~12~~	~~$1,783~~	~~$300~~	~~per unit~~
Beverage machine controls	1,612	0.000	10	$180	$100	per machine
Snack machine controls	387	0.000	10	$80	$30	per machine
ENERGY STAR refrigerated vending machine	1,576	0.180	14	$900	$150	per machine
~~Barrel Wraps - Injection Molding & Extruders~~	~~50~~	~~0.010~~	~~5~~	~~$2~~	~~$1~~	~~per ton~~

R. Plan Adjustments 07/15/11

Establishment of an Application Waitlist

> PECO proposes to establish a waitlist for incentive applications under this Program as soon as the Company receives Commission approval. The waitlist will allow the Company to meet Portfolio savings targets and also manage customer expectations regarding incentive availability under this Program. If the Commission approves the waitlist proposal, the Company will place applications in the waitlist based on the date they were received. Applicants will be notified that they are on the waitlist and will be contacted if they are eligible for an incentive. In the event that: (1) a pre-waitlist application drops out of a Program queue; or (2) the energy savings for the Program is projected to fall short of targets, the Company will process and pay incentives for applications in the Program waitlist on a first-come, first-served basis. The Company will continue to process and pay incentives on the applications that it received before the waitlist was established.

3.2.8 EE Program 8—Commercial/Industrial New Construction

A. Program Title and Program Years

Program Name: Commercial & Industrial New Construction

Program Years: PY 2011 – PY 2012

B. Objectives

The purpose of the Commercial & Industrial New Construction program is to greatly improve the energy efficiency of all newly constructed facilities and facilities that are completely renovated or reconstructed in the PECO service territory.

The program has several objectives:

- Change building design and construction practices used by architects and engineers, contractors, and owners to include all cost-effective energy efficiency designs and equipment.
- Capture "lost opportunities" to reduce electric demand and energy usage in the commercial and industrial sector by providing participants with design assistance and custom rebates or performance contracting for the construction of energy-efficient buildings and facilities.

Results of focus groups conducted in preparation of the program plan indicate that commercial and industrial customers across the board are comfortable with this type of program and many said they would likely participate.

C. Target Market

The target market for the Commercial & Industrial New Construction program is decision makers for the design and/or construction of new facilities and renovation contractors and developers. This program will cover both new constructions and buildings/facilities undergoing

"major renovation," defined as buildings where multiple major systems are undergoing significant upgrades.

While the energy and peak load savings resulting from this program will be accrued by the building owners/tenants, the key target market of the program are the professionals most responsible for the design and equipment decisions—architects and engineers, design/builders, developers, and contractors.

D. Program Description

The Commercial & Industrial New Construction program is designed to instill and accelerate adoption of design and construction practices so that new commercial and industrial facilities are more energy efficient than the current stock. The program provides facility designers and builders with training, design assistance, and incentives to incorporate energy efficient systems and construction practices in newly constructed and renovated facilities.

The program has the following components, directed mainly to commercial and industrial design and construction community: training, design assistance, and financial incentives.

Training

- General training in best practices—provides technical workshops and other technical developmental activities for the design and engineering community to familiarize and educate them on energy efficient design methods and new technologies.

Design Assistance

- Directed to upstream providers of design and construction services—architects and engineers (A&E), designers/builders, and contractors.
- Project-specific assistance—will provide a participant with the services of a consulting engineer to evaluate the cost-effectiveness of energy-saving measures under consideration and to recommend measures that may have been overlooked.
- The program will also provide design and engineering consultants with validation of their prospective energy efficiency projects in presentations to clients.

Incentives

- Directed to upstream providers of design and construction services but also available to facility owners.
- Custom rebates payable on a per kWh savings basis, compared with "standard" design and equipment installations.
- Participant must submit project energy savings generated by PECO-approved building energy modeling software (e.g., eQUEST) to be eligible for installation rebate

E. Implementation Strategy

PECO will administer the Commercial & Industrial New Construction program through a CSP implementation contractor.

Channels for Program Delivery

- Because they are the key decision makers in new commercial and industrial facility design, it will be advantageous for PECO to work "upstream"—with the design and construction community. For the program to be effective, PECO must educate these professionals on how and why to upgrade their building practices. Once convinced, these design and construction influencers can promote the program and the efficiency benefits to their clients as well as to their suppliers and subcontractors. These professionals are really both participants and delivery channels for the program.
- Articles and advertising in building design and engineering trade publications.
- Bill inserts to existing commercial and industrial customers to alert them to opportunities available for major renovations and expansions to their facilities.
- A conservation service provider (CSP) will implement the program on PECO's behalf, including providing assistance with PECO's direct marketing; recruiting and providing education to upstream channels; providing rebate fulfillment services; and tracking and reporting program activities and achievements toward goals.

Overview of Roles and Activities

The implementation CSP will have full responsibility for delivery of all aspects of the program. Responsibilities fall into several activity areas:

- Identification and recruitment of upstream market actors for program participation and delivery channel activities
- Education: including development and operation of training seminars for A&Es, designers, builders, and developers; and development and distribution of educational publications
- Marketing: including development and distribution of program materials in collaboration with PECO and design and construction professionals who will be both program participants and promoters
- Design and Project Assistance: engineering and technical support for project development, and cost-effectiveness assessment, and estimation of financial incentives; design review and post-installation inspections
- Rebate Processing: fulfillment house to receive, review and verify applications; and either pay or submit rebates to PECO for payment
- Program Performance Tracking and Improvement: including project tracking and documentation of project measures, rebate submittals and payments, opportunities to improve the program
- Reporting: including reporting of program activities to meet regulatory and internal requirements, in particular progress toward program goals

Education Overview

Education is a key component of the Commercial & Industrial New Construction program. The market will change through training, education and demonstration. The program will increase confidence in the performance and benefits of increased energy efficiency (better performance,

lower fuel bills, increased comfort, reduced maintenance, etc.). Designers and builders will be encouraged to implement more energy-efficient strategies to increase energy efficiency through the program. Emphasis on the additional benefits of comprehensive energy efficiency improvements and continual maintenance to retain savings will demonstrate an overall cost-effectiveness that can be achieved without the need for financial incentives over the longer term. Ongoing deployment of these strategies will become "standard" practice by these same designers and builders in additional projects, affecting long-term market transformation.

To accomplish this, the program will offer several forms of education as noted above:

- Training seminars will be taught by experts in specific aspects of high-efficiency building design and construction. Many utilities offer these no-fee sessions on an ongoing basis. In addition to teaching key principles and an understanding of the program, they will provide PECO with an excellent opportunity to develop strong relationships and build trust with this influential group, which is also the key target market for the program.

  PECO will consider linking the training activities with nationwide certification programs for builders, inspectors, lighting designers and with continuing education programs for architects and engineers.

- Publications with technical information, practical advice, and persuasive messages will be developed. These can be included in newsletters directed to design/build, published in trade journals, sent in direct mail, distributed at seminars, and made available on a PECO website page designed for this audience.

Applicable Collaborative Resources

- ENERGY STAR has considerable material on its website directed to commercial and industrial design and construction community, which this program should leverage. This includes Commercial Building Design guidelines and strategies, "Designed to Earn the ENERGY STAR" program and the "ENERGY STAR Challenge" for architecture firms, communications materials, many types of training opportunities, and an extensive tools and resources library.[12]

- ENERGY STAR also offers opportunity for buildings to gain EPA rating. By promoting practices and measures recommended by ENERGY STAR, the C&I New Construction program can have added credibility. Building types eligible for an EPA rating include: Office, Courthouse, Bank/Financial Institution, K-12 School, Supermarket/Grocery, Retail (big box), Hospital, Medical Office, Hotel, Residence Hall/Dormitory, and Warehouse (refrigerated/non-refrigerated).

- Sustainable Development Fund Financing—provides financing for the installation of solar PV and hot water heating systems.

F. Program Issues, Risks, and Risk Management Strategies

Currently, several market barriers inhibit the participation in new construction programs. Such barriers, which the program implementation activities will address, include:

- Perception of Increased Cost: Many designers and builders feel that increased building performance costs more, and that it is not cost-effective.

[12] http://www.energystar.gov/index.cfm?c=business.bus_index, May 2009.

- Risk Aversion: Historically, the commercial design and engineering community has been particularly slow to adopt new technologies or solutions. A&Es prefer to design and install systems and buildings using familiar technologies and designs. Liability issues are also a concern.
- First Cost vs. Lifecycle Cost Considerations: Building developers are very concerned with first cost considerations as they often must build within a pre-determined budget. As such, they are reluctant to consider high-efficiency measures, which usually cost more.
- Limited Technical Information: Designers and owners have limited familiarity with new products, technologies and their applications, and their associated benefits that extend beyond energy savings (comfort, durability, health, productivity and maintenance). ENERGY STAR, AIA, and other available training programs are whittling away at this problem.
- Inadequate Operational Procedures: Building systems are usually not tested to ensure that they perform as designed. In addition, owners frequently fail to implement an ongoing maintenance and quality assurance procedure to properly operate the equipment.

G. Ramp Up Strategy

Prior to program launch, considerable effort needs to go into preparing the ground for the success of the program, including:

- Need to develop relationships within the design/build community
- Need to develop and arrange training on best practices for design and construction of new commercial and industrial facilities

H. Marketing Strategy

PECO will select a CSP with experience in promotion through trade allies associated with builders and design firms. The implementation CSP will utilize established trade ally channels for educating and developing stakeholder awareness of the benefits of designing, building and promoting energy efficient construction standards.

I. Eligible Measures and Incentives

Participants will be encouraged to take a comprehensive approach to building/facility design. Custom rebates, which will be offered, best support this concept. Participants can design whole buildings/facilities with any combination of energy efficiency features and receive these financial incentives for the energy savings of the entire project compared with standard efficiency or basic code compliance.

Commercial & Industrial New Construction Proposed Measures—Per-Unit Savings, Costs, and Incentives

Measure	Annual kWh Savings	kW Savings	Useful Life of Measure	Incremental Cost	Incentive per Unit
Custom project	250,000 per project	30 per project	15 years	$0.25 per kWh saved	$0.07 per kWh saved or an equivalent based on the appropriate units

The proposed incentive level covers approximately 28% of the incremental cost and is consistent with actual project experience. Incremental cost is the additional cost of a high-efficiency measure beyond a standard-efficiency alternative.

J. Program Schedule

The following schedule identifies key milestones for the Commercial & Industrial New Construction program. The program will start in PY 2011 and continue services through PY 2012.

Proposed Commercial & Industrial New Construction Implementation Schedule

Key Milestone	Timing
Assign PECO program manager and staff	Anticipated January 2011
Start program design	June 2011
Select and contract with program implementation CSP	November 2009
Complete program design	August 2011
Pre-rollout program development: Build designer/builder network Develop designer/builder training curriculum and schedule Develop marketing strategies Develop procedures for tracking activities and documenting results	June 2011 (PY 2011 Q1)
Program rollout: Offer designer/builder education Offer design assistance and rebates	 September 2011 (PY 2011 Q2) September 2011 – May 2013
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The data collection guidelines proposed for the program reflect current measurement and verification (M&V) practices. The M&V requirements and methods used to evaluate this program will conform with State protocols, once they are published.

Metrics for Gauging Program Success

- Number of projects completed
- Energy savings associated with facilities built through participation in the program
- Number of training seminar attendees and/or trades people certified in energy-efficient building principles
- Increase in receptivity/adoption of energy-efficient building practices by designers, builders, and developers to measure the effectiveness of the marketing and education activities

Data Collection Approaches

The data required for evaluating the program will depend on the methodology chosen. They will likely include the following sources and information:

- Billing and/or metered use data
- Engineering estimates of measure savings
- Local weather data
- Program tracking system for measures installed, rebates paid, and building characteristics
- Upstream and building owner surveys regarding program awareness, satisfaction with the program and with the project results, understanding and perceived savings from measures, tenant characteristics, and program influence on design and construction decisions
- Program implementer/PECO staff surveys

Impact Evaluation Methodology

The impact evaluation will likely use a variety of techniques to assess energy savings due to the program in new facilities/buildings. The analysis techniques will likely include performing engineering analyses and perhaps metering as well, to determine whether the participant facilities operate as designed and achieve the expected savings. Site visits will be conducted as part of the engineering and metering data collection; additional site visits may be added at a later date if any installation problems are identified. Site visits will be used to determine if measures were installed as expected and to gather data for the engineering analysis of the homes as built. For this program perhaps above all others, the understanding and availability of baseline values for facility consumption will be critical to an assessment of energy savings.

PECO will credit toward the program only savings from rebated measures. This means that any additional purchases that may be induced by the program but not rebated—that is, spillover or free-driver effects, are not claimed by PECO under the program. Assessment of free-rider and

free-driver effects, if deemed appropriate, may be conducted using survey data in conjunction with established M&V methodologies and procedures.

Process Evaluation Methodology

Program participants, local inspectors, and program implementation staff will be interviewed for the process evaluation. These interviews will focus on the construction and inspection processes of facilities built to new standards. In addition to obtaining information on facility characteristics, the participant (builder and/or owner) survey will ask questions about the effectiveness of program promotional activities, participant and occupant satisfaction with the facility, and whether the occupants have encountered any problems with their new equipment.

During the first year, the process evaluation will focus on program implementation, administration, and delivery. Interviews will be used to determine if the program is encouraging new construction practices and if the upstream market stakeholders and facility owners are finding the education useful. If there are difficulties in obtaining participation during the first year, the evaluation may be expanded to include focus group interviews with a larger sample of designers, builders, developers, and facility owners. During the second year, the process evaluation will assess how well program changes recommended during the first-year process evaluation are being implemented.

L. Administrative Requirements

PECO will administer the Commercial & Industrial New Construction program through a CSP implementation contractor. PECO's role will be to ensure that:

- the CSP performs all the activities associated with delivery of all components of the program
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize builder and customer satisfaction with the program

The program is expected to operate with the following PECO/Contract staffing mix:

Staff	Allocation
Program manager: Responsible for final design and launch of program, and administering and overseeing CSP.	0.5 FTE in PY 2011 and PY 2012
Analyst/contract administrator: Responsible for administering and overseeing CSP and providing other back-office support to the program manager.	0.25 FTE in PY 2011 and PY 2012
Engineer: Responsible for assisting and reviewing CSP and participant estimates of project cost and savings	0.5 FTE in PY 2011 and PY 2012

M. Estimated Participation

Participation estimates were developed based on projected new construction in PECO's service territory, an assessment of the attainable market potential in the area, and the experience of other organizations that have offered this type of program.

The current forecast for new commercial and industrial construction is extremely low in the next two years. As a result, the program will not launch until PY 2011 and, even then, low participation is expected.

Commercial & Industrial New Construction Program—Estimated Participation (number of facilities/year)

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Custom projects	0	0	35	65	100

N. Estimated Program Budget

Program development begins in PY 2011 and program launch is expected a few months into that program year. The following cost estimates reflect this timing.

Commercial & Industrial New Construction Program—Proposed Budget

Budget	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$0	$0	$190,962	$196,691	$387,653
Implementation Contractor	$0	$0	$371,315	$682,954	$1,054,269
Umbrella Costs	$15,609	$18,231	$18,778	$19,341	$71,959
Program-Specific Education	$0	$0	$159,135	$163,909	$323,044
Promotion	$0	$0	$106,090	$109,273	$215,363
M&V	$0	$0	$149,608	$241,515	$391,123
Incentives	$0	$0	$649,801	$1,242,977	$1,892,778
Total	**$15,609**	**$18,231**	**$1,645,689**	**$2,656,660**	**$4,336,189**

The program costs were estimated using the following information and estimates:

- The values in the budget table include an escalation rate of 3% per year after PY 2009. The escalation applies to PECO admin labor, implementation, umbrella, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above
- CSP Implementation—Includes network development and recruitment, design assistance, rebate processing, program tracking and improvement, and reporting, as described above.
- Umbrella Costs—Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.
- Program-Specific Education—PECO education costs are assumed at $150,000/year in PY 2011 and PY 2012.
- Promotion—Estimated costs are $100,000 in each of the program years, PY 2011 and PY 2012.
- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to equal 10% of total program budget (including incentives, excluding M&V

costs). New construction projects require inspection and review to ensure that savings estimates are reasonable and attained.

- Incentives—The incentives budget is based on per-unit incentive allowances and the estimated number of installations. Overall, the incentives represent 44% of the total program budget over the four program years.

O. Projected Energy Savings and Demand Reduction

The savings estimates were developed using information and the savings calculator in the ENERGY STAR website, other secondary data such as Commonwealth Edison Company's 2008-2010 Energy Efficiency and Demand Response Plan, and Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region. These values were applied to the estimated number of measures rebated under the program each year. The savings noted in each year reflect the savings from measures installed by customers through the program in that year plus the impact of measures still in operation from previous years.

C&I New Construction Program—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
MWh Savings	0	0	8,750	25,000
Peak MW Reduction	0.000	0.000	1.050	3.000

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2011-PY 2012 timeframe (through May 2013): $0.173/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.023/kWh
- Levelized Cost of Reduced Peak Demand: $188/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
C&I New Construction	$18	$8	$10	2.35

Q. Plan Adjustments 07/15/11

Establishment of an Application Waitlist

PECO proposes to establish a waitlist for incentive applications under this Program as soon as the Company receives Commission approval. The waitlist will allow the Company to meet Portfolio savings targets and also manage customer expectations regarding incentive availability under this Program. If the Commission approves the waitlist proposal, the Company will place applications in the waitlist based on the date they were received. Applicants will be notified that they are on the waitlist and will be contacted if they are eligible for an incentive. In the event that: (1) a pre-waitlist application drops out of a Program queue; or (2) the energy savings for the Program is projected to fall short of targets, the Company will process and pay incentives for applications in the Program waitlist on a first-come, first-served basis. The Company will continue to process and pay incentives on the applications that it received before the waitlist was established.

3.2.9EE Program 9—Government/Public/Non-Profit Facility Energy Savings

A. Program Title and Program Years

Program Name: Government/Public/Non-Profit Facility Energy Savings

Program Years: PY 2009 – PY 2012

B. Objectives

The purpose of the Government/Public/Non-Profit Facility Energy Savings program is to achieve savings in this sector equal to a minimum of 10% of PECO's total energy reduction goals.

The program has several objectives:

- Substantially improve the energy efficiency of government and public facilities.
- Facilitate the monitoring of energy efficiency projects toward the goal.
- Capture opportunities to reduce consumption by street lighting and traffic signal lights.
- Enable eligible customers to identify and implement cost effective energy saving opportunities.

This program provides all of the same services offered to commercial customers in other programs. Additionally, it provides assistance with obtaining facility audits. The key difference is that for the government/public/non-profit facility segment, all the energy efficiency related services are offered within a single program. This includes retrofits and new construction projects.. This grouping will make it easier for PECO to demonstrate accomplishments toward meeting, at a minimum, the 10% energy use reduction goal for this customer segment as required by Act 129.

C. Target Market

The target market for the Government/Public/Non-Profit Facility Energy Savings program is all public facilities, including federal, state, and municipal buildings, and public schools, hospitals and other non-profits. There are approximately 11,000 such facilities and tens of thousands of street lights and traffic signals.

D. Program Description

The Government/Public/Non-Profit Facility Energy Savings program provides financial and technical assistance to achieve significant electricity savings in public sector facilities. This program offers the same financial incentives to reduce energy use in public sector facilities as in other nonresidential facilities, along with providing assistance in identifying key improvement opportunities and addressing the special planning and purchasing protocols of public and non-profit agencies.

The program has the following components:

- Street light replacements—includes incentives for retrofitting incandescent and mercury vapor lamps with high-pressure sodium, metal halide, or emerging energy-efficient technologies (e.g. LED or induction street lights).

- Traffic signal replacements—includes incentives for retrofitting incandescent traffic signals with LED. This includes red, green, yellow, and pedestrian signals. LED lamps save energy and also save on maintenance due to their longer lives.
- Prescriptive and custom measure rebates—includes rebates for installation of a full array of energy efficiency improvements. Prescriptive measures include lighting, HVAC, motors, and controls. Examples of custom measures include chillers, water/wastewater efficiency upgrades, , and very large or complex versions of any of the prescriptive measures listed above.
- Audits with cost reimbursement for installation of recommended measures—designed to assist facility operators to identify energy-saving opportunities and prioritize projects to fit with planning cycles and leverage other funding sources in addition to PECO incentives.

E. Implementation Strategy

The program is designed to make it as easy as possible for government/public/non-profit facility customers and their contractors to obtain rebates for prescriptive measures, while also providing flexibility in accommodating the diversity of energy-savings opportunities and varying complexities of projects likely in this sector with custom measure incentives. The program provides something close to a one-stop shop for obtaining energy efficiency assistance through audits offered to help customers and their influential contractors in this target market identify and prioritize their energy-savings opportunities. PECO will administer the Government/Public/Non-Profit Facility Energy Savings program through a CSP implementation contractor.

Channels for Program Delivery

Effective implementation of the program depends on all aspects of the delivery working effectively. This includes making qualifying products available, distributing information about the products and the program, promoting the program adequately, and educating those influential in making product selection and purchasing decisions. This program will engage the following channels for delivery of these key aspects the program:

- Product Supply
  - Equipment suppliers—public agencies often have contracts or standing agreements with equipment vendors. These vendors are influential in equipment selection. They should be educated about energy-efficient alternatives and incentives available to make these alternatives cost-competitive. Suppliers provide the most direct link between the program and the consumers in this sector's existing facilities. As appropriate, the incentives for equipment purchased under the program can be split or directed to these vendors.
  - Architects and engineers—for major renovations, expansions, and new building construction, the A&Es are most influential in the decisions that affect a facility's energy use. Properly educated and convinced to use building efficiency best practices, they can specify qualifying program measures to public sector construction projects.
  - Other trade allies—installation and maintenance contractors can provide services associated with some of the qualifying measures, such as HVAC diagnostic tune-ups, identifying and sealing air and duct leaks, and refrigeration system maintenance.

Again, as appropriate, incentives offered on qualifying measures can be directed to or split with these providers to encourage them to promote program participation.

- Program and Product Information Distribution
  - Trade allies & affinity groups—as both deliverers of program products and potential participants in the program, all vendors of the qualifying equipment and service measures should be engaged to receive and also provide to their public sector clients information about the program measure benefits, how the program works, and assistance with the incentive process.
  - Utility staff—while PECO will engage a CSP to implement the program, the staff (including Account Managers and County Affairs Managers) has ongoing contact with many of these customers. The staff will provide information about the program benefits, measures, and process.
  - Conservation service providers—the implementation CSP will develop and distribute information about the qualifying products and participation assistance by establishing and leveraging existing relationships with the product and service suppliers.
- Program Promotion
  - Energy Service Performance Contracting (ESPC)—the ESPC program in Pennsylvania provides energy services to state facilities, providing an avenue to promote the program through these existing relationships.
  - Trade allies & affinity groups —all vendors of the qualifying equipment and service measures should be engaged to make their public sector clients aware of the program and encourage their participation by recommending high-efficiency equipment models and diagnostic services.
  - Public agency news publications—leverage existing communication channels used by public agencies to make facility managers aware of the program opportunities.
  - Direct mail—this is a limited and known target market that PECO can reach by mail with specially crafted letters, program applications, and other promotional materials.
  - CSPs—a key responsibility of the implementation CSP is outreach and effective promotion of the program to the target market.
- Education

  Opportunities to educate both the trade allies, who themselves are both potential participants and delivery channels, and public agency facility managers include:
  - Bill inserts and/or direct mail
  - Agency and industry training sessions (piggybacking program education on these meetings)
  - CSPs (includes industry and technology experts) who meet individually with facility decision makers and provide auditor training
  - Facility audit reports

Overview of Roles and Activities

The implementation CSP will have full responsibility for delivery of all aspects of the program. Responsibilities fall into several activity areas:

- Development of relationships with government/public/non-profit facility equipment and maintenance suppliers to make incentive-eligible equipment and services available and to promote their participation in the program
- Auditor/contractor training: this can be provided directly or through arrangements with nationally recognized providers who conduct training and certification sessions in locations on request; CSP will maintain directory of qualified auditors
- Program marketing: including development and distribution of program materials and assistance with direct mail or other advertising in collaboration with other PECO contractors
- Participant recruitment and assistance: including scheduling audits with qualified auditors, assisting customers and contractors with incentive application submittal, assisting customers and contractors with the development of estimates and documentation for approval of custom measure projects, and providing information on applicable EECBG/ARRA funds and/or tax credits
- Rebate processing: fulfillment house to receive, review and verify applications; and either pay or submit rebates to PECO for payment
- Program performance tracking and improvement: including tracking of all program activities, rebate submittals and payments, and opportunities to improve the program
- Reporting: including reporting of program activities to meet regulatory and internal requirements, in particular progress toward program goals

Education Overview

The program will provide and leverage education provided by other groups to ensure that program channels and participants have the understanding and tools to make the program successful. These include:

- Seminars for state and local government leaders—these can be independently arranged but can also be coordinated with seminars already in preparation in many localities as officials try to educate their staff about allocations of American Recovery and Reinvestment Act of 2009 (ARRA) funds. The implementation CSP will work to align the timing of ARRA funding requirements and Act 129 plan approval to best leverage both resources.
- PECO will offer a series of municipal forums designed to educate and inform municipalities about programs and incentives.
- Training sessions for trade allies and other product supply and program and product distribution providers—these are to provide both technical information regarding the applicability and benefits of the measures promoted under the program, and information about how the program works, customers' role in and incentives for participating, and issues related to government agency procurement practices.

- The audit component of the program will also provide one-on-one customer education about energy efficiency benefits in general and the recommended measure benefits more specifically, Pennsylvania's commitment to reducing energy use in public facilities, and the availability of resources designed to enable energy efficiency improvement projects.
- Training and qualification of auditors is important. Many utility-sponsored programs rely upon outside training organizations to ensure that auditors are well-versed in building science principles and whole-building concepts for energy performance. The Building Performance Institute (BPI) and Residential Energy Services Network (RESNET®) have set widely-used standards for auditor training and already offer training sessions within Pennsylvania.

Applicable Collaborative Resources

There are a number of resources that this program may be able to leverage to help in its successful operation. These include:

- Energy Service Performance Contracting (ESPC)—Pennsylvania already has an ESPC program for state facilities. This infrastructure can be used to extend the reach of the PECO program to an even greater number of government facilities.[13]
- Energy Efficiency & Conservation Block Grants (EECBG)—being made available to the state, cities, and counties through ARRA to fund or extend funding of energy improvements throughout the state. Of particular applicability to this program and government-owned facilities and infrastructure, these funds may be used for the following activities:[14]
    - Facility energy audits
    - Financial incentive programs and mechanisms for energy efficiency improvements such as energy savings performance contracting, on-bill financing, and revolving loan funds
    - Grants to governmental agencies for the purpose of performing energy efficiency retrofits
    - Energy efficiency and conservation programs for buildings and facilities
    - Building codes and inspections to promote building energy efficiency
    - Energy distribution technologies that significantly increase energy efficiency, including distributed resources and combined heat and power
    - Working with the Delaware Valley Regional Planning Commission (DVRPC) to train and educate municipalities about programs and how to work through the process to coordinate all sources of project funding.
- The Reinvestment Fund/Sustainable Development Fund (SDF) Financing—provides financing to companies and organizations for installation of solar PV and hot water

[13] *Potential for Energy Efficiency, Demand Response, and Onsite Solar Energy in Pennsylvania*, prepared by ACEEE, April 2009.

[14] http://www.eecbg.energy.gov/#lc1, April 23, 2009

heating systems and also has a lease-financing product for large nonprofit institutions (schools and hospitals) for energy conservation improvements.

- The Building Performance Institute (BPI) and Residential Energy Services Network (RESNET) training capabilities offer opportunities for PECO to ensure that auditors are properly trained and qualified to provide services under this program. Many utilities collaborate with these groups to bring training to their area so that a trained workforce is available to perform the work promoted under their programs.

F. Program Issues, Risks, and Risk Management Strategies

There are several issues associated with providing an energy efficiency program to government, public, and non-profit customers. Key ones are identified below, along with how the Government/Public/Non-Profit Facility Energy Savings program can address them.

- Governmental agencies typically have more complex procurement practices than private businesses. For implementation of the program to be successful, the outreach, project scheduling, incentive fulfillment process, and trade ally involvement strategies used by the implementation contractor all need to reflect understanding and accommodation of these practices.
- Access to EECBG funds by the target market customers, while providing additional financial assistance to enable projects, may also impose additional steps in the project development cycle, possibly further increasing the lead time for projects. Close coordination with issuers of ARRA funds and assistance to participating customers will be important to ensuring successful project completion and participant satisfaction.
- Government and public agencies will need help identifying and prioritizing energy-saving opportunities. The audit component will directly address this need. But a commercial building audit often costs about $20,000. While the program will provide at least partial reimbursement of this cost to customers who install recommended measures, the up-front cost will be borne by the customer unless "bought down" by the contractor who will perform the work.
- The program will require the availability of a sufficient number of qualified auditors. This means that training needs to be procured prior to the launch of other program components. This should not be difficult but needs immediate attention, well before program launch. Furthermore, the issue of how the training will be paid for needs to be worked out. In many areas with similar programs, contractors are fully responsible for the cost of their training, though the training provider or program sponsor may cover some or all of the cost if certain conditions are met; e.g., purchase of blower door or other diagnostic equipment, completion of a certain number of audits.
- Identifying whether a customer has non-profit status, and therefore whether it is eligible to participate in this program instead of taking advantage of Commercial & Industrial Equipment Incentives, may be confusing. This is particularly true of hospitals, which sometimes change status from public to private or vice-versa. The program addresses this potential problem by offering the same incentives on applicable measures in both programs and clearly defining eligibility criteria for audit rebates. This will avoid possible dissatisfaction among customers whose status changes during their participation in the program.

G. Ramp Up Strategy

PECO will select an implementation CSP with experience in working with government, public, and non-profit customers; and with implementing energy efficiency programs. Since this is a relatively diverse market, with special contracting requirements, a relatively long time is allocated to developing the program prior to rollout. All the elements to encourage and support immediate participation, including availability of qualified facility auditors, will be in place prior to the program launch.

H. Marketing Strategy

PECO will select an implementation CSP with experience in promoting commercial and industrial energy efficiency programs and in performing outreach to government, public, and non-profit customers in particular. The CSP will have experience in working with equipment suppliers and contractors who work with these customers and with facility auditors, ensuring that they are aware of and understand the program and measures that qualify for incentives. Notably, this experience needs to extend to all types of customers, from small non-profit businesses to hospitals, commercial buildings and large industrial process facilities to governmental agencies.

I. Eligible Measures and Incentives

Measures

Both prescriptive and custom measures are eligible for incentives under this program. Prescriptive measures offered and associated rebates will be defined and listed for customers. These include all the street lighting and traffic signal measures. Custom projects, consisting of energy-saving measures not listed or involving multiple systems are also eligible. The proposed measures are included in the table below.

Incentives

On average, incentive levels provided to customers/contractors for installation of rebate-eligible measures are about 33% of the incremental measure costs. That is, the additional cost of a high-efficiency measure beyond a standard-efficiency alternative.

Additionally, it is assumed that each participating facility (not street lights or traffic signals) will have an audit performed, to identify energy-savings opportunities, at a cost of $20,000 per facility. Customers/contractors who install measures recommended as part of the audit can receive reimbursement from PECO for part of their audit costs, up to $10,000. The amount will be based on the customer/contractor cost of the improvements. For planning purposes, we assumed this reimbursement to be $5,000 or 25% of the average audit cost.

Government/Public/Non-Profit Facility Energy Savings Proposed Measures —Per-Unit Savings, Costs, and Incentives

Measure	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
High-efficiency cooling - packaged units - 10.1 EER – 30 tons	105	0.068	15	$49	$16	per ton cooling
High-efficiency cooling - packaged units - 11 EER –	206	0.134	15	$103	$34	per ton cooling

Measure	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
30 tons						
High-efficiency cooling - packaged units - 11.5 EER –.30 tons	255	0.165	15	$134	$45	per ton cooling
High-efficiency air-source HP - 10.1 EER - 30 tons	590	0.118	15	$146	$49	per ton cooling
High-efficiency air-source HP - 11 EER - 30 tons	916	0.183	15	$247	$82	per ton cooling
Ground-source heat pump	1,503	0.300	30	$1,238	$40	per ton cooling
HVAC tune-up	7,800	4.866	5	$7,950	$2,650	per HVAC unit
HVAC optimal start/stop	3,427	0.478	15	$1,500	$500	per control point
CFL bulbs	153	0.036	3	$5.00	$2.50	per lamp
CFL fixtures	276	0.066	6	$100	$50	per fixture
High-efficiency lighting - T-8	112	0.027	10	$85	$14	per fixture
High-efficiency lighting - T-5	465	0.111	10	$120	$40	per fixture
High-efficiency lighting – HID	270	0.064	6	$60	$20	per fixture
LED exit signs	307	0.035	15	$104	$34	per sign
Occupancy sensors	35	0.008	8	$60	$20	per sensor
White roofs	0.11	0.00006	20	$0.21	$0.07	per roof ft^2
Premium-efficiency motors	35	0.004	20	$5.70	$1.90	per hp
Energy management control system	3.52	0.000	15	$0.62	$0.21	per bldg. ft^2
LED traffic lights - green 8"	226	0.060	10	$145	$48	per lamp
LED traffic lights - green 12"	520	0.138	10	$155	$52	per lamp
LED traffic lights - yellow 8"	10	0.059	10	$145	$48	per lamp
LED traffic lights - yellow 12"	24	0.070	10	$155	$52	per lamp
LED traffic lights - red 8"	299	0.062	10	$145	$48	per lamp
LED traffic lights - red 12"	694	0.144	10	$155	$52	per lamp
LED traffic lights- Walk/Don't Walk - 9"	491	0.056	10	$145	$48	per lamp
LED traffic lights- Walk/Don't Walk - 12"	946	0.108	10	$155	$52	per lamp
Metal halide streetlights	657	0.000	6	$60	$20	per lamp
High pressure sodium streetlights	657	0.000	15	$30	$10	per lamp

Measure	Annual kWh Savings per Unit	kW Savings per Unit	Useful Life of Measure (years)	Increm. Cost per Unit	Incentive per Unit	Unit Definition
LED streetlights	548	0.000	20	$400	$133	per lamp
Induction fluorescent streetlights	569	0.000	20	$200	$67	per lamp
Custom measures	240,000 kWh per project	40 kW per project	15	$0.33	$0.07	per kWh saved or an equivalent based on the appropriate units
Energy Audit	0	0.000	0	$20,000	$5,000	per audit

Note: PECO will offer a 10% incentive increase for LED traffic light replacements of 20,000 or more when installations are completed before 5/31/12.

J. Program Schedule

The Government/Public/Non-Profit Facility Energy Savings program will be submitted for approval by the Commission in PY 2009 Q1, prepared for operation during PY 2009 Q2/Q3, and rolled out to the public during PY 2009 Q4. The program will operate from the latter part of program year PY 2009 through PY 2012. The following table provides a schedule of key milestones:

Proposed Government/Public/Non-Profit Facility Energy Savings Implementation Schedule

Key Milestone	Timing
Assign PECO program manager and staff	July 2009
Begin final program design	September 2009
Select and contract with program implementation CSP	November 2009
Complete program design	February 2010
Pre-rollout program development: Conduct auditor/contractor training and recruitment Develop protocols for working with public agency customers	September 2009 – February 2010
Program rollout	March 2010 (PY 2009 Q4)
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15th

Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

The evaluation methodology and data collection proposed for the program are guidelines that reflect current measurement and verification (M&V) practices. The ultimate M&V requirements for this program will conform with the state protocols, once they are published.

Metrics for Gauging Program Success

- Energy savings from completed projects (toward goal of achieving 10% of the plan savings through projects in this sector)
- Number of participating facilities or projects
- Number of facility audits requested/completed
- The percent of recommended measures installed per completed audit
- Understanding of and satisfaction with the program by target market customer and upstream providers/participants

Data Collection Approaches

Data for evaluating the program will come from the following sources:

- Impact Evaluation
  - Tracking system data for all projects
  - On-site inspection and sub-metering of a sample of custom projects to verify operation as reported
  - PECO customer energy consumption data for engineering or statistical analyses of impacts
- Process Evaluation

  Evaluation of program design and implementation performance will be conducted by gathering and analyzing data through a variety of surveys and interviews, including:
  - Surveys of target market customers (participants and nonparticipants)
  - Surveys of public facility equipment suppliers and service providers who participate and/or promote the program
  - Interviews with the implementation CSP and PECO program staff
  - Review of program documents and tracking system data

Impact Evaluation Methodology

The program will record energy savings and peak load reductions from the rebate applications processed. For prescriptive measures, recorded savings will use the per-unit deemed savings values. Because prescriptive measures are established technologies and data are available demonstrating the reliability of savings, it will not be necessary to conduct customer-level billing

analyses or metering studies on these projects. However, some projects will be inspected for independent verification of installation and operation as reported.

For custom measure projects, the gross savings need to be estimated based on engineering models and estimates. The M&V assessment will necessarily require pre/post building simulation modeling, billing analyses and/or sub-metering of select projects to verify savings.

PECO will credit toward the program only savings from rebated measures. This means that any additional purchases that may be induced by the program but not rebated—that is, spillover or free-driver effects— are not claimed by PECO under the program. Assessment of free-rider and free-driver effects, if deemed appropriate, may be conducted using customer billing and survey data in conjunction with established M&V methodologies and procedures.

Process Evaluation Methodology

Evaluation of the program implementation is important to ensure that the program is operating as intended and to provide information that can enable improvements in both the program design and implementation. Process evaluations will be undertaken and conducted throughout the program by the implementation and the M&V contractor(s) selected by PECO.

Process evaluations will assess customer understanding, attitudes about, and satisfaction with both the program and with PECO's broader educational activities. The evaluations will make use of survey data collected by the implementation and M&V contractors. These surveys will include both customers known to have participated in the program and eligible nonparticipants. The diversity of customers in this target market, including large and small government agencies, traffic signal and street light operators, local schools and public colleges, public health facilities, and other non-profit agencies means that survey content and fielding will need to accommodate a wide variety of participation experiences.

Interviews with program service providers, including auditors, will be conducted to assess satisfaction with the program and to identify problems and possible program services/implementation improvements.

The M&V contractor will also help PECO assess the performance of the program design and delivery of the products and services featured in the program, including effectiveness of the marketing and educational materials, effectiveness of advertising and promotional campaigns and messages, effectiveness of the trade ally involvement, and whether implementation milestones are met adequately and on schedule. These evaluations will use data maintained by the implementation CSP, information provided by PECO, and customer survey data.

L. Administrative Requirements

PECO will administer the Government/Public/Non-Profit Facility Energy Savings program through a CSP implementation contractor. PECO's role will be to ensure that

- the CSP performs all activities associated with delivery of all components of the program, and
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program.

The program is expected to operate with the following PECO/Contract staffing mix:

Government/Public/Non-Profit Facility Energy Savings—Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsible for final design and launch of program.	0.75 FTE in PY 2009 (0.75 yr. @ 1.0 FTE), 1.0 FTE in PY 2010 through PY 2012
Analyst/contract administrator: Responsible for administering and overseeing CSP and providing other back-office support to the program manager.	0.25 FTE in PY 2009 (0.5 yr. @ .5 FTE), 0.5 FTE in PY 2010 through PY 2012
Engineer: Provide assistance to customers, contractors, and implementation CSP to ensure proper estimation of project savings and review of audit results and recommendations.	0.25 FTE in PY 2009 (0.5 yr. @ 0.5 FTE), 0.5 FTE in PY 2010 through PY 2012
Business analyst: Responsible for coordinating with other collaborative resource agencies to assist customers in this market.	0.25 FTE in PY 2009 (0.5 yr. @ 0.5 FTE), 0.5 FTE in PY 2010 through PY 2012

M. Estimated Participation

Participation and measure adoption estimates were developed based on the size a makeup of government and public facilities in PECO's service territory on assessment of the attainable market potential in the area, and the experience of other organizations that have offered this type of program.

Government/Public/Non-Profit Facility Energy Savings Program—Estimated Participation by May 2013

	Adoption	Installations
Street light replacements	Replace 5% of current incandescent and mercury vapor stock	2,590 lamps
Traffic signal replacements	Replace 90% of incandescent stock in city; replace 72% of incandescent stock in suburbs	76,234 lamps
Prescriptive measures		99,799 installations
Custom measures		275 projects
Energy Audits	All custom projects plus about half participants with prescriptive measures	612 audits

N. Estimated Program Budget

Approval of the plan is anticipated in PY 2009 Q2, with program launch in the latter part of that program year. The following cost estimates reflect this timing.

Government/Public/Non-Profit Facility Energy Savings—Proposed Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
PECO Admin Labor	$217,500	$370,800	$381,924	$393,382	$1,363,606
Implementation Contractor	$496,020	$1,770,130	$3,383,354	$5,098,959	$10,748,462
Umbrella Costs	$202,914	$237,003	$244,113	$251,436	$935,467
Program-Specific Education	$37,500	$77,250	$79,568	$81,955	$276,272
Promotion	$100,000	$51,500	$53,045	$54,636	$259,181
M&V	$72,806	$319,195	$375,574	$439,248	$1,206,823
Incentives	$1,372,930	$8,133,146	$8,377,141	$8,761,221	$26,644,438
Total	**$2,499,671**	**$10,959,024**	**$12,894,718**	**$15,080,837**	**$43,564,598**

The program costs were estimated using the following information and estimates:

- The values in the budget table include an escalation rate of 3% per year after PY 2009.The escalation applies to PECO admin labor, implementation, umbrella costs, education, promotion and M&V costs.
- PECO Administration (Staffing)—see above
- CSP Implementation—Includes cost of providing the following:
  - Coordination of and with relevant collaborative resources
  - Participant recruitment and assistance—including qualified auditors, contractors, and customers; scheduling audit appointments
  - Rebate processing and fulfillment
  - Program monitoring and tracking—including recording and reporting of activities, providing required data for PECO's tracking system and regulatory reporting, complaint resolution, and process tracking and improvements
- Umbrella Costs—Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.
- Program-Specific Education—Estimated costs of education are $75,000 in PY 2009, to ensure adequate training of auditors and program understanding by trade allies and affinity groups.
- Promotion—Including multiple direct mail and bill inserts to the target market, with an especially large effort in PY 2009 to make these customers and their contractors aware of the program and activities to help them access ARRA funds.
- Measurement and Verification (M&V)—Including impact and process evaluation activities conducted by a contractor other than the implementation CSP; costs are anticipated to equal 3% of total program budget (including incentives, excluding M&V costs).

- Incentives—The incentives budget is based on per-unit incentive allowances and estimated number of installations. Overall, the incentives represent 61% of the total program budget over all four program years.

O. Projected Energy Savings and Demand Reduction

The estimated energy savings and demand reduction are based on annual per-unit kWh and kW values and effective useful life values provided in the TRM, where available. For the remainder, savings estimates were developed using information and the savings calculator in the ENERGY STAR website, other secondary data such as Commonwealth Edison Company's 2008-2010 Energy Efficiency and Demand Response Plan, and Global Energy Partner's Database of Energy Efficiency Measures for the Northeast region.

Prescriptive measure per-unit values and customer per-project values were applied to the estimated number of installations rebated under the program each year. The savings noted in each year reflect the savings from measures installed by customers in that year plus the impact of measures still in operation from previous years.

Since the planning years run June 1 through May 31 each year, the program will be in operation during PY 2009 for only 7 months and PY 2012 runs through May 2013. The participation estimates reflect this timing.

Government/Public/Non-Profit Facility—Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	9,920	68,743	127,565	186,651
Peak Demand Reduction (MW)	2.335	15.693	29.050	42.556

P. Cost-Effectiveness

Program Savings Acquisition Cost Calculation

This is the total program budget divided by estimated energy savings at key points during the program during this planning cycle.

- Savings Cost over the PY 2009-PY 2010 timeframe (through May 2011): $0.196/kWh
- Savings Cost over the PY 2009-PY 2012 timeframe (through May 2013): $0.222/kWh

Levelized Savings Cost Calculation

This is the lifetime cost of the program divided by the lifetime savings of the installed measures.

- Levelized Savings Cost of Energy Saved: $0.038/kWh
- Levelized Cost of Reduced Peak Demand: $176/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Government/Public /Non-Profit Facility Energy Savings	$155	$93	$62	1.67

Q. Plan Adjustments 07/15/11

Establishment of an Application Waitlist

PECO proposes to establish a waitlist for incentive applications under this Program as soon as the Company receives Commission approval. The waitlist will allow the Company to meet Portfolio savings targets and also manage customer expectations regarding incentive availability under this Program. If the Commission approves the waitlist proposal, the Company will place applications in the waitlist based on the date they were received. Applicants will be notified that they are on the waitlist and will be contacted if they are eligible for an incentive. In the event that: (1) a pre-waitlist application drops out of a Program queue; or (2) the energy savings for the Program is projected to fall short of targets, the Company will process and pay incentives for applications in the Program waitlist on a first-come, first-served basis. The Company will continue to process and pay incentives on the applications that it received before the waitlist was established.

3.2.10 EE Program 10—Renewable Resources

A. This program has been removed from the portfolio in accordance with the Commission's order.

3.3 Demand Reduction Programs

A total of 8 demand reduction programs were developed and assessed for this Plan.

1. Residential Direct Load Control
2. Residential Super Peak TOU
3. Commercial & Industrial Direct Load Control
4. Commercial & Industrial Super Peak TOU
5. DR Aggregator Contracts
6. Distributed Energy Resources
7. Permanent Load Reduction
8. Conservation Voltage Reduction

The following program descriptions provide all of the details as specified in the PUC Plan template. The detailed backup assumptions for the programs can be found in Appendix E-1.

3.3.1 DR Program 1—Residential Direct Load Control (RDLC)

A. Program Title and Program Years

Program Name: Residential Direct Load Control

Program Years: Development: PY 2009; Operation: PY 2010-PY 2012

B. Objectives

The objective of this program is to realize demand reductions from eligible residential customers in PECO's service territory during the top 100 peak hours, in support of energy savings and demand reduction targets as set forth in Act 129. The targeted load reduction from this program is set at net system peak demand savings of close to 61 MW at the end of PY2012. This program constitutes one of the two residential DR programs being considered in the entire portfolio of DR programs targeted toward residential customers.

C. Target Market

This program will be targeted at eligible residential customers with Central Air Conditioning (CAC) and electric hot water heating and who own their own home. Public housing units that fit this same profile will also be targeted and eligible.

D. Program Description

In this program, PECO remotely cycles or shuts down a customer's CAC unit and/or water heater on short notice, during times of peak demand. In return, participants receive financial incentives for allowing PECO to control their equipment. DLC events are called during time periods which coincide with the highest 100 hours of peak demand.

A one-way remote switch is connected to the condensing unit of an air conditioner, and to the immersion elements in a water heater. When activated by a control signal, the switch will not allow the equipment to operate for some predetermined portion of each hour. For the CAC program, the compressor is shut down during an event while the fan continues to operate. This allows cool air to be circulated throughout the home while the compressor is disabled. The operation of the switch is controlled through a digital paging network. CAC and water heating units are controlled for the 4 months during summer. The load cycling strategy encompasses a trade-off between customer comfort and program cost-effectiveness. Air conditioner cycling strategies at other utilities range from 33% to 67% of the time each hour; the national average is a 40% cycling strategy. The water heater direct load control component will be simpler and less likely to cause concern to the participant than will the air conditioner cycling component. Participating customers' water heaters will be turned off during a predetermined time period, and are subject to cycling at any time during the summer season.

E. Implementation Strategy

PECO will administer the Residential Direct Load Control program with assistance from outside contractors for program implementation. The key elements in the implementation strategy are:

- Program staff assignment- PECO will select and assign a program manager for developing this program, following approval by the Commission. The manager is responsible for the final program design.
- Contract with outside implementation contractor- PECO will select and contract program implementation with an outside CSP.
- IT system enablement- Outside services will be procured for enabling IT systems in order to ensure appropriate control and communication between PECO and program participants during load control events.
- Customer Recruitment: Eligible residential customers with CAC and water heating, who own their homes (and public housing units with this same profile), will be recruited to participate in the program.
- Switch installation and activation: Participants who sign up for the program will have a direct load control switch installed on the air conditioning compressor and to the immersion element in a water heater. After the switch is installed, its configuration is included in the control software so that it can be activated during a DR event.
- Program promotion- Different methods such as direct mail, bill inserts, trade shows and website communications could be used for customer communication and outreach.
- Customer education- Efforts to educate participants will need to be launched soon after the program design through training workshops, lectures, and seminars.
- Verification of load reduction: After installation, quality control inspections of installed direct load control switches will need to be performed. Also, load research studies to measure and verify the load reduction from switches will need to be conducted.

F. Program Issues, Risks, and Risk Management Strategies

The demand reductions from this program need to contribute toward the100 hours of peak annually. Therefore, the underlying assumption is that load reductions are realized from each of the participants during these top 100 hours. In order to manage the uncertainties associated with that estimate, participant recruitment strategy may need to be altered. For example, if it is likely that on an average load reduction from participants can be realized only for 50 hours instead of 100, the number of participants recruited will need to be doubled in order to attain the same level of demand reductions.

Also, for this program specifically, there could be an issue with the communication network not conveying the paging signal to the customer site in order to control the equipment. The implementation contractor will determine if a customer is within paging range. If the signal is not strong enough to cover the entire area, the area of eligible customers will be narrowed since the target market will depend on the range of the paging network.

G. Ramp Up Strategy

Program participant recruitment activity starts in PY 2009, even though program impacts are not realized in that year since PY 2009 ends May 31, 2010, which is prior to the start of the 2010 DR season. Also, IT system enablement begins in 2009, prior to the actual program implementation.

H. Marketing Strategy

The key elements of this are an overall advertising and marketing strategy, establishing important trade ally contacts, and identifying initial target areas.

This program is available to electric customers in selected geographical areas where paging coverage is available, and to those with central air conditioners, or electric water heaters, though it will target customers and regions that will yield the most peak period relief.

A well-defined target market will facilitate narrowly targeted direct mail campaigns, and enable efficient resource allocation for designing promotional materials. Acquisition of participants will occur through a variety of promotional methods such as direct mailings, bill inserts, telemarketing, mass media, trade shows and through various website communications.

I. Eligible Measures and Incentives

The eligible measures for this program are:

- Central Air Conditioning (CAC) units
- Electric Water Heaters

The table below shows the incentives associated with these measures. For CAC control, participants are offered $30/month incentives for the four summer months during which their CAC units are likely to be controlled. For water heater control, participants are offered incentives at the rate of $12/month for the four summer months during which their units will be controlled.

Measures	Per Participant Annual Incentives
a. Central A/C with control switch	$120
b. Water heating with control switch	$48

J. Program Schedule

Proposed Residential Direct Load Control Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	October 2009
Begin final program design	October 2009
Select and contract with program implementation CSP(s)	November 2009
Complete program design	December 2009
Pre-rollout program development: Conduct contractor recruitment and training IT system enablement	 November 2009 January 2010
Program rollout: Launch marketing and outreach Undertake customer education Perform verifications and improvements	 April 2010 April 2010 June 2010 – May 2013
Prepare reports: Documentation of program activities and progress toward goals by CSP	 Monthly throughout program implementation period

Key Milestone	Timing
Reports to Commission	Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

Key issues in the M&V requirements are verification of the load reduction as set forth in the TRM, both in terms of the reduction per control point as well as the paging success rate which affects the average reduction across control points. PECO will work with the third party M&V contractor to design and execute appropriate analyses of a statistically valid set of sites to verify the per unit load reductions. The two types of evaluation that will need to be conducted are a) Impact evaluation; and b) Process evaluation

Impact Evaluation

This will have two major components: equipment performance verification and load impact estimates. Equipment performance will be verified through a variety of steps, including controlled installation procedures and post-installation site visits to a sample of homes. During the installation process, the installers will ensure the switches work and will indicate that this test has been performed on the installation invoice. They will also record the size, type, and working condition of the equipment being cycled. The technician will need to assess the unit and determine if the placement of the switch will be effective. PECO will not install switches on AC units which it determines to be too old or in disrepair. Site visits to a sample of homes will verify that the switches have been installed correctly and are working. Load impacts will be based on the TRM.

Process Evaluation

This will examine program delivery, administration, implementation and customer response to them. In-person interviews with utility staff, equipment installers and a sample of customers will be used to gather data for the evaluation. In a direct load control program, it is important to determine if the program encourages free riders, that is, is the program benefiting those who would not normally use the equipment during the cycling period or those who already monitor their equipment usage. For trade allies, the interviews should seek to assess whether the program is being implemented as planned.

L. Administrative Requirements

PECO is responsible for developing and executing the implementation plan. The only staff assignment for this program is a 'Program Manager'. It will be the manager's responsibility to work with vendors and contactors to ensure the goals of the program are accomplished.

The Residential Direct Load Control Program will be administered through one or more CSP implementation contractors. PECO's role will be to ensure that:

- the CSP performs all implementation activities related to the program
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program.

The program is expected to operate with the following PECO/Contract staffing mix:

Residential Direct Load Control Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager	0.75 FTE in PY 2009 1.0 FTE in PY 2010 through PY 2012

M. Estimated Participation

Participation and measure adoption estimates were developed based on existing and projected homes in PECO's service territory and assessment of the attainable market potential in the area, as well as the experience of other organizations that have offered this type of program.

Residential Direct Load Control—Estimated Participation

	PY 2009	PY 2010	PY 2011	PY 2012
a. Central A/C with control switch	12,500	25,000	25,000	25,000
b. Water heater with control switch	5,000	20,000	10,000	10,000
Total no. of participants/units installed	**17,500**	**45,000**	**35,000**	**35,000**

N. Estimated Program Budget

The table below gives the estimated budget for the RDLC Program.

Residential Direct Load Control—Estimated Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Customer-Specific Costs					
Incentives	$0	$5,862,039	$9,690,367	$13,764,754	$29,317,160
Equipment costs[15]	$461,277	$1,644,629	$2,672,705	$3,760,986	$8,539,597
Sub-Total	**$461,277**	**$7,506,668**	**$12,363,072**	**$17,525,740**	**$37,856,757**
Direct Labor Costs					
Program Manager	$112,500	$154,500	$159,135	$163,909	$590,044
Sub-Total	**$112,500**	**$154,500**	**$159,135**	**$163,909**	**$590,044**
Other Program Services Costs					

[15] Equipment cost is based on the assumption of $70 for the switch plus $100 for installation. The water heating switch costs are reduced by 25% based on the assumption that a portion of the program participants will simultaneously participate in the CAC and water heating options thus the installation of both switches will be done at the same time. Equipment costs are capitalized over a 15-year time period at a rate of 14.51%.

Implementation Contractor (CSP)[16]	$750,000	$1,545,000	$1,591,350	$1,639,091	$5,525,441
Umbrella Costs[17]	$218,523	$255,234	$262,891	$270,778	$1,007,426
Evaluation[18]	$25,290	$162,175	$237,968	$320,781	$746,214
Education[19]	$0	$0	$0	$0	$0
IT System[20] enablement costs	$83,489	$85,994	$88,573	$91,231	$349,287
Promotion[21]	$100,000	$206,000	$106,090	$109,273	$521,363
Sub-Total	**$1,177,302**	**$2,254,403**	**$2,286,873**	**$2,431,152**	**$8,149,730**
Grand Total	**$1,751,079**	**$9,915,571**	**$14,809,079**	**$20,120,801**	**$46,596,531**

O. Projected Energy Savings and Demand Reduction

Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	0	2,756	4,418	6,089
Peak Demand Reduction (MW)	0.0	32.9	53.1	73.4

P. Cost-Effectiveness

- Levelized Cost of saved energy: $0.535/kWh
- Levelized Cost of saved capacity: $44/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Residential Direct Load Control	$52	$46	$6	1.12

[16] The Implementation Contractor's cost was estimated based on Global experience. Assume $750K in yr 1, $1.5 million for yrs 2-4, then $250K thereafter to maintain the program.

[17] Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

[18] Evaluation costs are assumed to be 2% of program implementation costs

[19] Participation education costs are borne by the CSP.

[20] The upfront IT system enablement cost is assumed to be $500,000, capitalized over a 15-year time period at a rate of 14.51%.

[21] Program promotion costs are assumed to be higher in the first two years of the program at $200,000. It is lowered in the last two years at $100,000.

3.3.2 DR Program 2—Residential Super Peak TOU

A. Program Title and Program Years

Program Name: Residential Super Peak TOU

Program Years: Development: PY 2009; Operation: PY 2010-PY 2012

B. Objectives

The purpose of the super peak TOU rate program is to provide customers with price signals as reflected in the tariff that encourage reductions in peak demand during periods of higher energy prices (defined as the "super peak" time period). In doing so, customers have the opportunity to reduce their electricity bills.

C. Target Market

The target market for the super peak TOU rate program is PECO's entire base of residential customers. All residential customers are eligible to participate, because PECO can utilize the existing Automated Meter Reading (AMR) system necessary to support the rate. Some of the participants in the residential Direct Load Control Program will most likely take service under the Super Peak TOU rate as well.

D. Program Description

The super peak TOU is a rate design that provides customers with the incentive to reduce peak demand by charging a higher (cost-based) price for electricity during specified peak hours on weekdays in the summer (June through September, which will correspond with the highest 100 peak hours). The higher peak price is offset by a lower price during all remaining hours. When enrolled in this rate program, customers can reduce their electricity bills by shifting consumption from peak hours to off-peak hours, or by simply reducing demand during peak hours. The difference between a super peak TOU rate and a traditional TOU rate is that the peak period in the super peak TOU rate is shorter in duration. This allows for the provision of a higher peak period price and a lower off peak period price, while still maintaining revenue neutrality. The result is a stronger price signal to customers, and in return greater peak demand reductions for the utility and larger bill savings for the customer. It is expected that the ratio of the peak rate to the existing residential rate would be roughly 2.5-to-1, although this is subject to revision and could be higher or lower upon implementation.

By charging energy rates that vary by time of day, the rate has the added benefit of encouraging economically efficient consumption of electricity and reducing the cross-subsidies that currently exist between customers within the class

Research suggests customers have been found to respond to time-based rates through a number of recent pricing pilots.[22] One such pilot, the California Statewide Pricing Pilot, produced a model that can be tailored to the characteristics of various utility service areas to simulate

[22] Ahmad Faruqui and Sanem Sergici, "Household response to dynamic pricing of electricity: A survey of the experimental evidence," January 10, 2009. http://www.hks.harvard.edu/hepg/Papers/2009/The%20Power%20of%20Experimentation%20_01-11-09_.pdf.

impacts of the rates on customer usage.[23] This model is called the Price Impact Simulation Model (PRISM) and was used to simulate the impacts described below.

E. Implementation Strategy

Customer enrollment in the super peak TOU rate program will not begin until after PECO's rate caps expire at the end of 2010, to align with the Act's Advanced Metering Infrastructure (AMI) provision. Super peak TOU will be launched in PY 2010 (specifically on or after January 1, 2011).

The super peak TOU rate program is considered part of PECO's "Default Service Plan" (DSP), as such participants will be supplied under the terms of the associated "Supply Master Agreement" (SMA), and therefore must be served by PECO should they choose to take service under super peak TOU rate program (the rate will not be available to customers who take service through another Energy Generation Supplier (EGS)). Specific terms and pricing for this rate program will be dependent upon PECO's ongoing energy procurement proceedings, and will be filed in a compliance filing prior to the formal launch in PY 2010. The rate will be designed such that it is revenue neutral and is not expected to result in an overall increase or decrease in revenues from the residential class in the absence of any change in customer usage behavior.

The super peak TOU rate program can be implemented using PECO's current metering technology, however, some enhancements to the existing metering and billing systems will be necessary. The majority of customers who request service under super peak TOU rate program will be accommodated. If a customer's meter cannot adequately transmit the required frequency of meter read data, such as when a customer premise is just not oriented in a manner to successfully transmit meter reads, affected customers will not be permitted to enroll in the super peak TOU rate program.

PECO will seek services from an outside contractor for implementing this rate program. This contractor will be responsible for educating customers about the new rate design. This could be accomplished through bill inserts illustrating the rate design in simple, easy to understand terms. It is also helpful to provide customers with a list of measures that they might implement to reduce their peak period consumption. In this regard, the rate is complementary to other DSM programs that are providing customers with the means to reduce consumption, whether specifically during the peak period or overall.

It will also be necessary to train staff at customer service call centers so that they are sufficiently equipped to answer questions regarding the rate.

F. Program Issues, Risks, and Risk Management Strategies

Below are possible program risks as well as strategies for addressing those risks.

- Customer enrollment. There is a risk that enrollment in the rate program will be low. This could happen if the rate program is not designed to provide the opportunity for significant bill savings, or if customers are not educated about its benefits, or are overly concerned about the risks. Good rate design and effective education are keys to managing this risk.

[23] Stephen S. George and Ahmad Faruqui. *Impact Evaluation of the California Statewide Pricing Pilot, Final Report.* March 16, 2005.

- Customer backlash. Without a full understanding of the rate, some customers may complain about the higher peak rate without recognizing the lower off-peak rate and opportunity for bill savings. Customer education about the program benefits will help to address this risk. The voluntary nature of the rate offering will also diminish the risk.
- Perceived lack of ability to respond to the rate. Some customers may not understand their options for responding to the rate and reducing peak demand. This could result in low customer enrollment, or in customers who enroll in the rate but do not alter their usage patterns. Educational efforts focused on the specific measures that can be taken to respond to time-varying rates would help to alleviate this risk and maximize the benefits of the program.

G. Ramp Up Strategy

The ramp up strategy for the super peak TOU rate program is fairly simple, as the majority of infrastructure is already in place to offer the rate. Through the course of a marketing and educational campaign designed to make customers aware of the rate program and its benefits, all customers would be offered the rate on a voluntary (opt-in) basis.

H. Marketing Strategy

The marketing strategy for the super peak TOU rate program would be centered around bill inserts, educational training sessions, and websites designed both to increase awareness of the rate and to alert customers to the potential benefits of enrolling in the rate program. Specifically, benefits that have been found to be successful in other pilots include (1) potential bill savings, (2) environmental benefits, and (3) the feeling that the customer is doing something good to help the utility and its community. These, as well as other marketing approaches, would be tested through focus groups. The outcome of the focus groups would shape the content of the marketing materials.

I. Eligible Measures and Incentives

Not Applicable - since this is designed as a rate offering to customers. Customers who are simultaneous participants in the Direct Load Control program will receive the same incentives regardless of which rate they take service under.

J. Program Schedule

Proposed Residential Super Peak TOU Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	Program to be implemented no sooner than PY 2010 (January 2011)
Begin final rate design	June 2010
Complete rate design	November 2010
Program rollout: Launch customer awareness and outreach efforts	January 2011
Prepare reports: Documentation of program activities and progress toward goals	Monthly throughout program implementation period

Key Milestone	Timing
Reports to Commission	Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

Through the use of econometric methods, consumption data during the same time period for similar non-participants can be evaluated to determine any changes in behavior induced by the rate. Additionally, a "but-for baseline" could be developed to assess performance. This would be used to benchmark post-enrollment consumption and identify any significant changes in usage.[24] For a feasible subset of the participating customers, it could also be beneficial to capture usage patterns in smaller time increments (daily or preferably hourly) to develop a deeper understanding of how the rates affect usage patterns.

L. Administrative Requirements

PECO is responsible for developing and executing the implementation plan. Implementation of this rate program will require a Program Manager and a Business Analyst.

The table below gives the staffing requirement for PECO:

Residential Super Peak TOU – Proposed PECO Staffing

Staff	Allocation
Program manager	0.5 FTE in PY 2010 through PY 2012
Business Analyst	0.25 FTE in PY 2010 through PY 2012.

M. Estimated Participation

The table below gives the estimated participation in this rate program. This rate program can only be effective after the current rate caps expire at the end of 2010. Therefore, there are no participants in 2009. The table shows the number of customers who are on this rate only as well as those who participate in the Residential Direct Load Control Program and are on the Super Peak TOU rate program as well.

Residential Super Peak TOU—Estimated Participation

	PY 2009	PY 2010	PY 2011	PY 2012
a. Super Peak TOU	0	5,000	10,000	20,000
b. Super Peak TOU (w/ DLC participant)	0	0	0	0
Total no. of participants	**0**	**5,000**	**10,000**	**20,000**

N. Estimated Program Budget

The table below gives the estimated budget for the Residential Super Peak TOU Rate. Note that this new rate will not become effective until rate caps are in place during PY 2010.

[24] For a recent example of this type of econometric analysis, see Ahmad Faruqui and Sanem Sergici, *BGE's Smart Energy Pricing Pilot Summer 2008 Impact Evaluation*, April 28, 2009.

Residential Super Peak TOU—Estimated Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Customer-Specific Costs					
Incentives	$0	$0	$0	$0	$0
Equipment costs	$0	$0	$0	$0	$0
Sub-Total	**$0**	**$0**	**$0**	**$0**	**$0**
Direct Labor Costs					
Program Manager	$0	$77,250	$79,568	$81,955	$238,772
Business Analyst	$0	$38,625	$39,784	$40,977	$119,386
Sub-Total	**$0**	**$115,875**	**$119,351**	**$122,932**	**$358,158**
Other Program Services					
Implementation Contractor (CSP)	$0	$515,000	$530,450	$546,364	$1,591,814
Umbrella Costs[25]	$15,609	$18,231	$18,778	$19,341	$71,959
Evaluation[26]	$780	$43,190	$63,052	$64,943	$171,965
Education[27]	$0	$0	$0	$0	$0
IT System enablement costs[28]	$0	$60,196	$62,001	$63,861	$186,059
Promotion	$0	$154,500	$530,450	$546,364	$1,231,314
Sub-Total	**$16,389**	**$791,117**	**$1,204,731**	**$1,240,873**	**$3,253,110**
Grand Total	**$16,389**	**$906,992**	**$1,324,082**	**$1,363,805**	**$3,611,268**

O. Projected Energy Savings and Demand Reduction

Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	0	0	399	931
Peak Demand Reduction (MW)	0.0	0.0	4.0	9.3

P. Cost-Effectiveness

- Levelized Cost of saved energy: $0.412/kWh
- Levelized Cost of saved capacity: $41/kW-yr

[25] Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

[26] Evaluation costs are assumed to be 5% of program implementation costs.

[27] Participation education costs are borne by the CSP.

[28] The upfront IT system enablement cost is assumed to be $500,000, capitalized over a 15-year time period at a rate of 14.51%.

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Residential Super Peak TOU	$6	$5	$1	1.23

Q. Other Utilities' Experience with This Program

Some utilities are currently exploring the possibility of offering super peak TOU rates, but none are currently in deployment. However, two Arizona utilities offer traditional TOU rates (with peak periods that are longer in duration) to residential customers. Arizona Public Service and Salt River Project have been offering TOU rates to residential customers on a voluntary basis for decades, and have achieved participation rates of 40 percent.

3.3.3 DR Program 3—Commercial & Industrial Direct Load Control

A. Program Title and Program Years

Program Name: Commercial & Industrial Direct Load Control

Program Years: Development: PY 2009; Operation: PY 2010-PY 2012

B. Objectives

The objective of this program is to realize demand reductions from eligible commercial/industrial customers in PECO's service territory during the top 100 peak hours, thereby supporting achievement of the energy savings and demand reduction targets set forth in Act 129. The targeted load reduction from this program is set at net system peak demand savings of 15 MW at the end of PY2012

C. Target Market

This program will be targeted at commercial/industrial customers with less than 100 kW of load and equipped with a Central Air Conditioning (CAC).

D. Program Description

In this program, PECO remotely controls a customer's CAC, during times of high peak demand or supply-side constraints. In return, participants receive ongoing incentives for allowing PECO to control their equipment. DLC events are called to coincide with the highest 100 hours of peak demand. Unlike the residential direct load control program, control here takes place through a Programmable Communicating Thermostat (PCT). PCTs or "smart thermostats" which allow remote adjustment of temperature settings, so the utility can remotely adjust the temperature to reduce demand from CAC units during called curtailment events. PCTs will be signaled via pager, which will initiate pre-programmed adjustments to set point temperatures by 2-4 degrees to achieve demand reductions. After an event, load control is released, allowing the thermostat to revert back to the original customer settings for temperature and schedule. PCTs are a proven technology and are currently being used with high effectiveness in DLC programs for other utilities.

E. Implementation Strategy

PECO will administer the Commercial & Industrial Direct Load Control program with assistance from outside contractors for program implementation. The key elements in the implementation strategy are:

- Program staff assignment- PECO will select and assign a program manager for developing this program, post program approval by the Commission. The manager is responsible for the final program design.
- Contract with outside implementation contractor- PECO will select and contract program implementation with an outside contractor, who is referred to as a Conservation Service Provider (CSP).
- IT system enablement- Outside services will be procured for enabling IT systems in order to ensure appropriate control and communication between PECO and program participants during load control events.

- Customer Recruitment: Eligible commercial/industrial customers with less than 100 kW of load and with CAC units will be recruited to participate in the program.
- PCT installation: Participants who sign up for the program will have a PCT installed at their site. After a PCT is installed, its configuration is included in the control software so that it can be activated during a DR event.
- Program promotion- Different methods such as direct mail, bill inserts, trade shows and website communications could be used for customer communication and outreach.
- Customer education- Efforts to educate participants will need to be launched soon after the program design through newsletters, training workshops, lectures, and seminars.
- Verification of load reduction: After installation of the PCTs, quality control inspections of PCTs will need to be performed. Also, load research studies to measure and verify the load reduction from PCTs will need to be conducted.

F. Program Issues, Risks, and Risk Management Strategies

The demand reduction from this program will contribute toward the 100 hours of peak annually. Therefore, the underlying assumption is that load reductions are realized from each of the participants during these top 100 hours. In order to manage the uncertainties associated with that estimate, participant recruitment strategy may need to be altered. For example, if it is likely that on an average load reductions from participants can be realized only for 50 hours instead of 100, the number of participants recruited will need to be doubled in order to attain the same level of demand reductions.

G. Ramp Up Strategy

Program participant recruitment activity starts in 2009, even though program impacts are not realized in that year since PY 2009 ends May 31, 2010, which is prior to the start of the 2010 DR season. Also, IT system enablement begins in 2009, prior to the actual program implementation.

H. Marketing Strategy

When developing the target market, PECO will target commercial/industrial customers with less than 100 kW load, who have CAC units. A well-defined target market facilitates narrowly targeted direct mail campaigns, and enables efficient resource allocation for designing promotional materials. Acquisition of participants will occur through a variety of promotional methods such as direct mail, bill inserts, trade shows and through various website communications. Account representatives too can promote the program through direct communication with the customer.

I. Eligible Measures and Incentives

The only eligible measure for this program is a CAC unit. It is assumed that an average participant has two 5-ton CAC units, but prospective participants with only a single unit will not be excluded. Incentives are offered at the rate of $30/month on each CAC unit, for the four summer months during which the program will be called. This effectively translates into an annual per participant incentive of $240. Conversely, if a participant only has a single CAC, the incentive would be $120.

Measures	Per Participant Annual Incentives
Central A/C with PCT (< 100 kW customer)	$240

J. Program Schedule

Proposed Commercial & Industrial Direct Load Control Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	October 2009
Begin final program design	October 2009
Select and contract with program implementation CSP(s)	November 2009
Complete program design	December 2010
Pre-rollout program development: Conduct contractor recruitment and training IT system enablement	 October 2009 January 2010
Program rollout: Launch marketing and outreach Undertake customer education Perform verifications and improvements	 April 2010 April 2010 June 2010 – May 2013
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

PECO will work with the third party M&V contractor to design and execute appropriate analyses of a statistically valid set of sites to verify the per unit load reductions. The two types of evaluation that will need to be conducted are a) Impact evaluation; and b) Process evaluation.

Impact Evaluation

This will have two major components: equipment performance verification and load impact estimates. Equipment performance will be verified through a variety of steps, including controlled installation procedures and post-installation visits to a sample of sites. During the installation process, the installers will test that the PCTs work and will indicate that this test has been performed on the installation invoice. They will also record the size, type, and working condition of the equipment being cycled. Visits to a sample of sites will verify that the PCTs have been installed correctly and are working. Load impacts will be estimated using engineering and survey data.

Process Evaluation

This will examine program delivery, administration, and implementation and customer response to them. In-person interviews with utility staff, equipment installers and a sample of customers will be used to gather data for the evaluation. In a direct load control program, it is important to determine if the program encourages free riders, that is, is the program benefiting those who would not normally use the equipment during the cycling period or those who already monitor their equipment usage. For trade allies, the interviews should seek to assess whether the program is being implemented as planned.

L. Administrative Requirements

PECO will administer the program through one or more CSP implementation contractors. PECO's role will be to ensure that

- the CSPs perform all implementation activities related to the program
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program.

The program is expected to operate with the following PECO/Contract staffing mix:

Commercial & Industrial Direct Load Control Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager: Responsibilities include design and launch of program.	0.38 FTE in PY 2009 0.5 FTE in PY 2010 through PY 2012

M. Estimated Participation

Participation and measure adoption estimates were developed based on existing and projected customers in the targeted market segment in PECO's service territory and assessment of the attainable market potential in the area, as well as the experience of other organizations that have offered this type of program.

Commercial & Industrial Direct Load Control—Estimated Participation

	PY 2009	PY 2010	PY 2011	PY 2012
Total no. of participants/units installed	**1,500**	**2,750**	**4,250**	**4,000**

N. Estimated Program Budget

The table below gives the estimated budget for the Commercial/Industrial Direct Load Control Program.

Commercial & Industrial Direct Load Control—Estimated Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Customer-Specific Costs					
Incentives	$0	$1,050,600	$2,164,236	$3,278,181	$6,493,017
Equipment costs[29]	$525,000	$1,274,110	$2,160,523	$2,129,725	$6,089,358
Sub-Total	**$525,000**	**$2,324,710**	**$4,324,759**	**$5,407,906**	**$12,582,375**
Direct Labor Costs					
Program Manager[30]	$56,250	$77,250	$79,568	$81,955	$295,022
Sub-Total	**$56,250**	**$77,250**	**$79,568**	**$81,955**	**$295,022**
Other Program Services					

[29] The cost of a PCT is assumed to be $100. The total equipment cost per customer, therefore, is $200 along with $150 for installation of the two thermostats. Equipment costs are capitalized over a 15-year time period at a rate of 14.51%.

[30] Assumed an annual cost of $150,000 for the program manager

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Implementation Contractor (CSP)[31]	$250,000	$515,000	$530,450	$546,364	$1,841,814
Umbrella Costs[32]	$78,044	$91,155	$93,890	$96,706	$359,795
Evaluation[33]	$15,841	$55,883	$86,840	$120,916	$279,480
Education[34]	$0	$0	$0	$0	$0
IT System[35] enablement costs	$83,489	$85,994	$88,573	$91,231	$349,287
Promotion[36]	$200,000	$206,000	$106,090	$109,273	$621,363
Sub-Total	**$627,374**	**$954,031**	**$905,843**	**$964,489**	**$3,451,738**
Grand Total	**$1,208,624**	**$3,355,991**	**$5,310,169**	**$6,454,349**	**$16,329,134**

O. Projected Energy Savings and Demand Reduction

Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	0	758	1,653	2,511
Peak Demand Reduction (MW)	0.0	7.6	16.5	25.1

P. Cost-Effectiveness

- Levelized Cost of saved energy: $0.348/kWh
- Levelized Cost of saved capacity: $35/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
C&I Direct Load Control	$16	$11	$5	1.41

[31] The Implementation Contractor's cost was estimated based on Global experience. Assume $750K in yr 1, $1.5 million for yrs 2-4, then $250K thereafter to maintain the program.

[32] Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

[33] Evaluation costs are assumed to be 3% of program implementation costs.

[34] Program specific education is assumed to be the CSP's responsibility.

[35] The upfront IT system enablement cost is assumed to be $500,000, capitalized over a 15-year time period at a rate of 14.51%.

[36] Program promotion costs are assumed to be higher in the first two years of the program at $200,000. Costs are assumed to be lower in the last two years at a level of $100,000.

3.3.4 DR Program 4—Commercial & Industrial Super Peak TOU

A. Program Title and Program Years

Program Name: Commercial & Industrial Super Peak TOU

Program Years: Development: PY 2009; Operation: PY 2010-PY 2012

B. Objectives

The purpose of the super peak TOU rate program is to provide customers with a price incentive that encourages reductions in peak demand through load shifting or load curtailment, during super peak pricing periods. In doing so, customers have the opportunity to reduce their electricity bills overall.

C. Target Market

The target market for the super peak TOU rate program is PECO's base of small (<100 kW) and medium-sized (100-500 kW) commercial/industrial customers. Most of these customers are eligible to participate, because they are already equipped with the metering technology necessary to support the rate. Customers who take service under super peak TOU will also be permitted to participate in the Commercial/Industrial Direct Load Control Program.

D. Program Description

The super peak TOU is a rate design that provides customers with the incentive to reduce peak demand by charging a higher (cost-based) price for electricity during peak hours on weekdays during the summer (June through September). This higher peak price is offset by a lower price during all remaining hours. When enrolled in this rate, customers can reduce their electricity bills by shifting consumption from peak hours to off-peak hours, or by simply reducing demand during peak hours.

The difference between a super peak TOU rate and a traditional TOU rate is that the peak period in the super peak TOU rate is shorter in duration. This allows for the provision of a higher peak period price and a lower off peak period price, while still maintaining revenue neutrality. It is expected that the ratio of the peak rate to the existing rate would be roughly 2.5-to-1, although this is subject to revision and could be higher or lower upon implementation.

E. Implementation Strategy

Customer enrollment in the super peak TOU rate program will not begin until after PECO's rate caps expire at the end of 2010, to align with the Act's AMI provision(s). It is estimated that super peak TOU will not be launched until PY 2010 (specifically on or about January 1, 2011).

The super peak TOU rate is considered part of PECO's "Default Service Plan" (DSP), as such participants will be supplied under the terms of the associated "Supply Master Agreement" (SMA), and therefore must be served by PECO should they choose to take service under super peak TOU (the rate will not be available to customers who take service through another Energy Generation Supplier (EGS)).

Specific terms and pricing will be dependent upon PECO's ongoing energy procurement proceedings, and will be filed in a compliance filing prior to the formal launch in PY2010. The

rate will be designed such that it is revenue neutral and is not expected to result in an overall increase or decrease in revenues from he residential class in the absence of any change in customer usage.

The super peak TOU rate program will be designed and filed for approval with the Pennsylvania PUC. Rate design will promote neutrality, such that it is revenue neutral and is not expected to result in an overall increase or decrease in revenues from the Medium C&I class in the absence of any change in customer usage behavior.

The super peak TOU rate program can be implemented using PECO's current metering technology (conditionally as noted); minor upgrades to the existing metering and billing systems will be necessary.

PECO will be responsible for educating customers about the new rate design. This could be accomplished through bill inserts illustrating the rate design in simple, easy to understand terms. It is also helpful to provide customers with a list of measures that they might implement to reduce their peak period consumption. In this regard, the rate is complementary to other DSM programs that are providing customers with the means to reduce consumption, whether specifically during the peak period or overall.

It will also be necessary to train staff at customer service call centers so that they are sufficiently equipped to answer questions regarding the rate.

F. Program Issues, Risks, and Risk Management Strategies

Below are possible program risks as well as strategies for addressing those risks.

- Customer enrollment. There is a risk that enrollment in the rate will be low. This could happen if the rate is not designed to provide the opportunity for significant bill savings, or if customers are not educated about its benefits. Good rate design and effective education are keys to managing this risk.

  As previously noted, however, (section 3.3.2), a very small number of customers may experience difficulty because of their metering or premise location, which may result in the inability of PECO's current automated meter reading system to transmit the necessary detailed energy consumption data. In such instances, PECO will within reason seek to remedy such conditions through the installation of antennas, or possible relocation of equipment. Where these efforts fail to provide a reliable signal, those customers will not be permitted to take services under the super peak TOU tariff.

- Customer backlash. Without a full understanding of the rate, some customers may complain about the higher peak rate without recognizing the lower off-peak rate and opportunity for bill savings. Customer education about the program benefits will help to address this risk. The voluntary nature of the rate offering will also diminish the risk.

- Perceived lack of ability to respond to the rate. Some customers may not understand their options for responding to the rate and reducing peak demand. This could result in low customer enrollment, or in customers who enroll in the rate but do not alter their usage patterns. Educational efforts focused on the specific measures that can be taken to respond to time-varying rates would help to alleviate this risk and maximize the benefits of the program.

G. Ramp Up Strategy

The ramp up strategy for the super peak TOU rate program is fairly simple, as the majority of infrastructure is already in place to offer the rate. Through the course of a marketing and educational campaign designed to make customers aware of the rate and its benefits, all customers would be offered the rate on a voluntary (opt-in) basis. Upon enrollment in the rate program, customers would begin receiving updated bills reflecting the change in rate structure.

H. Marketing Strategy

The marketing strategy for the super peak TOU rate program would be centered around bill inserts, educational training sessions, and websites designed both to increase awareness of the rate and to alert customers to the potential benefits of enrolling in the rate. Specifically, benefits that have been found to be successful in other pilots include (1) bill savings, (2) environmental benefits, and (3) the feeling that the customer is doing something good to help the utility and its community. These, as well as other marketing approaches, would be tested through focus groups. The outcome of the focus groups would shape the content of the marketing materials.

I. Eligible Measures and Incentives

Not Applicable - since this is designed as a rate offering to customers. Customers who are simultaneous participants in the Direct Load Control program will receive the same incentives regardless of which rate they take service under.

J. Program Schedule

Proposed Commercial & Industrial Super Peak TOU Rate Schedule

Key Milestone	Timing
Assign PECO program manager and staff	Program to be implemented no sooner than PY2010
Begin final rate design	June 2010
Complete rate design	November 2010
Program rollout: Launch customer awareness and outreach efforts	January 2011
Prepare reports: Documentation of program activities and progress toward goals Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

Through the use of econometric methods, post-enrollment consumption for the participants could be evaluated to determine any change in behavior induced by the rate. Additionally, a "but-for baseline" could be established using comparable class load data. This would be used to

benchmark post-enrollment consumption and identify any significant changes in usage.[37] For a feasible subset of the participating customers, it could also be beneficial to capture usage patterns in smaller time increments (daily or preferably hourly) to develop a deeper understanding of how the rates affect usage patterns.

L. Administrative Requirements

PECO is responsible for developing and executing the implementation plan. Implementation of this rate program will require a Program Manager and a Business Analyst.

The table below gives the staffing requirement for PECO:

Commercial & Industrial Super Peak TOU – Proposed PECO Staffing

Staff	Allocation
Program manager	0.5 FTE in PY 2010 through PY 2012
Business Analyst	0.25 FTE in PY 2010 through PY 2012.

M. Estimated Participation

The table below gives the estimated participation in this rate program. This rate program can only be effective after the current rate caps expire at the end of 2010. Therefore there are no participants in PY 2009. The table shows the number of customers who are on this rate only, as well as those who participate in the Direct Load Control Program and are on the Super Peak TOU rate program as well.

Commercial & Industrial Super Peak TOU—Estimated Participation

	PY 2009	PY 2010	PY 2011	PY 2012
a. Small (0-100 kW) -- Super Peak TOU	0	1,000	2,000	4,000
b. Small (0-100 kW) -- Super Peak TOU w/PCT and DLC	0	0	0	0
c. Medium (100-500 kW) -- Super Peak TOU	0	0	0	0
Total no. of participants	**0**	**1,000**	**2,000**	**4,000**

N. Estimated Program Budget

The table below gives the estimated budget for the Commercial/Industrial Super Peak TOU Rate. Note that this new rate will not become effective until rate caps are in place during PY 2010.

Commercial & Industrial Super Peak TOU—Estimated Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Customer-Specific Costs					
Incentives	$0	$0	$0	$0	$0
Equipment costs	$0	$0	$0	$0	$0
Sub-Total	**$0**	**$0**	**$0**	**$0**	**$0**
Direct Labor Costs					

[37] For a recent example of this type of econometric analysis, see Ahmad Faruqui and Sanem Sergici, *BGE's Smart Energy Pricing Pilot Summer 2008 Impact Evaluation*, April 28, 2009.

Program Manager	$0	$77,250	$79,568	$81,955	$238,772
Business Analyst	$0	$38,625	$39,784	$40,977	$119,386
Sub-Total	**$0**	**$115,875**	**$119,351**	**$122,932**	**$358,158**
Other Program Services					
Implementation Contractor (CSP)	$0	$515,000	$530,450	$546,364	$1,591,814
Umbrella Costs[38]	$15,609	$18,231	$18,778	$19,341	$71,959
Evaluation[39]	$0	$43,190	$63,052	$64,943	$171,185
Education[40]	$0	$0	$0	$0	$0
IT System enablement costs[41]	$0	$60,196	$62,001	$63,861	$186,059
Promotion	$0	$154,500	$530,450	$546,364	$1,231,314
Sub-Total	**$15,609**	**$791,117**	**$1,204,731**	**$1,240,873**	**$3,252,329**
Grand Total	**$15,609**	**$906,992**	**$1,324,082**	**$1,363,805**	**$3,610,487**

O. Projected Energy Savings and Demand Reduction

Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	0	0	594	1,386
Peak Demand Reduction (MW)	0.0	0.0	5.9	13.9

P. Cost-Effectiveness

- Levelized Cost of saved energy: $0.393/kWh
- Levelized Cost of saved capacity: $39/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Commercial/Industrial Super Peak TOU	$9	$7	$2	1.23

Q. Other Utilities' Experience with This Program

Some utilities are currently exploring the possibility of offering super peak TOU rates, but they are not currently in deployment. However, many utilities offer traditional TOU rates to C&I customers.

[38] Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

[39] Evaluation costs are assumed to be 5% of program implementation costs

[40] Participation education costs are borne by the contractor.

[41] The upfront IT system enablement cost is assumed to be $350,000.

3.3.5 DR Program 5—DR Aggregator Contracts

A. Program Title and Program Years

Program Name: DR Aggregator Contracts

Program Years: Development: PY 2009; Operation: PY 2010-PY 2012

B. Objectives

The objective of this program is to realize demand reductions from eligible commercial/industrial customers in PECO's service territory during the top 100 peak hours, thereby achieving energy savings and demand reduction targets as set forth in Act 129. The targeted load reduction from this program is set at net system peak demand savings of 150 MW by the summer of PY 2012.

C. Target Market

This program will be targeted toward all eligible commercial/industrial customers in PECO's service territory, irrespective of the size of their load.

D. Program Description

In this program, PECO establishes performance contracts with one or more Curtailment Service Providers who will recruit PECO customers and deliver the demand reduction target set in the program. These companies, also referred to as 'Aggregators', sign up a pool of participants and offer the combined load reduction resource to PECO during hours of peak demand coincident with the top 100 peak hours. Several of these aggregator companies currently have end-use customers participating in DR programs being administered by PJM. In the program being considered here, these Curtailment Service Providers are expected to tap their existing clients participating in the PJM market, as well as recruit additional customers, if needed.

E. Implementation Strategy

This program is primarily implemented by the Curtailment Service Providers who undertake all activities associated with program implementation. PECO's overall responsibility is to ensure that the goals of the program are accomplished.

F. Program Issues, Risks, and Risk Management Strategies

In this program, all risks are borne by the Curtailment Service Providers.
One of the risks associated with this program is similar to that for Direct Load Control programs. This is related to uncertainties in program performance. The demand reductions from this program need to contribute toward the top 100 hours of system peak annually. Therefore, the underlying assumption is that load reductions are realized from each of the participants during these top 100 hours. In order to manage the uncertainties associated with that estimate, participant recruitment strategy may need to be altered. For example, if it is likely that on an average load reductions from participants can be realized only for 50 hours instead of 100, the number of participants recruited will need to be doubled in order to attain the same level of demand reductions during the top 100 hours.

G. Ramp Up Strategy

Program participant recruitment activity starts in PY 2009, even though program impacts are not realized in that year since PY 2009 ends May 31, 2010, which is prior to the start of the 2010 DR season. Aggregator contracts will be staged in (3) 50 MW increments, and while it is assumed that the full 150 MW will be needed to satisfy the overall DR reduction target, if other programs over perform, additional MW will not be needed, and will not be procured. Since the program primarily leverages on the existing customer base that is currently being served by Curtailment Service Providers and participating in the PJM market, no specific ramp up strategy is necessary.

H. Marketing Strategy

For this program, the responsibility for developing the marketing strategy rests on the Curtailment Service Providers.

I. Eligible Measures and Incentives

There are no specific eligible measures and incentive levels indicated for this program. The Curtailment Service Provider is free to attain load reductions through any measures deemed appropriate.

J. Program Schedule

Proposed DR Aggregator Contracts Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	July 2009
Issue RFPs, select and contract with program implementation Curtailment Service Provider(s)	1st Quarter 2010
Program rollout	2nd Quarter 2010
Prepare reports: Documentation of program activities and progress toward goals by Curtailment Service Provider(s) Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

PECO will work with the third party M&V contractor to design and verify load reductions achieved. Evaluation will be centered around establishing baselines and then measuring load reduction performance relative to the baseline. Process evaluations will also be conducted to gauge customer satisfaction with Curtailment Service Providers and staff interviews.

L. Administrative Requirements

PECO will administer the program through one or more Curtailment Service Providers implementation contractors. PECO's role will be to ensure that the Curtailment Service Providers performs all implementation activities related to the program

The program is expected to operate with the following PECO/Contract staffing mix:

DR Aggregator Contracts Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager	0.38 FTE in PY 2009 0.5 FTE in PY 2010 through PY 2012
Analyst/Contract Administrator	0.25 FTE in PY 2009 0.5 FTE in PY 2010 through PY 2012

M. Estimated Participation

NA- as participation is expressed as an 'aggregate' participant.

N. Estimated Program Budget

The table below gives the estimated budget for the DR Aggregator Contract Program.

DR Aggregator Contracts—Estimated Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Direct Labor Costs					
Program Manager	$56,250	$77,250	$79,568	$81,955	$295,022
Analyst/Contract Administrator	$30,000	$61,800	$63,654	$65,564	$221,018
Sub-Total	**$86,250**	**$139,050**	**$143,222**	**$147,518**	**$516,040**
Other Program Services					
Implementation Contractor (CSP)[42]	$0	$3,347,500	$6,895,850	$10,654,088	$20,897,438
Umbrella Costs[43]	$109,261	$127,617	$131,446	$135,389	$503,713
Evaluation[44]	$3,910	$72,283	$143,410	$218,740	$438,344
Education[45]	$0	$0	$0	$0	$0
IT System enablement costs	$0	$0	$0	$0	$0
Promotion[46]	$0	$0	$0	$0	$0
Sub-Total	**$113,172**	**$3,547,400**	**$7,170,706**	**$11,008,217**	**$21,839,495**
Grand Total	**$199,422**	**$3,686,450**	**$7,313,927**	**$11,155,735**	**$22,355,534**

O. Projected Energy Savings and Demand Reduction

Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	0	5,000	10,000	15,000
Peak Demand Reduction (MW)	0.0	50.0	100.0	150.0

[42] The Implementation Contractor cost is estimated at $65/kW-yr of contract.

[43] Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

[44] Evaluation costs are assumed to be 2% of program implementation costs.

[45] This is the contractor's responsibility, so no extra costs are incurred by PECO.

[46] This is the contractor's responsibility, so no extra costs are incurred by PECO.

P. Cost-Effectiveness

- Levelized Cost of saved energy: $0.444/kWh
- Levelized Cost of saved capacity: $44/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
DR Aggregator Contracts	$104	$95	$9	1.09

3.3.6 DR Program 6—Distributed Energy Resources

A. Program Title and Program Years

Program Name: Distributed Energy Resources

Program Years: Development: PY 2009; Operation: PY 2010-PY 2012

B. Objectives

The objective of this program is to realize energy savings and peak demand reductions from eligible commercial/industrial customers in PECO's service territory during the top 100 peak hours, thereby achieving energy and demand savings reduction target set as part of the requirements for fulfilling Act 129. The targeted net system peak demand savings from this program is set at 35 MW at the end of PY2012.

C. Target Market

This program will be targeted toward all eligible commercial/industrial customers in PECO's service territory who have existing backup generation resources or are interested in having grid-connected generating units such as Combined Heat and Power (CHP) installed at their facilities.

D. Program Description

This program is designed to work with PECO customers who either have existing backup generation resources or are interested in installing other types of distributed generation systems at their facilities. These systems would be dispatched by PECO during the top 100-hours of system peak demand each year. In return, participants are provided incentives of up to $210/kW for equipment maintenance upgrades and/or installations. Upgrades to existing backup generation systems would be to enhance those systems to meet local air quality standards that would allow for a minimum of 100 hours of run time that coincides with the 100-hour critical peak period. Other types of distributed generation systems might include CHP, reciprocating engines, fuel cells, etc. The administration of this incentive is similar to that for the Custom Rebate component of the C&I Equipment Incentive program.

E. Implementation Strategy

PECO will implement the Distributed Energy Resources (DER) program through one or more CSP implementation contractors. PECO's role will be to ensure that:

- the CSP performs all the activities associated with delivery of all components of the program
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program

The key elements in the implementation strategy are:

- Program staff assignment- PECO will select and assign a program manager and an engineer for developing this program, following approval by the Commission.
- Contract with outside implementation contractor- PECO will select and contract program implementation with outside contractor(s), referred to as CSPs.

- Customer Recruitment and Assistance- Eligible commercial/industrial customers who have existing backup generation resource and CHP units will be recruited to participate in the program. The contractor will be responsible for customer recruitment, as well as assisting customers with development of estimates and documentation for approval of custom measure projects.
- Program marketing- PECO staff along with the contractor will be responsible for distribution of program materials to eligible participants. PECO's account representatives will have primary responsibility for establishing direct communication with the customers in order to promote the program. Direct mail can also be used for program promotion.
- Customer education- The contractor will be responsible for educating participants about the program through one-on-one contacts and through training workshops, lectures, and seminars.
- Incentive processing- The contractor will be responsible for receiving, reviewing and verifying incentive applications. Incentives can be paid directly by the contractor or submitted to PECO for payment.
- Reporting- This will involve reporting of program activities to meet regulatory and internal requirements, including progress toward program goals
- Program performance tracking and improvement- This will involve tracking performance of the backup generation and CHP units, incentive submittals and payments, and identification of areas for program improvement.

F. Program Issues, Risks, and Risk Management Strategies

One of the risks associated with this program is similar to that for the other DR programs. This is related to uncertainties in program performance. The demand reductions from this program need to be realized during the top 100 hours annually. Therefore, the underlying assumption is that the systems are dispatched during the 100-hour peak demand period each year. While the intent of this program is to upgrade customer owned standby generation in exchange for dispatch control, evolving environmental and air quality regulations may have a direct impact on the numbers and sizes of participating generators. It is assumed that in the current regulatory environment that the majority of prospective participants would qualify. Future tightening of air quality regulations could reduce the size of the participant pool, but the favorable impacts of upgrading emissions controls should still ensure an adequate number of prospective participants are available.

G. Ramp Up Strategy

Program participant recruitment activity starts in PY 2009, even though program impacts are not realized in that year since PY2009 ends May 31, 2010, which is prior to the start of the 2010 DR season.

H. Marketing Strategy

The marketing strategy for the DER program would be centered with business to business contact through PECO's account management force, educational training sessions, and websites designed both to increase awareness of the program and to alert customers to the potential benefits of enrolling in the program, as well as a defined trade-ally network. The implementation contractor will be responsible for distributing information about qualifying technologies and with assisting customers in program participation.

I. Eligible Measures and Incentives

The eligible measures for this program include:

- Clean Back-up generation Units
- Fuel Switching (diesel to natural gas)
- Combined Heat and Power Units

Incentives are available at a level of up to $210/kW for equipment upgrades and/or replacement.

J. Program Schedule

Proposed Distributed Energy Resources Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	December 2009
Begin final program design	October 2009
Complete program design	March 2010
Program rollout	April 2010
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

PECO will work with a third party M&V contractor to verify load reductions at individual sites as well as aggregate load reductions achieved.

L. Administrative Requirements

PECO will administer the program through one or more CSP implementation contractors. PECO's role will be to ensure that the CSP performs all implementation activities related to the program

The program is expected to operate with the following PECO/Contract staffing mix:

Distributed Energy Resources Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager	0.38 FTE in PY 2009 0.5 FTE in PY 2010 through PY 2012
Engineer	0.25 FTE in PY 2009 0.5 FTE in PY 2010 through PY 2012

M. Estimated Participation

Not Applicable - Expressed as an 'aggregate' participant.

N. Estimated Program Budget

The table below gives the estimated budget for the Distributed Energy Resources (DER) Program.

Distributed Energy Resources—Estimated Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Customer-Specific Costs					
Incentives	$1,575,000	$2,703,750	$3,341,835	$3,442,090	$11,062,675
Sub-Total	**$1,575,000**	**$2,703,750**	**$3,341,835**	**$3,442,090**	**$11,062,675**
Direct Labor Costs					
Program Manager	$56,250	$77,250	$79,568	$81,955	$295,022
Engineer	$37,500	$77,250	$79,568	$81,955	$276,272
Sub-Total	**$93,750**	**$154,500**	**$159,135**	**$163,909**	**$571,294**
Other Program Services					
Implementation Contractor (CSP)[47]	$0	$1,030,000	$1,856,575	$2,731,818	$5,618,393
Umbrella Costs[48]	$78,044	$91,155	$93,890	$96,706	$359,795
Evaluation[49]	$49,591	$114,747	$158,769	$188,118	$511,226
Education[50]	$0	$0	$0	$0	$0
IT System Enablement Costs	$0	$0	$0	$0	$0
Promotion[51]	$0	$0	$0	$0	$0
Sub-Total	**$127,635**	**$1,235,902**	**$2,109,234**	**$3,016,642**	**$6,489,413**
Grand Total	**$1,796,385**	**$4,094,152**	**$5,610,204**	**$6,622,641**	**$18,123,382**

O. Projected Energy Savings and Demand Reduction

Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	0	15,600	27,300	39,000
Peak Demand Reduction (MW)	0.0	20.0	35.0	50.0

P. Cost-Effectiveness

- Levelized Cost of saved energy: $0.097/kWh
- Levelized Cost of saved capacity: $76/kW-yr

[47] Assume $50/kW for the enablement and operational stages of the program (PY2009-PY2012) and $5/kW for maintenance of the programs (beyond PY2012).

[48] Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

[49] Evaluation costs are assumed to be 3% of program implementation costs.

[50] This is the contractor's responsibility, so no additional costs are incurred by PECO.

[51] This is the contractor's responsibility, so no additional costs are incurred by PECO.

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Distributed Energy Resources	$59	$55	$4	1.08

3.3.7 DR Program 7—Permanent Load Reduction

A. Program Title and Program Years

Program Name: Permanent Load Reduction

Program Years: Development: PY 2009; Operation: PY 2010-PY 2012

B. Objectives

The objective of this program is to realize energy savings and peak demand reductions from eligible commercial/industrial customers in PECO's service territory during the top 100 hours. The targeted net system peak demand reduction from this program is set at about 15 MW by the end of PY 2012.

C. Target Market

This program will be targeted toward all eligible commercial/industrial customers in PECO's service territory.

D. Program Description

This program is designed to encourage customers to permanently move electricity usage from peak periods to off-peak periods on an ongoing basis. Energy storage systems or any other technologies that permanently shift or eliminate load from peak to off-peak periods that are deployed at customer sites would be eligible for the program. Examples of such systems may include technologies like Gas Absorption chillers and Thermal Energy Storage (ice building for cooling) systems. The program is not restricted to offering incentives for any specific technology and encompasses any measure option that enables permanent load shifting, like an energy efficiency lighting upgrade, or process equipment modernization in which a reduction in energy consumption can be verified. Also Retro-commissioning activities are eligible to receive incentives as a custom measure under this program. This program would be designed in the same manner as the Custom Rebate portion of the C&I Equipment Incentives program.

E. Implementation Strategy

PECO will implement the Permanent Load Reduction (PLR) program through one or more CSP implementation contractors, directly with end use customers, and architectural, mechanical and electrical engineering/design firms. PECO's role will be to ensure that:

- the CSP performs all the activities associated with delivery of all components or the program
- PECO's educational and program messages are delivered accurately and clearly to ensure the effectiveness of program delivery and maximize customer satisfaction with the program.

The key elements in the implementation strategy are:

- Program staff assignment- PECO will select and assign a program manager and an engineer for developing this program, following approval by the Commission.
- Contract with outside implementation contractor- PECO will select and contract program implementation with an outside CSP.

- Customer Recruitment and Assistance- Eligible commercial/industrial customers who can install permanent load shifting technologies will be recruited to participate in the program. The contractor will be responsible for customer recruitment, as well as assisting customers with development of estimates and documentation for approval of custom measure projects.
- Program marketing- PECO staff along with the contractor will be responsible for distribution of program materials to eligible participants. PECO's account representatives will have primary responsibility for establishing direct communication with the customers in order to promote the program. Direct mail can also be used for program promotion.
- Customer education- The contractor will be responsible for educating participants about the program through one-on-one contacts and through training workshops, lectures, and seminars.
- Incentive processing- The contractor will be responsible for receiving, review and verifying incentive applications. Incentives can be paid directly by the contractor or submitted to PECO for payment.
- Reporting- This will involve reporting of program activities to meet regulatory and internal requirements, including progress toward program goals
- Program performance tracking and improvement- This will involve tracking performance of the technologies used for load reduction, incentive submittals and payments, and identification of areas for program improvement.

F. Program Issues, Risks, and Risk Management Strategies

Unlike the other DR measures, most projects designed for permanent load shift exhibit a documentable reduction in demand for energy. As such once verified, the demand reduction is by definition, permanent. The demand reductions from this program will be realized during the top 100 hours annually.

G. Ramp Up Strategy

Program participant recruitment activity starts in PY 2009, even though program impacts are not realized in that year since PY 2009 ends May 31, 2010, which is prior to the start of the 2010 DR season.

H. Marketing Strategy

The marketing strategy for the PLR program will be based on a business to business approach through PECO's account management, in addition to equipment manufactures, trade allies, and engineering & design firms. The implementation contractor(s) will be responsible for distributing information about qualifying technologies and with assisting customers in program participation.

I. Eligible Measures and Incentives

Examples of technologies that lead to permanent load reduction are:

- Gas Absorption Chiller System
- Thermal Energy Storage System
- Retro-commissioning project as custom measure

Incentives are administered, similar to custom rebates in energy efficiency programs, at a level of 21% of per participant cost. For the three measures mentioned here, that effectively translates into incentive levels indicated in the table below.

Measures	Per Participant Annual Incentives ($/kW)
a. Gas absorption chiller system	$343
b. Thermal energy storage system	$350
c. Retro-commissioning	Custom

J. Program Schedule

Proposed Permanent Load Reduction Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	October 2009
Begin final program design	October 2009
Select and contract with program implementation CSP(s)	November 2009
Complete program design	March 2010
Pre-rollout program development: Conduct contractor recruitment and training	October 2009
Program rollout: Launch marketing and outreach Undertake customer education Perform verifications and improvements	 April 2010 April 2010 June 2010 – May 2013
Prepare reports: Documentation of program activities and progress toward goals by CSP Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

PECO will work with a third party M&V contractor to design and execute appropriate analyses of a statistically valid set of sites to verify load reductions at individual sites as well as aggregate load reductions achieved.

L. Administrative Requirements

PECO will administer the program through one or more CSP implementation contractors. PECO's role will be to ensure that the CSP performs all implementation activities related to the program

The program is expected to operate with the following PECO/Contract staffing mix:

Permanent Load Reduction Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager	0.38 FTE in PY 2009 0.5 FTE in PY 2010 through PY 2012
Engineer	0.25 FTE in PY 2009 0.5 FTE in PY 2010 through PY 2012

M. Estimated Participation

Permanent Load Reduction—Estimated Participation ('number of participants' or 'units installed' per year)

	PY 2009	PY 2010	PY 2011	PY 2012
a. Gas absorption chiller system	2	10	15	15
b. Thermal energy storage system	2	3	5	5
c. Retro-commissioning	5	15	30	30
Total no. of participants/units installed	**9**	**28**	**50**	**50**

*The proposed adjustment will not impact the total cost of the Program as incentives can be offered for other qualifying technologies.

N. Estimated Program Budget

The table below gives the estimated budget for the PLR Program.

Permanent Load Reduction—Estimated Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Customer-Specific Costs					
Incentive Costs	$223,428	$747,372	$1,190,037	$1,233,180	$3,394,017
Sub-Total	**$223,428**	**$747,372**	**$1,190,037**	**$1,233,180**	**$3,394,017**
Direct Labor Costs					

Program Manager	$56,250	$77,250	$79,568	$81,955	$295,022
Engineer	$37,500	$77,250	$79,568	$81,955	$276,272
Sub-Total	**$93,750**	**$154,500**	**$159,135**	**$163,909**	**$571,294**
Other Program Services					
Implementation Contractor (CSP)[52]	$0	$198,296	$493,021	$805,252	$1,496,569
Umbrella Costs[53]	$31,218	$36,462	$37,556	$38,683	$143,918
Evaluation[54]	$7,639	$29,464	$51,618	$62,313	$151,035
Education[55]	$0	$0	$0	$0	$0
IT System enablement costs	$0	$0	$0	$0	$0
Promotion[56]	$0	$0	$0	$0	$0
Sub-Total	**$38,857**	**$264,221**	**$582,196**	**$906,248**	**$1,791,522**
Grand Total	**$356,035**	**$1,166,093**	**$1,931,368**	**$2,303,338**	**$5,756,833**

O. Projected Energy Savings and Demand Reduction

Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	451	6,325	17,607	28,888
Peak Demand Reduction (MW)	0.0	3.9	9.3	14.7

P. Cost-Effectiveness

- Levelized Cost of saved energy: $0.045/kWh
- Levelized Cost of saved capacity: $89/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
PLR Program	$29	$19	$10	1.56

[52] Assume $50/kW costs for all four program years

[53] Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&Voversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

[54] Evaluation costs are assumed to be 3% of program implementation costs

[55] This is the contractor's responsibility, so no costs are incurred by PECO.

[56] This is the contractor's responsibility, so no costs are incurred by PECO.

3.3.8 DR Program 8—Conservation Voltage Reduction (CVR)

A. Program Title and Program Years

Program Name: Conservation Voltage Reduction

Program Years: Development: PY 2009; Operation: PY 2010-PY 2012

B. Objectives

The objective of this program is to realize energy savings and peak demand reduction from eligible customers in PECO's service territory during the top 100 peak hours, thereby supporting achievement of the energy savings and demand reduction targets set forth in Act 129. The targeted net system peak demand reduction from this program is set at 11 MW at the end of PY 2012.

C. Target Market

All PECO customers

D. Program Description

This program incorporates voltage regulation techniques on distribution feeders that result in lower (but within regulatory requirements) service voltage levels, thereby reducing associated energy consumption and demand. A number of techniques could be deployed to achieve these reductions. This program implements a 1% voltage reduction at the substation bus from historic levels. The voltage set points for 13.2KV and 34KV distribution substations with automatic voltage controls (AVCs) and load tap changers (LTCs) will be recalibrated to deliver a 1% lower voltage. The voltage at the substation bus is monitored to ensure that voltage levels do not drop below regulatory requirements.

E. Implementation Strategy

This program is primarily implemented by PECO Transmission and Substation Technicians who will perform the set point changes. Additionally, PECO or Contract crews will perform additional voltage mitigation activities such as installing distribution circuit capacitors, larger distribution transformers and replacing primary and secondary wire to address any potential customer issues as a result of the program implementation. Contractors will be hired to perform the CVR related work and/or work normally done by the PECO crews. PECO's overall responsibility is to ensure that the goals of the program are accomplished.

F. Program Issues, Risks, and Risk Management Strategies

In this program, there is a risk that the lower bus voltage will impact customer voltages. The mitigation strategy is to investigate and improve customer voltages through installation of capacitor banks, pole top or URD transformers and larger primary or secondary wire. Ultimately the voltage may need to be adjusted up to its previous setting to resolve some issues. The energy (kWh) and demand (MW) savings have been conservatively estimated to account for that possibility.

G. Ramp Up Strategy

Program activity would commence in PY2009, even though program impacts are not realized in that year since PY2009 ends May 31, 2010, which is prior to the start of the 2010 DR season.

H. Marketing Strategy

Limited marketing activities are anticipated for this program since it mainly addresses the PECO system. Some level of customer outreach however is necessary and would likely relate to communication strategies addressing how customers might be affected (if at all) by lowering of voltage levels.

I. Eligible Measures and Incentives

There are no specific eligible measures and incentive levels indicated for this program.

J. Program Schedule

Proposed Conservation Voltage Reduction Program Schedule

Key Milestone	Timing
Assign PECO program manager and staff	October 2009
Schedule and begin implementing set point changes	November 2009 and completion prior to June 2010
Prepare reports: Documentation of program activities and progress toward goals by contractor Reports to Commission	 Monthly throughout program implementation period Quarterly, and annually each July 15
Conclude program operation for this planning cycle	May 2013

K. Evaluation, Measurement, and Verification Requirements

PECO will work with the third party M&V contractor to design and execute appropriate analyses of a statistically valid set of sites to verify load reductions at individual sites as well as aggregate load reductions achieved.

L. Administrative Requirements

PECO will administer the program internally. Contractors will be used to perform activities that PECO staff would normally perform.

PECO's role will ensure that all implementation activities related to the program are executed.

The program is expected to operate with the following PECO/Contract staffing mix:

Conservation Voltage Reduction Program – Proposed PECO/Contract Staffing

Staff	Allocation
Program manager	0.19 FTE in PY 2009 0.25 FTE in PY 2010 through PY 2012

M. Estimated Participation

Not Applicable - Expressed as an 'aggregate' participant

N. Estimated Program Budget

The table below gives the estimated budget for the Conservation Voltage Reduction Program.

Conservation Voltage Reduction Program – Estimated Budget

	PY 2009	PY 2010	PY 2011	PY 2012	Total
Direct Labor Costs					
Program Manager	$28,125	$38,625	$39,784	$40,977	$147,511
Sub-Total	**$28,125**	**$38,625**	**$39,784**	**$40,977**	**$147,511**
Other Program Services					
Implementation Contractor (CSP)	$1,850,000	$1,905,500	$0	$0	$3,755,500
Umbrella Costs[57]	$15,609	$18,231	$18,778	$19,341	$71,959
Evaluation	$56,812	$58,871	$1,757	$1,810	$119,249
Education	$0	$0	$0	$0	$0
IT System enablement costs	$0	$0	$0	$0	$0
Promotion[58]	$0	$0	$0	$0	$0
Sub-Total	**$1,922,421**	**$1,982,602**	**$20,535**	**$21,151**	**$3,946,708**
Grand Total	**$1,950,546**	**$2,021,227**	**$60,319**	**$62,128**	**$4,094,219**

O. Projected Energy Savings and Demand Reduction

Cumulative Energy and Peak Demand Savings Estimates

	PY 2009	PY 2010	PY 2011	PY 2012
Energy Savings (MWh)	0	110,000	110,000	110,000
Peak Demand Reduction (MW)	0.0	11.3	11.3	11.3

P. Cost-Effectiveness

- Levelized Cost of saved energy: $0.002/kWh
- Levelized Cost of saved capacity: $24/kW-yr

Program	Dollars (Millions)			TRC
	Lifetime Benefits	Lifetime Costs	Net Benefits	
Conservation Voltage Reduction	$113	$4	$109	26.70

[57] Each program in the plan will pay a proportional of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

[58] This is the contractor's responsibility, so no costs are incurred by PECO.

4 Program Management and Implementation Strategies

4.1 Overview of PECO Management and Implementation Strategies

4.1.1 Types of services offered by PECO and other parties

PECO will provide a portfolio of financial incentives, delivered through Conservation Service Providers (CSPs), low income installation companies, trade allies and retailers, to end use customers that elect to utilize energy efficient equipment, appliances or processes that result in saving kWh or reducing kW. In most cases, these products/services will be delivered through existing channels and trade allies such as HVAC contractors, retail stores etc. Our low-income program will provide weatherization and direct installation of CFLs to low income customers. PECO will use a CSP to provide these services. The Whole Home Performance program follows the ENERGY STAR whole home model and incorporates an initial audit (paid for by the customer) and the direct installation of low cost measures that will save the customer the approximate cost of the audit. The audit will provide recommendations the customer can take to further reduce their energy consumption. PECO intends to hire a CSP that will provide the audits and work with trade allies to install the measures the customer elects.

PECO will support the plan implementation through a combination of internal resources, CSPs, and the use of multiple trade allies and retail distribution outlets. This will provide multiple entry points for customers to be made aware of the programs and have the opportunity to participate.

Strategically, PECO will maximize the use of CSPs to bring their experience to bear for Pennsylvania. CSPs will be responsible for program implementation, staffing, training, and tracking of the programs and measures they are contracted to provide. CSPs will also be responsible for developing the trade ally network, providing call center and customer service functions and recommending appropriate marketing and incentive levels required to reach our targets. Wherever possible, incentives and penalties will be built into their contracts to ensure performance.

PECO also intends to hire a CSP to be responsible for measurement, verification and evaluation. This function will ensure that programs are meeting their goals and are appropriately verified. This function will also interface with the Statewide Evaluator to ensure measurement and verification protocols are aligned with the State's requirements. PECO will develop, using a CSP, a tracking system, through which, all programs will be tracked and appropriate records kept for participating customers.

PECO hired Global Energy Partners (Global) in November 2008 to aid in the development of the plan. Global has extensive experience in the development and execution of energy efficiency and demand side management programs. As part of this engagement, the Brattle Group was utilized as a sub-contractor in the development of the peak demand reduction programs required under Act 129.

PECO specific resources will be utilized to perform the following functions:

a. Overall program management
~~a.~~b. Vendor/CSP management
~~a.~~c. Program analysis
~~a.~~d. Measurement and Verification management
~~a.~~e. Budget Management

These resources will serve as the managerial and controlling functions across all CSPs to provide strategic direction, develop and review Request for Proposals (RFPs), analyze program performance, develop, coordinate and execute education, awareness and promotions, develop and recommend program changes, and ensure overall program success.

4.1.2 Risk categories and risk mitigation strategies

Risk management is essential to ensure program targets are met, both efficiently and effectively. Risk must be managed on an on-going basis and processes will need to be modified over time as PECO gains experience running these programs. A key concern is that the economic downturn may drive customers to repair older appliances that could be replaced with high efficiency alternatives. Each of these risks, if not managed properly, could result in lower program performance. The following are some key steps PECO is taking to manage those risks.

While more detail will follow, we have incorporated the following principles into our plan to mitigate much of the risks outlined below:

1. Selecting programs that are simple, flexible and have a history of delivering results in other states
~~1.~~2. Developing a plan with a broad mix of programs to avoid over reliance on any single measure, channel or customer segment
~~1.~~3. Over acquiring savings/reductions in certain programs to hedge unknown performance across the entire portfolio.

PERFORMANCE RISK

Program benchmarking is the first step PECO took to ensure the portfolio was well balanced with a high likelihood of success. These types of programs have run for many years in states such as California, Vermont and New York. Lessons learned from these programs have been incorporated into our program portfolio.

Performance risk will also be managed utilizing a well thought through and clear RFP for bidding programs to the CSP marketplace. It is essential that a disciplined RFP evaluation and selection process be utilized to ensure experienced CSPs are utilized in the final design and implementation of the PECO programs. Proven track record of performance will be a key evaluation criteria. CSP contracts, where possible, will include performance clauses with penalties to ensure CSPs have a strong financial incentive to succeed.

In addition, Program Managers will be responsible for the continual oversight and modifications to the programs to not only provide corrective actions if goals are not being met, but to maximize

the performance of programs that are meeting the goals. If programs are not meeting their goals, changes must be made to program structures and processes to correct any flaws.

Lastly, PECO plans to continue to meet with stakeholders and other Pennsylvania EDCs to share learning's and draw on the program experience across the state to improve the programs in its portfolio.

TECHNOLOGY RISK

Pennsylvania has not had this type of widespread energy efficiency program in its history. Since this is a new set of programs not introduced previously, the PECO plan focuses the majority of the incentives on known technologies and products with established energy efficiency savings.

The Commission had the foresight to develop a technical reference manual (TRM) which provides the standards upon which prescriptive or deemed savings will be calculated. Utilizing this methodology removes much of the technology risk from the more prescriptive measures in the plan and results in a more cost effective measurement and verification process.

Custom savings will be measured and will utilize pre and post-evaluations to verify energy savings and confirm the level of incentive provided to a customer. Incentive payment estimates will be based on standard engineering and energy calculation principles. Final payments will be based on the confirmed savings. This approach to custom programs will ensure that energy savings estimates are verified and appropriately counted.

MARKET RISK

PECO, in conjunction with our consultant, Global, has worked very hard to ensure a strong portfolio of programs, benchmarked for success in other jurisdictions, and developed with input from key stakeholders. Participation is a function of awareness that the programs exist, motivation to participate, and availability when ready to purchase. To reduce market risk, PECO plans to do the following:

1. A well-funded education and awareness program will accompany the launch of our programs. This will include not only program awareness, but also the benefits of becoming more energy efficient.
2. All trade allies will be trained and provided appropriate materials to ensure awareness and knowledge of the programs and how these programs will help them further their business goals.
3. Strong promotional advertising will be implemented to further drive awareness and call to action.
4. As appropriate, point of sale material will be placed in participating retail stores.
5. PECO will make participation as easy as possible for customers.
6. CSPs hired by PECO will bring strong program design and implementation experience to ensure the best chance for success.

EVALUATION RISK

Evaluation risk occurs when different assumptions are utilized to determine energy savings. Eliminating evaluation risk begins with program design, to ensure all assumptions and M&V protocols are agreed to upfront. PECO will work very closely with the Statewide Evaluator to ensure consistent assumptions and processes are agreed to.

Additionally, the TRM will provide a known set of assumptions for most prescriptive measures. Questions should not arise over the number of kWh saved, but a disciplined verification procedure will be in place to ensure measures that customers claim to be installed, have in fact, been installed. This will be a key role of our Manager of M&V as well as our CSP responsible for M&V. PECO will use industry standard methods to perform the measurement and verification process.

Custom measures will be worked with our M&V staff in advance to ensure a comprehensive review of the program and the kWh reduction targets. Pre and post- meter evaluations will be conducted to ensure the savings has occurred with appropriate documentation of the savings.

4.1.3 Human resource and contractor resource constraints

PECO plans to address potential human resource and contractor resources constraints in various ways. PECO understands there will be several areas of expertise needed to implement the plan. PECO will leverage its existing organizational infrastructure with plans to grow the organization to meet the needs of implementing the plan. Internally, the organization will be overseen by Energy and Marketing Services and will be further broken out in the marketing department by the following groups: *Residential Energy Efficiency Programs, Commercial and Industrial Programs, Demand Reduction, Measurement and Verification, Business Planning and Promotions.*

In order to implement the programs, as well as other required functions necessary, the plan includes twenty-seven (27) incremental full time equivalents (FTEs). The FTEs will include Program Managers, Business Analysts, Contract Administrators and Engineers. The incremental resources will be a combination of PECO new hires and contracted resources. The additional resources are necessary to oversee CSP performance and to coordinate and integrate various implementation efforts. PECO's strategy is to immediately hire six of the twenty-seven FTEs required to launch the first set of programs in the 2009/2010 timeframe. As the additional programs are launched, PECO expects to bring on a combination of permanent employees and/or contractors as needed to ensure alignment of resources with plan execution.

PECO will address any resource constraints by working closely with industry associations such as the Association of Energy Services Professionals (AESP), Peak Load Management Association (PLMA) and others who specialize in Energy Efficiency and Demand Response to leverage as a communication network for appropriate resources.

As far as contractor resources, PECO intends to work closely with CSPs and to understand the resources that will be necessary to implement the plan. Recognizing that there may be some constraints in the early program years, PECO will recommend through its RFP process that the

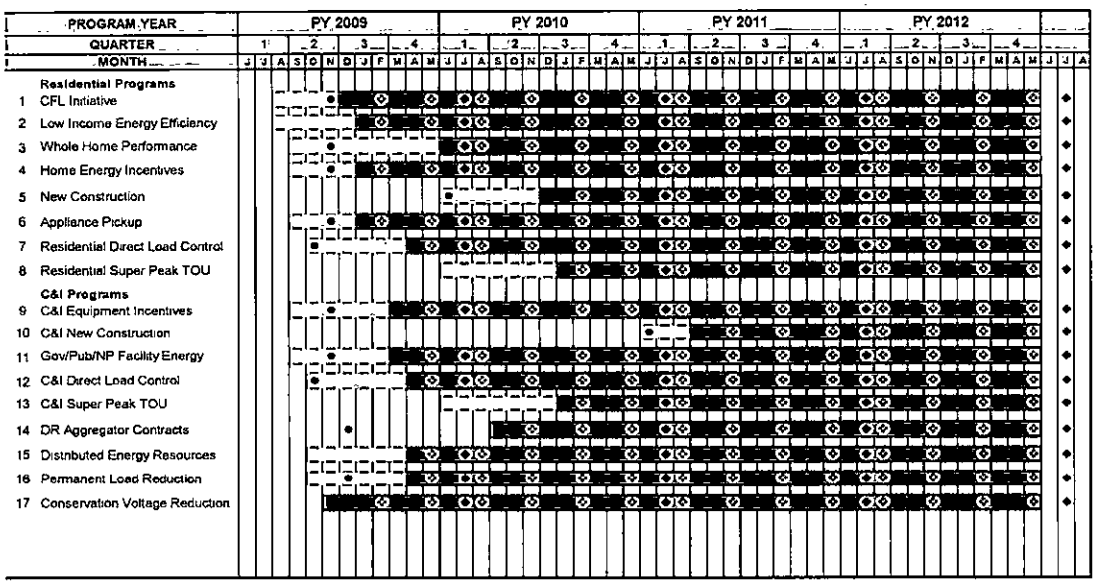
potential CSPs work closely with organizations and agencies such as Smart Energy Initiative, Philadelphia Workforce Development Corporation, Electrical Association of Philadelphia and other similar organizations to communicate the skills required and how these organizations can help close the gap.

4.1.4 Early warning systems to indicate progress towards goals and process for adjustment

Program Managers will closely monitor the programs and will have access to a tracking database that will be populated by CSPs. Performance indicators will be identified with goals and milestones and will be tracked on a monthly basis. Monthly review of performance indicators as well as feedback from CSPs will assist in the identification of "early warning signs". In addition, PECO will work closely with its measurement and verification vendor to understand how programs can be improved or what programs may need to be eliminated based on customer participation and feedback.

4.1.5 Implementation schedules with milestones

PECO recognizes that in order to meet the Energy Efficiency targets, they will need to launch a major portion of the Energy Efficiency programs in 2010 and stagger implementation of Demand Reduction programs to meet PY 2012 targets. Milestones and goals will be identified and developed with the selected CSP for individual programs. The following illustrates PECO's proposed portfolio implementation schedule:



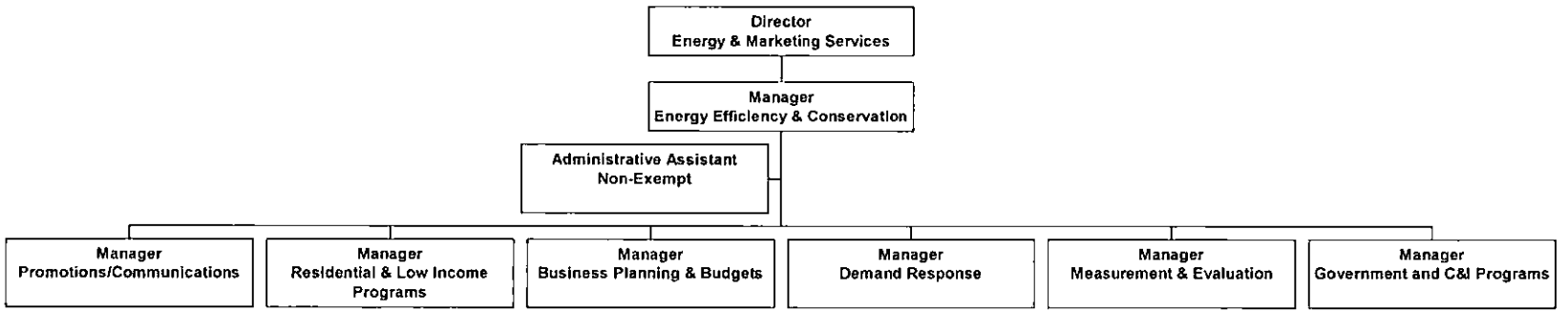
Legend
- Program Design period
- Program Operation period
- ● CSP placed under contract
- ◇ Quarterly report to Commission
- ◆ Annual report to Commission

4.2 *Executive Management Structure*

4.2.1 PECO Structure for addressing portfolio strategy

PECO's organizational design will be consistent with the recommended plan execution. The organization will consist of full-time equivalents and contractors. The below table illustrates management-level support for the programs.

PECO Proposed EE&C Organization



New Positions: 2

4.2.2 Approach for overseeing the performance of CSPs and other providers

Oversight of CSPs will be a key factor in the managing of programs. PECO will incorporate performance measures into its contracts with the CSPs. The Program Manager will monitor performance closely through the tracking system that will measure key indicators such as participants, costs, and other program specific indicators for various programs. The Program Manager will work closely with the CSP to understand how the program is performing and if changes may be needed to make the program more successful. In addition, as part of the PECO M&V process, random surveys will be performed to understand the customer's satisfaction with the program as well as any ideas on how the customer experience may be improved.

Regularly-scheduled meetings will be held with senior leaders and CSPs to provide overview and update of program status, as appropriate.

4.2.3 Basis for Administrative Budget

The administrative expenses are those expenses that are required to perform the programs included in the plan. They account for approximately 8.7% of the total budget and fall into the following categories:

Incremental Direct Labor	$10.3M	3.1%
Program Evaluation	$9.8M 3.0%	
Umbrella Costs[59]	$8.5M 2.6%	
Total Cost	$28.6M	8.7%

PECO labor represents PECO employees and contractors required to develop, execute, vendor manage, review and analyze all programs in the portfolio. Program evaluation falls well within the 5%-8% benchmarks for this function. The umbrella costs include expenses that cannot be allocated to any individual program such as the Statewide Evaluator.

4.3 Conservation Service Providers (CSPs)

4.3.1 List any selected CSPs, describe their qualifications and basis for selection (include contracts in Appendix)

PECO will be launching several EE&C programs to attain the Energy Efficiency and Demand Reduction goals. Compact Fluorescent Lamps will be the first program

[59] Each program in the plan will pay a proportional share of costs PECO will incur to build infrastructure and support the programs. This includes additional PECO staff for program and M&V oversight, general energy efficiency education, tracking database development and EE&C Plan development costs.

launched. The CFL program will be the flagship program that will serve to build energy efficiency awareness and educate consumers. Ecos Consulting, Inc., headquartered in Portland, Oregon, has been selected as the vendor to implement the CFL program. Ecos has managed more than 500 programs throughout the U.S. and Canada since 1997. Ecos has worked with many utilities, including but not limited to Arizona Public Service, Nevada Energy, Tucson Electric Power, Southern California Edison, Seattle City Light, Puget Sound Energy (Washington State), San Diego Gas and Electric, Energy Trust of Oregon, NYSERDA, Dayton Power & Light (Ohio), and Pacific Gas & Electric. In addition, Ecos Consulting, Inc. is a founding Board member of the Midwest Energy Efficiency Alliance (MEEA).

In addition to the ability to meet the program's energy savings and budget goals defined by PECO, Ecos Consulting, Inc. was selected over its peers after demonstrating the following:

- CFL Recycling: A well defined CFL recycling program that includes partnering with Veolia Technical Solutions to distribute recycling pails at participating retailers. This recycling program includes developing promotional materials and training participating stores, and managing liability. Ace and True Value retailer chains currently participate in the recycling program in other states.
- Quick Launch: Identified 18 retailers in PECO's territory with over 250 locations. Retailers include drug, grocery, and specialty stores that are in the Philadelphia region. This is essential to quickly reach consumers within the Philadelphia city limits.
- Management Plan: Proposed a management plan that supports PECO's implementation requirements. This staff will be responsible for visiting retailers, ensuring that shelves are stocked properly, and that appropriate signage is displayed to promote PECO's programs. The staff will also be available to educate consumers visiting stores
- Marketing: Proposed a turn-key marketing operation that includes creative and innovative campaigns
- Web Site: A comprehensive Web site with retailer search will be offered to PECO customers.

The following contract is was previously submitted and approved by the Commission.:

- CFL contract between PECO and Ecos Consulting, Inc.

4.3.2 Describe the work and measures being performed by CSPs

The CFL CSP will be responsible for designing program phases for execution, developing the Manufacturer/Retailer Recruitment and/or Distribution Process, developing the education and outreach programs, working with PECO to develop a marketing plan and developing a process for Program Performance Monitoring.

The CSP will report point-of-sales bulb data from retailers. This bulb data will be reported in the tracking system and will be utilized to calculate and report energy and demand savings from bulb sales at retailers.

4.3.3 Describe any pending RFPs to be issued for additional CSPs

PECO has issued the following RFPs and is in the process of negotiating contracts with the selected CSPs:

Low Income Energy Efficiency

Residential Home Energy Incentives

Residential and Commercial & Industrial Direct Load Control (A single CSP will be responsible for both programs)

Commercial/Industrial Equipment Incentives, Commercial/Industrial New Construction, Government/Public/Non-Profit Energy savings and Permanent Load Reduction (A single CSP will be responsible for all four programs)

PECO has submitted the following CSP contracts to the Commission for approval:

Measurement and Evaluation – submitted September 2, 2009, approved September 17, 2009

Program Evaluation and Tracking System – submitted November 11, 2009, pending approval

EE&C Plan Development – submitted July 1, 2009 (with EE&C Plan), pending approval

Residential Appliance Pickup – submitted November 30, 2009, pending approval

5 Reporting and Tracking Systems

5.1 Reporting

PECO plans to utilize a CSP to conduct impact and process evaluations and a separate CSP to develop and maintain an M&V Tracking System.

The M&V Evaluation Contractor (CSP) will be responsible for conducting impact and process evaluations of all programs and Plan and interfacing with the Statewide Evaluator to determine the required data collection and reporting requirements. The M&V Evaluation Contractor will then disseminate that information to the M&V Tracking System Vendor and Implementation CSPs to ensure that all data collection and reporting requirements are satisfied.

The M&V Tracking System CSP will be responsible for developing and maintaining a robust tracking system, capable of storing all of the required data and providing reports, outlined by the Statewide Evaluator, on a secure electronic platform.

While the data collection and reporting requirements have yet to be determined by the Statewide Evaluator, PECO has attempted to provide a plan anticipating items that might be required by the Statewide Evaluator to satisfy the compliance requirements of Act 129. The Plan will be adjusted accordingly when the actual data collection and reporting requirements are developed.

5.1.1 List of Reports

It is anticipated that Project Reporting will include the Commission's final reporting requirements as outlined by the Statewide Evaluator. The draft template proposed format is available on the PUC's Web site at http://www.puc.state.pa.us/electric/Act_129_info.aspx.

Project Reporting is expected to include, but will not necessarily be limited to, the following items:

1. **Quarterly** – It is anticipated that reports would be available on a quarterly basis, which outline program status, invoicing and administrative responsibilities. Status reports will identify issues with each evaluation (i.e. *difficulties in getting the job done, with recommended or agreed solutions*). Review of major findings, observations, analysis, review of evaluation implementation and recommended updates to the evaluation plan. The PECO M&V Contractor is expected to provide a report to the Statewide Evaluator.
2. **Ad-hoc** – To document problems, resolution and urgent issues as they arise. These reports may also need to be linked with planned evaluation efforts or changes to planned evaluation efforts that result in changes in work efforts.
3. **Interim, Compliance, and Final Evaluation Reports** - These reports will determine compliance with the Plan reduction requirements. The reports will provide total savings and savings by segment. To be in compliance with the

Plan, the reports will demonstrate energy impacts and total energy savings in a cost effective manner. The reports will provide four snapshots in time as well as any other evaluation findings, observations, and recommendations regarding the programs in the contract group.

- First Report – ***Due September 15, 2010*** to cover the first year
- Second Report – ***Due date as determined by the Commission*** to cover the second year, plus a cumulative two year summary
- Third Report – ***Due date as determined by the Commission*** to cover the third year, plus a cumulative three year summary
- Final Report – ***Due date as determined by the Commission*** to cover the fourth year, plus a cumulative four year summary

Final Project Management Report – The final project management report will summarize the work that has taken place in relation to the Plan. The format and contents will be specified by the Statewide Evaluator. It is expected that this will be a report presenting an overview of the evaluation efforts and identifying the key issues that were identified during the evaluation, with a summary of how they were resolved. The report is also expected to contain impact and process evaluations to detail compliance with Act 129 requirements and recommend process improvements for future programs.

5.1.2 Data Submissions

Please refer to sections 5.2.1 and 5.2.2 for data that would be available to the Commission and its Statewide Evaluator.

5.2 Project Management Tracking Systems

Although the exact M&V Tracking System requirements have not been established by the Statewide Evaluator, PECO anticipates that the elements outlined in the following sections might be required. PECO will adjust its Plan to conform to the data collection and reporting requirements established in collaboration with the Statewide Evaluator.

5.2.1 Data Tracking System Overview

It is expected that the M&V Tracking System would provide a variety of standard reports as well as support an ad hoc query and report development process. The standard reports would support PECO's tracking of incentive commitments, incentives paid, and kWh and kW achieved as well as other pertinent data.

Examples of standard reports include, but are not limited to:

- Incentives committed year-to-date and current reporting period
- kWh and kW achieved year-to-date and current reporting period
- Incentives paid out year-to-date and current reporting period

- kWh and kW variance reports, by vendor, by program element, by measure
- kWh and kW incentive forecast based on application completion dates
- MW of demand reduction resources based on program performance

In addition to the report functions, it is expected that the system would also be capable of exporting data for use in other software (e.g. Microsoft Excel).

The primary critical metric is that all financial components of the programs will be tracked. For this reason, tracking of incentives, both committed and paid during any plan year, is a critical component for this system. All of PECO's programs are subject to strict budgetary constraints. The M&V Tracking System will ensure and adhere to parameters and specified protocols. In addition, implementation, administrative, and forecasts will be tracked to ensure all elements of the program qualify for cost recovery treatment.

The second critical metric that will be tracked is total kWh of energy conservation and kW of demand reductions achieved. PECO's programs will use both deemed savings values and custom measure values. Deemed savings values will be provided by the Technical Reference Manual (TRM) in two ways: 1) table based pre-calculated savings and reductions that could be loaded into the database and updated periodically as the TRM is updated, and 2) formula based savings and reductions that will need a calculation to determine the savings and/or reductions based on variable inputs – the formulas would reside in the database and be updated periodically as the TRM is updated. Custom measures will all be formula based but the formulas will not be standardized so that the system would allow for direct entry of kWh savings and kW reductions for each measure. The tracking system would allow for such direct entry, and should also allow the uploading and storage of electronic documentation that supports the calculated savings.

The Statewide Evaluator will perform an annual and four year independent evaluation of the cost-effectiveness of PECO's EE&C Plan, as well as develop the measurement and evaluation protocols, standard data collection formats, and data bases for the evaluation of program benefits and results to be used across all EDC service territories. Based on recommendations from the Statewide Evaluator, the reporting requirements may change.

5.2.2 Software Format, Data Exchange Format and Database Structure

The M&V tracking system will receive data from PECO's customer Billing and Data Management Systems. PECO's Customer Information and Marketing System (CIMS) and Chronological Energy Demand Activity Repository (CEDAR) are customer information management systems that are Mainframe/MVS based. The data is stored in a DB2 database system. There are two standard interface methods with CIMS:

- File transfer
    - The vendor must have a file transfer protocol (FTP) server where a CIMS batch process can either send to or receive files from.
    - The vendor must be able to support the following secure file transfer process.

        - Secure file transfer protocol (SFTP)
        - FTP with a Procedures Generation Package (PGP) encrypted file process
    - The files must be standard text files.

- Extensible Mark-up Language (XML) communication

PECO's internal customer systems include: CIMS, CEDAR, and Customer Data Warehouse (CDW).

It is anticipated that the M&V Tracking System will need to track a number of items that facilitate effective project tracking and regulatory reporting. This data will also support PECO's Quality Assurance process as well as Evaluation, Measurement and Verification requirements.

PECO envisions data being collected at several levels including, but not limited to, the following:

- Customer
- Class
- Building or Premise
- Program
- Measure
- Service Point
- Interval Meter/Historical Usage
- Meter Reading Types

It is expected that this hierarchy would interface with PECO's existing CIMS, and must facilitate future data analyses. PECO will provide an initial population of Customer, Premise and Account data that would be used to qualify customers for programs. Some of the fields in the initial data set are expected to include, but not be limited to, the following:

- Account Number
- Customer Number
- Premise Number
- Customer First Name
- Customer Name Compressed (for Commercial Accounts)
- Premise Address 1
- Premise Address 2
- Premise City
- Premise State
- Premise Zip Code
- Customer Primary Phone Number
- Customer Alternate Phone Number
- County of Premise Address
- Code for Type of Premise (Residential or Commercial Premise)

- Code for Rate Information

Additional data would then be entered by Implementation Contractors or PECO to complete the application process. In addition to the pertinent data listed above, it is anticipated that the M&V Tracking System would also track application status, such that PECO will be able to identify progress at each point from initiation to completion.

5.2.3 Tracking System Access

PECO will provide select customer account data to the M&V Tracking System Vendor as part of the customer validation process for application enrollment. This data must be considered highly confidential and must be protected against unauthorized access or disclosure. In addition, all of the data collected from Implementation Contractors related to PECO's programs will be considered confidential and subject to the same protections. Security processes and protocols will be established to secure all data from unauthorized access. PECO and the M&V Tracking System Vendor will jointly develop processes for data backup and disaster recovery.

An anticipated key to the real-time data aspects of the M&V Tracking System will be a web-based interface for the Implementation Contractor and/or third-party vendors. Such a thin-client platform will support the central location of all data and help maintain currency for tracking, reporting and fulfillment. PECO plans to provide some level of linking between the tracking interface and its existing PECO websites. As such, the web client is expected to have a look and feel that is similar to PECO's other websites. PECO will provide the specifications for this requirement to the selected M&V Tracking System Vendor. PECO envisions integrating the user interface components of the M&V Tracking System website more fully into PECO's website.

While on-line data entry is the preferred method for this system, PECO acknowledges that there are situations where access to the web may be limited or non-existent. It is expected that the tracking system would be designed with consideration for limited use of off-line data entry. This may be accommodated via a software solution or by using off-line electronic forms (e.g., Adobe Acrobat forms). It is expected that the M&V Tracking System will offer an off-line solution for Implementation Contractors and users. Such a solution will include a process for ensuring timely updates of the on-line database from off-line tools.

It is expected that vendors will be capable of using this system to input projects and determine incentives on behalf of their customers. The interface would facilitate easy retrieval of project information by vendors. It would also facilitate vendor tracking of projects by status, giving the vendors a tool to manage multiple customer projects. It is possible that a single project may contain multiple measures, with more than one vendor fulfilling different measures. PECO and the M&V Tracking System Vendor will address such situations so that a vendor cannot arbitrarily access other vendor's measures or projects.

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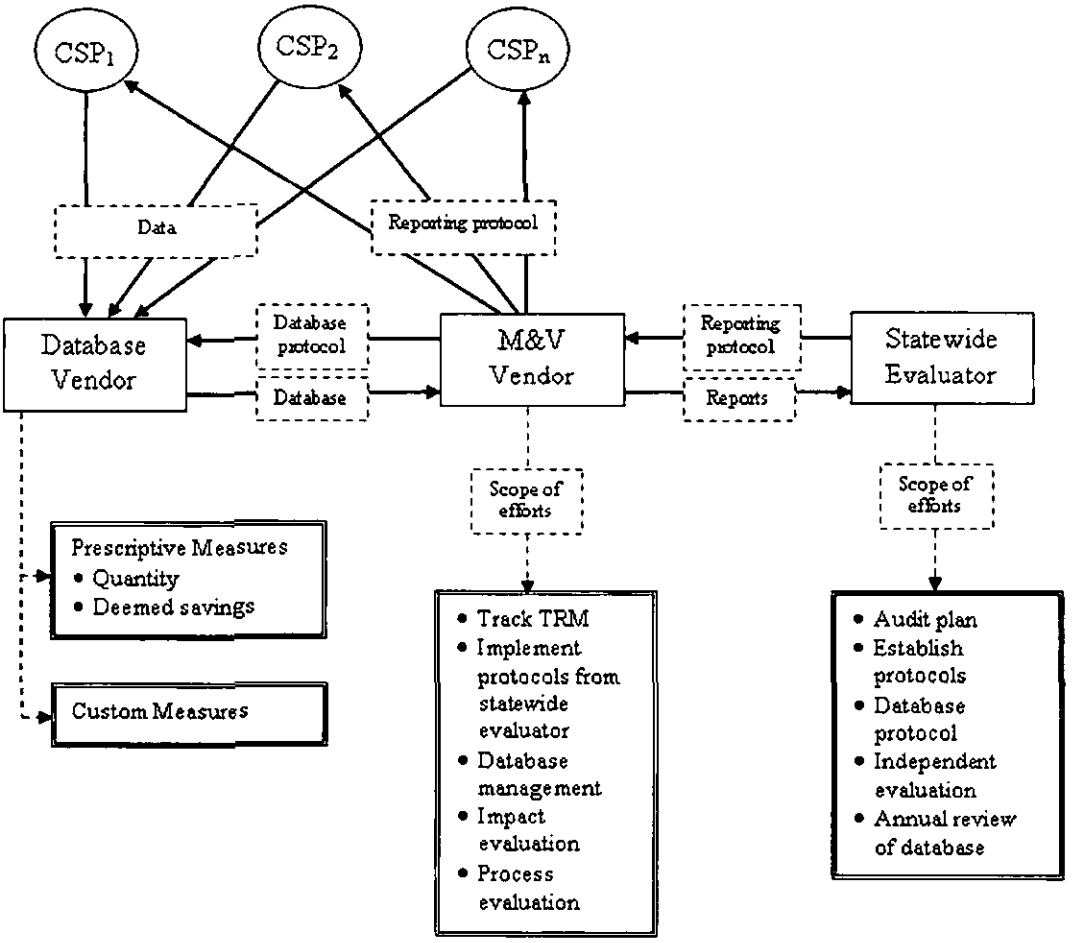
6 Quality Assurance and Evaluation Measurement Verification

6.1 Quality Assurance/Quality Control

PECO will incorporate quality assurance/quality control (QA/QC) into the implementation of this Energy Efficiency and Conservation Plan. The plan proposes an infrastructure for monitoring program activity that identifies key components and explicitly identifies the relationships among them. The importance of this is to establish the role that each contributor will have and to facilitate communication between the implementation CSPs, the database vendor, and the program evaluators. The following schematic depicts the components of the program documentation and measurement, verification, and evaluation (MV&E) infrastructure that PECO will use to ensure that program activities are documented and information can be shared, so that savings claims can be verified.

Program Documentation and Measurement, Verification & Evaluation Infrastructure



6.1.1 Overall Approach to Quality Assurance/Quality Control

The QA/QC approach addresses four areas critical to ensure program implementation quality: selection of the implementation CSPs, development of program protocols and procedures, verification /documentation of activities and savings, and evaluation.

PECO will leverage the experience of program implementation professionals by selecting CSPs to implement the programs in this plan who have the following qualifications:

- Demonstrated experience in implementing programs for the specific target market associated with the program
- Demonstrated understanding of the measures and features of the program the CSP will implement
- Existing relationships and experience in establishing relationships with upstream equipment suppliers and contractors, as appropriate for the program

- Experience in providing and/or coordinating training by other qualified providers about the program and measures to program delivery channels (e.g., equipment suppliers, contractors, auditors) and the target participant market
- Capabilities for processing incentives

PECO and the CSPs will develop specific protocols and procedures for the implementation of each program. These will govern various aspects of the program implementation, including:

- CSP representation of PECO,
- appropriate outreach methods,
- development and content of promotional messages,
- assessment of participant/project eligibility,
- procedures for site visits and audits,
- required documentation and reporting of program activities
- data collection, maintenance, and entry in PECO's program database, for projects and rebate applications
- handling of incentive applications,
- addressing customer and equipment supplier/contractor satisfaction, problems, and complaints

Verification of project eligibility and proper installation, and operation of measures is important. Documentation of purchases and verifications done will ensure that programs are implemented in top quality fashion and will provide the basis for defensible program evaluations. Specific procedures for verification, documentation, and feedback from participants and upstream suppliers are described below.

PECO will contract with an M&V contractor before the programs are launched. This will allow time for development of a detailed evaluation plan for each program, including definition of the impact and process evaluation methods they will employ and the data needed to support them. Then, prior to the launch of each program, the implementation CSP will know what data PECO will need to be tracked and the Database Vendor will be able to accommodate housing of those data. Having the evaluation plan completed and available to the PECO and CSP staff for each program will help ensure that the implementers will maintain appropriate and high quality records so that savings can be verified.

6.1.2 Procedures for Measure and Project Installation Verification, QA/AC and Savings Documentation

Although the procedures for measure and project installation verification, quality assurance and control, and savings documentation will vary by program and product, it is anticipated that the general process outlined below will be applied to impact evaluations:

- A random sampling of customers for on-site evaluations will be determined utilizing common statistical methods
- Pre-evaluation data gathering and preparation of field data forms will be performed
- On-site measure and project installation verifications will be performed, and equipment nameplate data and other pertinent data will be collected
- Equipment data will be cross-referenced with customer application data contained in the tracking system for accuracy
- Equipment operational tests will be observed and noted
- Quality of the equipment installation will be noted
- For prescriptive measures, data will be analyzed, and measure savings will be calculated using the methodologies and algorithms detailed in the TRM
- For custom measures, energy simulation modeling (such as eQuest or DOE-2) or pre/post-measure metering will be required to determine measure savings

6.1.3 Process for Collecting and Addressing Participant, Contractor and Trade Ally Feedback

Although the procedures for addressing participant, contractor and trade ally feedback by program and product will be determined in collaboration with the Statewide Evaluator, it is anticipated that the general process outlined below will be applied to process evaluations:

- At a minimum, a sampling of participants, non-participants, contractors and trade ally staff will be interviewed to support the process evaluation
- A random sampling of customers for surveys will be determined utilizing common statistical methods
- Telephone, in-person or on-line surveys of participants will be conducted to understand their satisfaction with the program, why they chose to participate, how the program could be improved and their views on the incentive levels
- Similarly, non-participants will be surveyed to understand why they chose not to participate, their views on incentive levels (and at what level of incentive would be necessary to move them to participate), and recommendations on how to improve the program. This information is valuable in understanding market barriers that inhibit greater acceptance of the measures.
- Contractors and trade allies will be interviewed to gauge their understanding of how the program works and to get front-line assessment of the market. Suggestions on program improvement, staff motivation, contractor incentives and customer attitudes will provide valuable feedback in the evaluation.
- The data will be analyzed and process improvement recommendations will be outlined.

6.2 Planned Market and Process Evaluations

A market evaluation was conducted as part of the development of this Energy Efficiency and Conservation Plan. It helped to shape the programs and estimate savings that could be achieved by them for the PY 2009 to PY 2012 planning cycle. PECO may perform another evaluation of the market saturation and remaining potential for energy and peak load savings. Such an evaluation would revisit:

- awareness and understanding of energy efficiency opportunities among the stakeholders,
- attitude toward adoption of energy efficiency measures and demand response participation, and
- actions undertaken both within and outside PECO's energy efficiency programs.

The market evaluation will be useful in identifying market readiness for new types of programs and measures and whether some programs have outlived their usefulness in terms of achieving their potential. One example of this is the residential lighting market. By the next planning cycle, bulbs with higher efficiency than incandescents will be the new standard. This will likely lead to standard CFLs being the most commonly purchased bulb type rather than ones in need of incentives to encourage adoption. The market evaluation can help determine appropriate focus for the next generation residential lighting program.

Process evaluations will be conducted for each program throughout the life of the program. These will examine satisfaction with and the effectiveness of the:

- program design and protocols for implementation,
- implementation of those protocols and procedures,
- marketing materials and strategies,
- outreach and recruitment activities,
- documentation and compliance with incentive eligibility requirements, and
- processing and timely payment of incentives.

The process evaluations conducted during the operation of the programs will be used to improve their program design (e.g., modify measures offered, eligibility requirements) and implementation procedures (e.g., modify recruitment, advertising methods, monitoring, database maintenance) within this planning cycle. Final process evaluations will be used to revise the programs, as appropriate, for the next planning period. They will assess the effectiveness of using CSPs to implement programs, identify additional opportunities for CSPs to support program development and/or activities (e.g. provide technical expertise, contractors/auditor/staff training, marketing strategies and materials, specific promotional events). The frequency and schedule of the process evaluations will be determined for each program individually. Process evaluations will be conducted by

the implementation CSP to help maintain best practices, and annually by the independent M&V contractor that PECO hires and the Statewide Evaluator.

Additionally, the M&V contractor will annually conduct impact evaluations to document and verify net energy and demand savings associated with the programs. The M&V contractor will interact with the Statewide Evaluator to make sure that the reporting protocols are in alignment with the state requirements.

6.3 Strategy for Coordinating with Statewide Impact Evaluation Consultant

The schematic of the documentation and MV&E infrastructure in Section 6.1 explicitly includes and shows the role of the Statewide Evaluator. In addition to the clearly defined lines of access to and flow of information, the Statewide Evaluator will have direct access to the database maintained by the Database Vendor, for purposes of reviewing and utilizing the data but not to enter or modify data therein.

The program database will contain data on the prescriptive and custom measures as well as projects performed within each program in the plan. To the extent feasible and appropriate, the Statewide Evaluator will be consulted to ensure that the database will contain information relevant and needed for evaluation of the programs. The Statewide Evaluator will also be briefed on how to access and utilize the information in the database.

The individual program descriptions contained in Section 3 of this report address the considerations associated with these evaluations. The M&V Vendor and the Statewide Evaluator will use the most appropriate methods for determining the impacts of the different programs in the plan.

7 Cost Recovery Mechanism

7.1 Total Annual Revenues

PECO's total amount of annual retail revenue as of December 31, 2006, equals $4,273,858,275. Applying the 2% annual limit, as set forth in the Act to this amount, results in a total allowable annual spend of $85,477,166 per year. The spend totals to $341,908,662 over the four Program Years of the EE&C Plan.

Table 7.1 below shows additional details on how the total 2006 annual retail revenues were derived.[60] First, the sales of electricity from all of PECO's customers (FERC Accounts 440.0 through 446.0) and other operating income (FERC Accounts 450.0 through 456.1) were summed. In addition, as required by the Implementation Order at page 35, the total annual retail revenue was adjusted to include "...generation revenues collected by an EDC for an EGS that use consolidated billing." The revenues were then adjusted to remove several "non-retail" (i.e., wholesale) values which include: sales for resales (447.0), other electric revenues (456.0) and revenues from wholesale transmission (456.1).

TABLE 7.1

LINE	DESCRIPTION	AMOUNT	SOURCE
1	Total Revenues as of 12/31/06	4,371,215,020	FERC Accounts 440.0 through 446.0
2	Adjustment for "Shopping" Customers	92,390,366	PECO records
3	Wholesale Revenue Adjustment	(189,747,111)	FERC Accounts 447, 456.0, 456.1
4	Total Retail Revenue	4,273,858,275	Sum of lines 1 to 3
5	Allowed Annual Spend (2% of Rev.)	$85,477,166	Line 4 times 0.02
6	Four Year Total Spend	$341,908,662	Line 5 times four program years

7.2 Description of Plan in accordance with 66 Pa. C.S. §§ 1307 and 2806.1

The Act, §2806.1(b)(h) requires that the EE&C plan include a cost recovery mechanism to fund EE&C measures and ensure recovery of prudent and reasonable costs including administrative costs. The Act also requires analysis of these administrative costs - §2806.1(b)(k). The Implementation Order at page 33 defines administrative costs as including, "... but not be limited to, costs relating to plan and program development, cost-benefit analysis, measurement and verification, and reporting." Based on this definition, PECO's EE&C Plan administrative costs include:

1) Plan and Program Development Costs - (costs of Global Energy Partners - PECO's EE&C Plan Design and Development CSP)

~~1)~~2) PECO Incremental Direct Labor (managers, program managers, business analysts, engineers),

[60] The calculation is based on Schedule 400 - Income Statement contained in PECO's 2006 Electric Annual Revenue Report to the Commission.

~~1)~~3) Evaluation Costs

~~1)~~4) Tracking Costs

~~1)~~5) "Umbrella Costs" (i.e., common costs that are spread across all of the EE&C measures)

PECO's administrative costs were previously described in Section 4.2.3.

7.3 Data tables

Appendix D contains the following Data Tables as required by the Commission's EE&C Plan template:

- See Table 6A for the Portfolio-Specific Assignment of EE&C Costs – these include the Residential Sector, the Small Commercial/Industrial Sector and the Large Commercial/Industrial sector.
- See Table 6B for the Allocation of Common Costs to Applicable Customer Sector.
- See Table 6C for the Summary of Portfolio EE&C Costs for the PECO Plan – this is the summation of the costs from Tables 6A and 6B.

7.4 Tariffs and Section 1307 cost recovery mechanism

Tariffs

As part of the implementation of PECO's Energy Efficiency and Conservation Plan ("EE&C Plan" or " Plan"), the electric tariff must be revised and several new rates and riders must be introduced. See Revised PECO Exhibit RAS-1, for a copy of Supplement No. 99, which contains the various provisions designed to implement PECO's proposed EE&C Plan.

These tariff changes include:

- The introduction of a cost recovery mechanism to collect the required EE&C Plan costs from customers
- Revisions to existing tariffs that the recovery mechanism is applicable to, and
- The introduction of new rates required for the implementation of four new EE&C programs - a Residential Direct Load Control (DLC) Program, a Small Commercial/Industrial DLC Program, Residential Super Peak Time of Use rate (TOU), and Small Commercial/Industrial TOU rates.

A high-level summary description of the cost recovery mechanism was provided in Section 1.7. However, additional details on the Section 1307 cost recovery mechanism, calculations and supporting cost documentation are provided in this section.

Cost Recovery Mechanism

PECO proposes to recover the cost of its EE&C Plan through an Energy Efficiency & Conservation Program Charge ("EEPC ") that will be imposed under Section 1307 of the Public Utility Code and will be reconcilable and non-bypassable. As required by the Commission in PECO's EE&C Plan Final Order, Docket No. M-2009-2093215, the EEPC will not be a separate line item on residential customers' bills and will not be included in the price to compare. Instead, residential customers' distribution rates will be adjusted by the amount of the charge calculated for each rate class. For small commercial customers, the EEPC will be based on energy use or kWh. For large commercial customers, the charge will be based on a PJM Peak Load Contribution ("PLC"). The EEPC will be listed as a separate item on small and large commercial customers' bills and will not be included in the price to compare.

The proposed cost recovery mechanism is shown in the tariff at page 34D. The tariff language provides a general description of the cost recovery method, the formula for calculating the charge and the charges specific to each rate class.

As shown in Section 7.1, the Company has total allowable expenditures of $341,908,662. However, the Final Order requires that several adjustments be made to the Plan. These adjustments include:

- Removal of the Renewable Resource Program and program costs filed in the PECO's initial Plan.
- Removal of the costs of the two Time of Use ("TOU") Programs. While these programs were approved by the Commission, it reserved the cost allocation for these programs for a future proceeding.
- Removal of the Statewide Evaluator ("SWE") costs from the EE&C Plan budget. The cost of the SWE will be tracked separately, but may still be recovered through the EEPC.
- Reallocation of the "umbrella" or common costs based on the cost of each program.

In addition to the above adjustments, PECO has made additional cost adjustments to the Plan, which include:

- Reallocation of the funds made available from the removal of the Renewable Program and the SWE into several other programs in order to increase customer participation and better meet or exceed the Plan's savings reduction goals.
- Reduction of the proposed municipal lighting expenditures in light of the significantly higher bill increase for street lighting customers under the original Plan in comparison to other classes, as recognized by the Commission.
- The reallocation of the Direct Load Control ("DLC") components of the TOU programs to the DLC programs.

The above adjust adjustments are reflected in Revised Exhibit RAS-3. The net effect of these adjustments result in a Plan spend of $328,622,066. Including the cost of the separate tracking of the SWE, the total expenditures of the EE&C Plan and the SWE recovery equals $331,236,833. The portions of the budgeted expenditures projected for each rate class are:

- $150.5 million for the residential class;
- $76.1 million for the Small Commercial & Industrial Class ("SC&I");
- $99.7 million for the Large Commercial and Industrial Class ("LC&I"); and
- $4.9 million for the Municipal Class ("ML") class.

PECO Revised Exhibit RAS-2 contains a summary of the projected expenditures for each of the eighteen programs across these rate classes.

The cost recovery rates were developed based on the total program expenditures allocated to each rate class for the duration of the Plan. To develop the recovery charge for each rate class, the total expenditure for that class was divided by the appropriate projected class billing units for the period from January 1, 2010 through May 31, 2013. The resulting charge per billing unit was grossed up to provide for recovery of Pennsylvania Gross Receipts Tax. This calculation produces a charge that will recover the total expenditures on a levelized basis over the recovery period.

PECO Revised Exhibit RAS-3 contains the detailed calculations for the development of the recovery charges for each class.

<u>True-Up</u>

In its Final Order, the Commission approved levelized cost recovery so that the EEPC can remain constant in each of the 4 program years. PECO's recovery charge will not be adjusted to the yearly revenues collected from the EEPC. Subject to the Commission's annual review, only a single true-up adjustment is planned at the end of the EE&C Plan on May 31, 2013. A revised recovery rate would be established which would run from June 1, 2013 to December 31, 2013 to adjust for any under or over recoveries that existed. This would then allow for the start of a new recovery mechanism if the Commission adopts new incremental consumption and peak demand reduction requirements as allowed by the Act at 2806.1(b)(II), 2806.1(c)(3) and (d)(2). Note that the Commission must complete its evaluation establishing a new EE&C plan by November 30, 2013. The goal is to recover on average $82.8M per year for the 4 program years. However, the actual program spend is expected to vary each year in accordance with PECO's EE&C Plan.

7.5 Cost recovery mechanism

PECO's cost recovery mechanism for its EE&C Plan is designed to ensure that measures are paid for by the same customer class(es) that receive the EE&C benefits. This is accomplished by creating separate EE&C charges for the Residential class, the Small Commercial/Industrial class, for the Large Commercial/Industrial class, and for the Municipal Lighting class that are based on only the cost of the measures that apply to each class. For example, the Residential class EE&C charge of 0.34 cents/kWh includes the cost of the six programs that are specifically targeted to residential customers (i.e., CFL, Low-Income, Whole Home Performance, Home Energy Incentives, New Construction, and Appliance Pickup). The residential charge is also based on an allocation of the costs of the "common program" that is available to all rate classes (i.e. – Conservation Voltage Reduction). These costs were allocated based on sales (i.e., the percent of sales of the residential class to the total sales of all of the classes).[61] This process is done in a similar manner for the LC&I class, the SC&I class and for the ML class.

See PECO Revised Exhibits RAS-2 and RAS-3, for allocation of program costs by rate class and for the spreadsheet that shows how the EEPC was developed for each customer class according to the method just described.

PECO proposes to start the recovery period with bills sent to customers during February 2010 (January usage)and will continue through bills sent to customers in July 2013 (June usage). The January 2010 starting point is designed to coincide with other rate changes that occur in January, namely, the true-up of the Universal Services Fund Charge; the true-up of Intangible Transition Charges and Competitive Transition Charges (up to 2011) and changes in the Generation Supply Adjustment (after 2010). This will avoid the need to make multiple rate changes, issue multiple customer notices and make multiple revisions to the Company's billing system.

[61] The recovery of EE&C Plan costs for residential customers who take electric service under PECO's Customer Assistance Program (CAP) Rate must be treated slightly different than the recovery from non-CAP customers due to discount structure of the CAP Rate. PECO's CAP rates have 5 "sub-rates" (i.e., CAP A, B, C, D, and E) which provide various levels of discounted charges based on a customer's income level. These discounts range from about 25% to 85%. PECO has calculated EE&C recovery charges for each CAP sub-rate that are proportional to the CAP discounts currently received - thus ensuring that CAP customers pay the appropriate amount of EE&C Plan costs. The CAP rate recovery charges will only need to be collected in this manner, up until December 2010 (PECO's relative bill month of December). Starting, in January 2011, PECO's Default Service Program tariff (Docket No. P-2008-2062739) will go into effect and the CAP rates will be based on a different discounting methodology. Thus a separate EE&C recovery charge will not be required in order to ensure that CAP customers pay the appropriate amount of EE&C Plan costs.

8 Cost Effectiveness

8.1 Description of Application of the TRC Analysis

8.1.1 Cost Effectiveness Analysis Approach

The cost-effectiveness results reported in this study adhere to the PUC specifications as defined in their June 18, 2009 TRC Implementation Order. In that Order, the PUC closely follows the California Standard Practice protocol which provides a model for TRC testing. PECO utilized a spreadsheet tool to assess the cost-effectiveness of each individual program. The results of the program-specific analysis were then represented for the entire EE&C Plan as a whole. The detailed backup tables that support the cost-effectiveness analysis for each individual program can be found in Appendix E-2.

8.1.2 Avoided Costs

Consistent with the TRC Order, the Company developed avoided cost projections in three segments. The first segment, which covers the years 2010 through 2014, is based upon the PJM western Hub energy futures prices as quoted by NYMEX on May 28, 2009. NYMEX provides prices for on-peak and off-peak periods. In order to convert the NYMEX quoted prices to an "around-the-clock" price, the Company assumed that the on and off-peak prices would apply for the same number of hours in each period. The resulting around-the-clock price had to be further adjusted to reflect PECO's cost because NYMEX quotes prices at the PJM Western Hub. However, prices at the PECO Zone tend to be higher. In order to adjust for this difference, PECO compared the hourly Locational Marginal Prices ("LMP:s") for the PECO Zone to the hourly PJM Western Hub prices for 2007 and 2008 using PJM's 2008 *State of the Market Report.* The Western Hub around-the-clock price was multiplied by the average ratio of LMPs at the PECO Zone to the LMPs at the Western Hub to derive the aound-the-clock energy price at the PECO Zone.

For the second segment, which covers the years 2015 through 2019, energy prices were derived from NYMEX natural gas futures converted to energy prices using a "spark spread" calculation. In order to calculate the spark spread, the Company started with Henry Hub futures prices quoted by NYMEX as of May 28, 2009. In order to reflect delivered prices at the PECO Zone, the Transco Zone 6 Basis Swap futures prices reported by NYMEX at May 28, 2009 were added to the Henry Hub futures prices. The spark spread was calculated using a heat rate of 10,450 Btu per kWh, as the Commission directed in the TRC Order. Because gas prices are quoted in MMBtu, the heat rate was converted to MMBtu by dividing by 1,000. The heat rate was multiplied by the natural gas prices, calculated in the manner described above, and the product was subtracted from the electricity prices at the PECO Zone for 2014 to obtain the spark spread. The electricity prices for 2015 through 2019 were calculated by multiplying the natural gas price for each year in that period by the heat rate of 10,450 Btu/kWh (converted to MMBtu by dividing by 1,000 and adjusting by the spark spread.

Electricity prices for the final segment, which covers the years 2020-2024, were calculated using the same method employed for the second segment except that the natural gas prices for those years were based upon the "Middle Atlantic" natural gas prices applicable to "Electric Power" reported in the Energy Information Agency's Annual Energy Outlook for 2009.

Capacity prices through May 2013 are based upon the results of PJM's Reliability Pricing Model ("RPM") base residual auctions. Since there are no auction results for periods after May 2013, the capacity prices for subsequent years were obtained by escalating the June 2012 – May 2013 RPM price at an annual rate derived from data for the Producer Price Index – Electric Power Generation, as reported by U.S. Bureau of Labor Statistics.

In order to represent avoided energy costs on a yearly basis, a 12-month average was calculated. However, since the EE&C Plan is based on a Program Year (PY) running from June 1st to may 31st, the average for each program year was calculated on the 12 months starting with June 1st of each program year. In addition, the average avoided cost for PY 2009 was calculated based on the period January 1, 2010 to May 31, 2010 as a proxy for a full 12-month program year. For PY 2010, the avoided energy cost was based on the period June 1, 2010 to May 31, 2011. The calculation for each subsequent program year was calculated in the same manner. The avoided costs are represented in the table below:

Program Year	Avoided Energy Costs ($/kWh)			Avoided Capacity Costs ($/kW-yr)
	Residential	Commercial	Industrial	
2009	$0.114	$0.080	$0.068	$69.83
2010	$0.118	$0.084	$0.071	$63.62
2011	$0.121	$0.087	$0.074	$40.16
2012	$0.123	$0.090	$0.077	$51.03
2013	$0.126	$0.093	$0.080	$55.40
2014	$0.129	$0.095	$0.082	$60.14
2015	$0.130	$0.096	$0.083	$65.28
2016	$0.131	$0.098	$0.085	$70.86
2017	$0.132	$0.099	$0.086	$76.92
2018	$0.134	$0.100	$0.087	$83.50
2019	$0.132	$0.099	$0.086	$90.64
2020	$0.132	$0.098	$0.086	$98.39
2021	$0.136	$0.103	$0.090	$106.80
2022	$0.139	$0.105	$0.093	$115.93
2023	$0.140	$0.107	$0.094	$125.85

8.2 Data tables

Appendix D contains the following data tables as required by the Commission's EE&C Plan template:

- Table 7A: TRC Benefits Table
- Table 7B: TRC Benefits Table

- Table 7C: TRC Benefits Table
- Table 7D: TRC Benefits Table
- Table 7E: TRC Benefits Table

9 Plan Compliance Information and Other Key Issues

9.1 Plan Compliance

9.1.1 Description of plan

As discussed in Section 3 of this document, PECO's EE&C Plan (the "PECO Plan" or "Plan") provides energy efficiency, conservation and demand reduction programs to each of its customer classes, including specific programs for government, educational and non-profit entities, and for low-income households.[62] The Plan portfolio contains CFL programs for Residential customers, financial incentives for energy efficient Residential and Commercial and Industrial ("C&I") equipment and construction, and financial incentives to promote retrofitting government buildings, schools, hospitals and non-profits with energy efficiency measures. Similarly, PECO's demand reduction programs portfolio includes, among other measures, direct load control programs and time-of-use programs for Residential and C&I customers.

Schedule 5 shows that PECO's Plan provides these programs equitably across all of its customer classes, both on a budgetary and energy savings basis. For example, 22% of PECO's energy efficiency and conservation program budget is directed to Residential programs and result in 39% of the projected energy savings under the Plan. Another 8% of the budget is directed to low-income programs that result in 6% of the energy savings. With regard to C&I customers, 21% of the budget is directed to C&I programs that result in 24% of the plan's savings. Finally, 13% of the budget is directed to governmental and institutional entity programs, which result in 15% of the Plan's savings.

With respect to the demand reduction portfolio, 19% of the budget is directed to C&I program, resulting in 51% of the savings. Meanwhile, 14% of the budget is directed to Residential programs, resulting in 17% of the savings. Therefore, PECO believes that its programs are equitably provided across its customer classes consistent with the Commission's recognition in the Implementation Order that "'equitable' does not mean 'pro rata,' especially when cost-effectiveness is factored into the process."[63]

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[62] Consistent with Act 129, PECO's reference to low-income households means households at or below 150% of the Federal poverty income guidelines. *See* 66 Pa.C.S. 2806.1(g).

[63] *See Energy Efficiency and Conservation Program*, Docket No. M-2008-2069887, *Implementation Order* (Order entered January 16, 2009), at 22.

9.1.2 Statement delineating the EE&C plan

Section 2806.1(c) of Act 129 requires an EDC with at least 100,000 customers to achieve a minimum consumption reduction of 1% for the EDC's retail customers by May 31, 2011, as measured against the EDC's forecasted consumption for June 1, 2009 through May 31, 2010 adjusted for weather and extraordinary loads. This section of the Act also requires the EDC to achieve a minimum consumption reduction of 3% by May 31, 2013, as measured against the EDC's forecasted consumption for June 1, 2009 through May 31, 2010 adjusted for weather and extraordinary loads.

PECO's Plan, as set forth in Section 3, is projected to meet or exceed its 1% consumption reduction target of 394 million kWh in Program Year 2010 (which ends on May 31, 2011) and meet or exceed its 3% target of 1,185 billion kWh by Program Year 2012 (which ends May 31, 2013).

Section 2806.1(d) of the Act requires an EDC with at least 100,000 customers to reduce the weather-normalized demand of the EDC's retail customers by a minimum of 4.5% of annual system peak demand in the 100 hours of highest demand, as measured against the EDC's peak demand for June 1, 2007 through May 31, 2008. PECO's Plan is projected to meet this requirement on or before Program Year 2012, which ends on May 31, 2013.

The Plan is projected to achieve these consumption and demand reduction requirements of the Act through the use of a broad array of financial incentives. These incentives will be provided to PECO's customers through CSPs, installation companies, and trade allies (*e.g.*, HVAC contractors and retail stores).[64]

9.1.3 Low-Income requirements

PECO's Plan will meet the requirements of this section by using and building upon its existing Low Income Usage Reduction Program ("LIURP"). Specifically, as part of the Plan, PECO will increase the number of low-income customers receiving weatherization services (*e.g.*, in-home energy audits and education) in its service territory, and will provide services to install CFLs for low-income customers, repair or replace non-working gas heaters and remove electric space heaters, and install ENERGY STAR appliances for these customers, as applicable. PECO also plans to leverage American Recovery and Reinvestment Act of 2009 (Stimulus Package) funding to provide these programs.

9.1.4 Government/Non-Profit requirements

Section § 2806.1(b)(1)(i)(B) of the Act requires that "[a] minimum of 10% of the required reductions in consumption . . . be obtained from units of Federal, State and local government, including municipalities, school districts, institutions of higher education and nonprofit entities." PECO's governmental and institutional energy efficiency programs are projected to exceed this target by achieving 15% of the total energy efficiency plan projected savings.

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[64] *See* PECO's Discussion in Sections 3 and 4 of this document for a detailed description of its EE&C programs and its implementation strategy.

9.1.5 Experimental equipment or devices

As noted in section 4.1.2., PECO developed its plan by benchmarking proven programs and technologies from states such as California, Vermont and New York. Accordingly, since PECO's Plan focuses on known technologies and products, it is not anticipating the use of experimental equipment and devices.

9.1.6 Competitively neutral to all distribution customers

With the exception of PECO's super peak Time-of-Use rate, which is a PECO default service rate required by the smart meter provisions of Act 129[65], all of the programs in PECO's Plan will be available to all PECO distribution customers, regardless of whether they receive generation supply from PECO as a default service provider or an EGS.

9.2 Other Key Issues

9.2.1 Describe how this EE&C plan will lead to long-term, sustainable energy efficiency savings in the EDC's service territory and in Pennsylvania.

PECO's EE&C Plan was developed to meet or exceed the requirements of Act 129. In developing the EE&C Plan, PECO benchmarked successful utility demand-side management (DSM) and demand response programs throughout the country, and selected measures and programs for inclusion in the Plan that have demonstrated a history of providing reliable, documented and sustainable energy and demand savings. The proposed plan includes a variety of proven programs effective across all customer classes. PECO believes that by providing programs along with comprehensive education will lead to long term sustainability through ongoing customer participation.

9.2.2 Describe how this EE&C plan, and the EDC, will avoid possible overlaps between programs offered in different Pennsylvania EDC service territories as well as possible programs offered in neighboring states.

While PECO's EE&C Plan is unique and tailored towards the particular demographics of its customer base, PECO has taken steps to collaborate with other EDCs in Pennsylvania to offer common incentives for certain programs and measures, where it makes sense, to limit the possibility of overlaps. PECO has included an educational and promotional component in its EE&C Plan, to promote general energy efficiency awareness and education, and provide program specific details to its customers.

[65] See 66 Pa. C.S. 2807(g)(2).

9.2.3 Describe how this EE&C plan will leverage and utilize other financial resources, including funds from other public and private sector energy efficiency and solar energy programs.

PECO's EE&C Plan program descriptions contain specific references to third-party financial resources and rebates such as Keystone HELP, the American Recovery and Reinvestment Act (ARRA) federal tax credits, The Redevelopment Fund/Sustainable Development Fund (TRF/SDF), and the Electrical Association of Philadelphia (EAP) among others. PECO will make this information available on its website as well as in general educational and program specific promotional materials.

9.2.4 Describe how the EDC will address consumer education on energy efficiency, conservation, solar and solar photovoltaic systems, and geothermal heating and other measures.

PECO has included a comprehensive consumer education program in its EE&C Plan. PECO is planning to initiate its execution of its Plan with the launch of a compact fluorescent lamp (CFL) giveaway/discount program. This is planned to be PECO's flagship energy efficiency program which is intended to build general awareness of the programs as well as educate customers about how these programs can help them save on their energy bills. As part of the promotion of the various programs PECO plans to include extensive education in all of its materials. In addition, the Plan includes website enhancements to include an online residential energy audit and links to renewable resource (solar and wind) websites.

9.2.5 Indicate that the EDC will provide a list of all eligible federal and state funding programs available to ratepayers for energy efficiency and conservation.

PECO plans to include information regarding all known federal and state funding programs that could be available to ratepayers as indicated in section 9.2.3 above.

9.2.6 Describe how the EDC will provide the public with information about the results from the programs.

Once the Statewide Evaluator has completed its accepted annual reports, PECO will issue press releases to inform the public of the results of its EE&C Plan.