

Before the
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PPL Electric Utilities Corporation
Energy Efficiency and Conservation Plan

Act 129 Phase II

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1. Overview of PPL Electric's Act 129 Phase II Plan

1.1.1. Summary Description of Plan

PPL Electric Utilities Corporation (PPL Electric or the Company) hereby submits its Act 129 Phase II Energy-Efficiency and Conservation Plan (EE&C Plan or Plan or Phase II) in compliance with Section 2806.1 (b)(1)(i) of Act 129 (the Act). This filing is being made pursuant to the Act and the August 3, 2012 Implementation Order of the Pennsylvania Public Utility Commission (Commission) at Docket Nos. M-2012-2289411; M-2008-2069887 (Implementation Order entered August 3, 2012) (Implementation Order). The Plan describes an extensive portfolio of energy-efficiency and conservation programs and related education programs. The proposed portfolio consists of the following programs:

Continued from Phase I to Phase II:

- Appliance Recycling
- Residential Retail Program (combines residential lighting and energy-efficiency)
- Residential Energy-Efficiency Behavior & Education
- Low-Income WRAP Program (with changes)
- E-Power Wise Program
- Prescriptive Equipment Small C&I, Large C&I and Government/Educational/Non-profit (a/k/a, GNI) with additions
- Custom Incentive Small C&I, Large C&I and GNI Program

New Programs in Phase II:

- Residential Home Comfort Program (hybrid combining the Phase I Audit and Weatherization Program and a portion of Phase I Residential Efficient Equipment with a new home component)
- Student and Parent Energy-Efficiency Education Program
- Low-Income Energy-Efficiency Behavior & Education Program
- Master Metered Low-Income Multifamily Housing Program
- Continuous Energy Improvement Program
- School Benchmarking Program

The Plan provides a portfolio of options which will offer PPL Electric's customers a cost-effective, equitable, flexible, and wide-ranging set of programmatic choices, incentives, information, and educational opportunities. Together they meet the goals outlined in the Implementation Order and successfully balance stakeholder input with budget constraints and savings objectives. Each individual program is described in **Section 3**.

1.1.2. Plan Objectives

The requirements of the Act are consistent with PPL Electric's overall business philosophy and its history of promoting energy-efficiency and conservation while striving for excellence in customer service. PPL Electric's implementation and management of its Act 129 Phase I Plan reflected this philosophy. During Phase I programs were designed, changed, enhanced, or eliminated to more effectively meet customer response. The Phase II plan represents an opportunity to expand this effort and continue to provide customers with choices that enable wiser use of electricity; reduced electricity consumption; and opportunities to save money without diminishing quality of life or business effectiveness. In addition, PPL Electric's current plan was able to create approximately 245 full-time and 8 part-time green jobs in

the last four years, and the proposed plan will continue this kind of support for local economic development.

The Phase II Plan is designed to meet the requirements set forth by the Commission's Implementation Order. Those requirements are:

- Comply with the designated expenditure cap of 2% of 2006 Annual Revenues for each year of the three-year Plan, which equates to an average of approximately \$61.5 million per year for three years and approximately \$184.5 million¹ for the Phase II period. The three-year Plan will start on June 1, 2013 and conclude on May 31, 2016.
- Achieve a total overall energy reduction of at least 821,072 MWh/yr. by May 31, 2016. At least 25% of the energy reduction target must be achieved in each of the three program years.
- Achieve a minimum of 10% (82,107 MWh/yr.) of the total required energy reductions from the Institutional customer sector by May 31, 2016. The institutional sector includes government, education, non-profit, and multifamily housing.
- Achieve a minimum of 4.5% (36,948 MWh/yr.) of the total required energy reductions from the low-income customer sector (<= 150% of Federal Poverty Income Guidelines) by May 31, 2016. This includes savings from low-income programs and low-income participation in general residential programs.
- The proportion of measures available to the low-income sector is at least 9.95% of the total measures available to all customer sectors. A list of measures is included in **Appendix E**.
- Offer at least one energy-efficiency program for each customer sector and offer a reasonable mix of energy-efficiency programs for all customer sectors. Offer at least one comprehensive measure for residential and commercial customer sectors.
- The portfolio is cost-effective based on the Total Resource Cost Test (TRC).
- Allocate the cost of measures to the customer class(es) that receive(s) the benefit of those measures.
- Define the roles and responsibilities of Conservation Service Providers. (CSP)
- Include procedures to measure, evaluate, and verify performance of the programs and the Plan as a whole. These procedures are described in PPL Electric's Evaluation Plans, which are submitted separately and approved by the Commission's Statewide Evaluator (SWE).
- Define a mechanism for recovery of all applicable costs.

1.1.3. Overall Strategy to Achieve Energy-Efficiency Goals

PPL Electric carefully evaluated each Phase I program to determine its viability for Phase II. For programs and measures offered in Phase I, PPL Electric program staff reviewed data to compare what was achieved against what had been expected. Information from the SWE Market Potential Study² was reviewed, including achievable potential, incremental costs, kWh/yr. savings, and TRCs. Measures with a low savings and a low TRC were generally excluded. PPL Electric also considered market transformation and free-ridership during the program planning process and excluded some measures accordingly. The process to establish the overall portfolio (the mix of measures and programs for customer sectors) required many iterations to successfully meet all of the Act 129 requirements described above and achieve a reasonable balance between sectors, savings, budget, and an overall TRC. In addition, the portfolio was designed to ensure a transition from Phase I to Phase II that is as seamless as possible to customers and trade allies.

¹ \$184.5 million excludes Statewide Evaluator costs that are not subject to the funding cap.

² Electric Energy Efficiency Potential for Pennsylvania Final Report (released by the Commission on May 10, 2012).

The maximum allowable funding specified in the Implementation Order for PPL Electric is \$184.5 million. The proposed revised Plan totals \$186.1 million³, and with anticipated changes in the TRM that will likely reduce savings and increase acquisition costs, PPL Electric fully expects to expend all available funds in Phase II.

The Implementation Order requires “EDCs to develop EE&C plans that contain at least one comprehensive measure for residential and small commercial rate classes in EE&C Plans going forward.” Implementation Order at 20. To meet this requirement, PPL Electric will offer the Home Comfort Program designed for new and existing homes including a component for manufactured homes.⁴ This comprehensive program will include an incentive for contractors who build energy-efficient new homes; customer incentives for audits and weatherization for existing homes; and a rebate for customers purchasing manufactured homes with a further rebate for those customers installing a heat pump. To meet the requirement for the Small C&I sector, PPL Electric will also offer free audits and a comprehensive array of measures specifically designed for farms as part of the Prescriptive Equipment Program for Small C&I. In addition, PPL Electric has added a comprehensive component to the Master Metered Low-Income Housing Program for customers with all electric heat.

Consistent with the recommendation in the Implementation Order, PPL Electric will offer a program designed to address energy-efficiency within multifamily low-income master metered buildings. Implementation Order at 49. It is expected that the Master Metered Low-Income Multifamily Housing Program will provide approximately 6,900 MWh/yr. toward the required GNI 10% savings goal.

PPL Electric designed its portfolio to provide options for all customer sectors. PPL Electric engaged stakeholders throughout the development process and wherever possible and practical included their suggestions in the final plan. As an example, the School Benchmarking Program suggested by stakeholders will not yield any quantifiable energy savings. However, PPL Electric recognized the value of providing school administrators with energy-efficiency information that will help them make informed decisions about energy-efficiency upgrades, and included it in the proposed Plan as an effective complement to other program offerings.

1.2.1. Plan Development Process and Key Assumptions

PPL Electric began developing a Phase II plan prior to the release of the Commission's March 1, 2012 Secretarial Letter seeking comments on topics related to the Phase II EE&C Plans. In addition, PPL Electric engaged Cadmus Group Inc. to provide assistance in evaluating new measures and new programs identified for Phase II, and to conduct the TRC for the Phase II EE&C Plan.

PPL Electric hired staff for Phase I to develop RFPs, lead the selection process, and manage all aspects of Phase I programs. Over the last four years, that staff has worked closely with CSPs, trade allies,

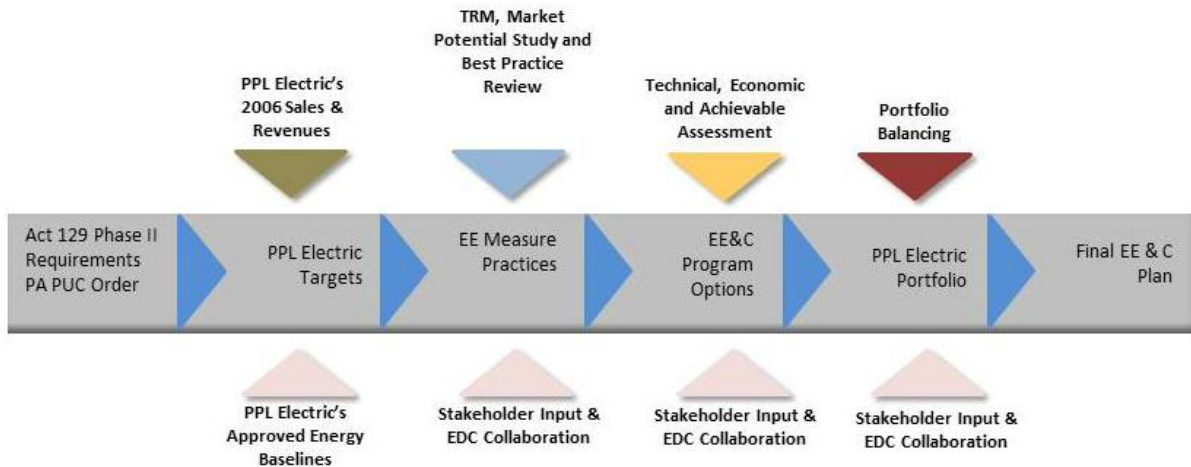
³ Excludes Statewide Evaluator costs that are not subject to the cost cap. These costs are estimated to be \$3 million for PPL Electric.

⁴ Modular also known as manufactured homes are defined homes that require a building permit and are subject to local zoning and building code standards. Manufactured homes must meet building standards defined by the Dept. of Housing and Urban Development (HUD) and are defined as a movable dwelling. 8 feet or more wide and 40 feet or more long, designed to be towed on its own chassis, with transportation gear integral to the unit when it leaves the factory, and without need of a permanent foundation.

customers, and stakeholders to seek their input on programs and measures. The success of Phase I and design of the Phase II Plan is a result of drawing on their expertise.

An in-house Steering Committee made up of executives and managers with direct and indirect involvement in Act 129 guided the overall Plan development process. The Act 129 requirements and Commission’s Implementation Order, as well as experience from Phase I and stakeholder input, formed the primary basis for the development of the Plan.

Figure 1. Process for Developing the Plan



The Phase II targets set parameters for constructing a portfolio of measures and programs for different customer classes. For each sector, a set of program concepts was developed based on Phase I experiences, the Market Potential Study, best practices, and lessons learned in utility-sponsored or publically funded energy-efficiency programs. The programs were designed to satisfy the requirements of Act 129 and ensure a range of program options were available to all customer classes and market segments while meeting the reduction targets for governmental/non-profit and low-income sectors. The process for developing the Plan consisted of establishing a set of guiding principles including: 1) using a top-down approach to establish possible targets based on Phase I achieved performance by sector; 2) evaluating energy-efficiency measures by potential, cost, and TRC, using the SWE Market Potential Study and PPL Electric’s market research and experience from Phase I; 3) developing and balancing the portfolio to meet all of the Act 129 requirements; 4) providing opportunities for stakeholders to participate and contribute to Plan development; and 5) making adjustments based on what is affordable, customer feedback, and the requirements set forth in the Act (i.e., GNI savings target).

1.2.2. Principles Guiding Development of the Plan

PPL Electric has a long-standing commitment to energy-efficiency and helping customers use electricity wisely, as well as helping customers save on their electricity bills. The following guiding principles served as a backdrop to development of the measures, programs, and implementation strategies in PPL Electric’s portfolio:

- **Customer focus:** PPL Electric has a long history of educating consumers and acting as a trusted energy advisor to its customers. Its Plan was developed to empower customers to take energy-efficiency actions that save money in a way that is simple to understand and cost-effectively optimizes customer benefits to the greatest extent possible.

- **Compliance with Act 129:** PPL Electric takes seriously its regulatory obligations to offer energy-efficiency and conservation programs to its customers. Consistent with the requirements of Act 129, PPL Electric has sought significant stakeholder input, and has developed a portfolio of cost-effective programs to generate the energy savings needed to meet the goals outlined by the Pennsylvania Legislature and the Commission.
- **Leadership in efficiency and conservation:** PPL Electric's Plan builds upon the success of its Act 129 Phase I Plan and its consumer education programs. PPL Electric's efforts to engage customers in energy-efficiency have included offering an online home energy use analysis tool; providing customers with hourly and daily electricity use information via the Internet; offering financial incentives and rebates for all customer segments; promoting education and community outreach to encourage energy-efficiency; and providing easy access to Act 129 program materials on PPL Electric's company website. Finally, PPL Electric was a leader in installing smart meter technology at every customer site in its service territory.
- **Proven solutions and sustainable savings:** PPL Electric's programs focus on proven, cost-effective, energy-efficiency technologies that can be installed alone or as part of an integrated strategy to long-term, sustainable energy-efficiency. Despite the challenges presented by the need to balance savings targets and available funding with decreasing TRM values (lower savings), lower avoided costs (lower benefits for energy savings), and inflation (higher implementation costs for PPL Electric and for customers' energy-efficiency projects), PPL Electric in designing its Act 129 Phase II Plan sought to optimize energy savings for each participating customer location through extensive efficiency strategies, and will encourage participation in its multiple programs and incentives wherever such participation makes sense for customers. Programs that might have provided "deep" savings may need to be adjusted mid-course because savings may no longer make a program or measure cost-effective.
- **Flexibility and options:** PPL Electric's Plan is designed to be flexible enough to address changing market conditions. The Plan provides multiple program options, education, information, financial incentives, and services to support customers' energy-efficiency needs. Some programs provide customers with audit information that allows them to make informed decisions based on personal and organizational priorities, while allowing energy-efficiency improvements to be made in phases.
- **Market transformation:** PPL Electric's Plan is designed to stimulate broader market acceptance and installation of energy-efficient technologies. PPL Electric will take steps to assist its customers with the installation of low-cost, high-savings, energy-efficiency measures that provide sustainable savings over time. The Plan supports customers' efforts to install innovative technologies, particularly through its proposed Commercial and Industrial (C&I) Custom Incentive Program, and includes provisions for training and education, outreach to trade allies and stakeholders, and an active overarching customer awareness campaign to ensure customers are kept abreast of ever-changing advances in technology. PPL Electric will monitor performance of its programs and adjust programs as required if there is sufficient market transformation or high free-ridership.
- **Commitment to low-income customers:** Act 129 continues PPL Electric's strong commitment to helping low-income customers reduce their electricity consumption and save money. In addition to continuing PPL Electric's successful LIURP (Low-Income Usage Reduction Program) known as the Winter Relief Assistance Program (WRAP), Phase II will offer the E-Power Wise program and the low-income Energy-Efficiency Behavior & Education Program. Further, although the Master Metered Low-Income Multifamily Housing

Program is designed as a GNI program, it is expected that there will be energy-efficiency educational materials provided to the tenants.

1.2.3. Assessment of Resource Potentials

In January 2012, PPL Electric started evaluating Act 129 Phase I Programs and measures to determine what programs and measures should be considered for Act 129 Phase II. Using the Company's market research and studies, the Commission's market potential study, information garnered from discussions with other utilities, ENERGY STAR®, and Consortium of Energy Efficiency (CEE), PPL Electric's Program staff systematically studied the energy-savings potential available in each market sector and used that in presenting programs and measures to be considered in the design of Act 129 Phase II.

1.2.4. Developing the Portfolio

The energy-saving targets, the expenditure cap, cost-effectiveness of the portfolio, the GNI and low-income set-asides, and the customer equity guidelines established by Act 129 defined the major parameters and constraints for developing the portfolio. Development of the portfolio and subsequent revisions began with a "top-down" process that involved evaluating each sector based on what was being achieved in Act 129 Phase I. At the same time, PPL Electric Program Staff evaluated program and measure levels from the "bottom up" and identified possible programs and changes for consideration in Phase II: those that were innovative, those that were successfully being offered by other utilities and those programs requested by customers, trade allies, CSPs, or stakeholders.

Step 1: PPL Electric reviewed required targets, targeted funding, the market potential study, and performance from Phase I. Then, PPL Electric drafted a list of potential Phase II measures, grouped those measures by programs and sectors, and put those into its Portfolio Model.

Step 2: For each measure, data on technical specifications and potential end-use energy and costs were compiled primarily from the TRM and from PPL Electric's experience in delivering energy-efficiency programs. Other technical resources, including the Database for Energy-Efficiency Resources (DEER), CEE, and ENERGY STAR® were also consulted. PPL Electric contacted energy-efficiency professionals from around the country regarding program design, costs, savings, and customer response.

Step 3: PPL Electric determined the life-cycle costs, savings, and avoided cost benefits for each measure to compute the measure's cost-effectiveness from a TRC perspective.⁵ Application of the TRC identified some measures that did not meet the cost-effectiveness threshold. However, to ensure a well-balanced, comprehensive and complementary mix, some measures with high-saving potentials such as insulation, heat pump water heater (HPWH), and packaged air conditioning units were retained in the portfolio. To ensure consistency with Phase I methods and EM&V procedures, TRC calculations were performed by The Cadmus Group, Inc., PPL Electric's EM&V CSP. Key assumptions used to determine cost-effectiveness are listed in **Table 7- 7E, Section 8.**

Step 4: For each program in the portfolio, savings were calculated, for this revision, using the 2013 TRM and the Draft 2014 TRM and the results from the SWE's 2012 Electric Energy Efficiency Potential in Pennsylvania to compile information on measure savings and costs. The

⁵ Calculation methods and assumptions used for estimating all program costs are provided in **Appendix D.**

available potential for each program was guided largely by the results of the potential study, PPL Electric's customer surveys, and program experience from the Act 129 Phase I programs.

Step 5: The aggregate, plan-level savings for programs were spread over the three-year plan cycle to establish annual saving targets. Expected ramp-up of annual savings varied across programs. In the case of new programs where no prior local implementation experience or infrastructure exists, savings are expected to accrue at lower levels initially and accelerate gradually over the course of the Plan.

Step 6: Finally, the expected number of participants and customer incentive levels in each program were adjusted iteratively to balance the portfolio. The objective of this balancing exercise was to provide a reasonable mix of programs that meets all of the Act 129 requirements, such as GNI and low-income set-asides, the overall cost cap, equity across various customer segments, and cost-effectiveness at the portfolio level.

1.2.5. Managing Uncertainty

The proposed EE&C program portfolio was developed within the confines established by Act 129 and the Commission's Implementation Order. The proposed portfolio took into consideration requirements including energy savings, and cost-effectiveness of the portfolio, expenditure limits, customer equity, and set-aside provisions for low-income and governmental/non-profit customer segments, and other requirements of the Act and the Commission's Implementation Order.

As was the case during Phase I, the consumption reduction targets set by the Commission for Phase II are cumulative in nature. That is, to achieve the target set by the Commission in its Implementation Order, PPL Electric is required to achieve three-year cumulative reduction of 2.1% MWh/yr. Although PPL Electric has developed a plan to achieve its three-year cumulative target, the Company has identified a few areas of uncertainty that could impact the success of the Phase II EE&C Plan.

First, the state of the economy is constraining customers' willingness to make investments in energy-efficiency, especially Small C&I and institutional customers (schools, non-profits, and governments). In addition, at present, electric rates are relatively low. The combination of current state of the economy, coupled with low energy prices may reduce the likelihood that customers will participate in energy-efficiency programs.

To address this concern for Small C&I customers, PPL Electric's successful Direct Discount Program, enhanced during the middle of Act 129 Phase I, will be continued in Act 129 Phase II and is key to the Prescriptive Incentive Program. Further, PPL Electric has designed its incentives to cover a sufficient portion of the incremental cost of each measure. These incentives, coupled with effective marketing and customer segmentation, will enable the messages to be tailored to customers "on the fence." PPL Electric's Phase II EE&C Plan is offering School Benchmarking at "no cost." This program will enable Electric to reach school administrators and teachers, as well as schoolchildren and parents, to educate them on energy-efficiency. These are just some of the ways the Plan has been designed to ensure customers are aware and take advantage of the programs being offered.

Second, the likelihood of future changes to the TRM has the potential to result in further adjustments to savings in future versions of the TRM (2013 – 2015 for the initial EE&C Plan and 2014 – 2015 TRMs for this revised EE&C Plan) and could reduce the savings attributable to energy-efficiency measures. In an attempt to address this uncertainty, PPL Electric designed its Plan to use the savings assumptions from

the Commission's proposed 2014 TRM. If there are further changes in savings in 2014, or 2015 TRMs, PPL Electric may have to adjust its mix of measures, programs, and sectors to reflect those changes. Further, PPL Electric's Phase II Plan is projected to exceed the compliance target by approximately 42%, including an estimated carryover of 551,704 MWh/yr. from Phase I. The over-compliance and carryover will provide the flexibility to accommodate lower per-measure savings, higher than expected program acquisition costs, and newer technology since the Plan was filed.

In addition, reaching key energy decision makers in both the small and large C&I customer sectors can present a special challenge to PPL Electric and its CSPs, especially if the building owner (landlord, property manager, etc.) is not the customer and does not pay the electric bill (paid by the tenant).

To address the uncertainty relating to reaching key energy decision makers, as well as the related time lag, PPL Electric worked with its CSPs and trade allies to develop strategies that mitigate the time required to deliver programs. PPL Electric worked with trade allies to assess and expedite, where necessary, the availability of trained and qualified personnel to deliver services, especially in the early stages of the Plan.

The next uncertainty is how to adjust the EE&C Plan if actual performance differs from estimates in the EE&C Plan. The flexibility to quickly adjust programs is critical to achieving the savings compliance target, equitable distribution of savings and costs among customer sectors, and other requirements of Act 129. This includes adjusting incentive levels and participation estimates if customer preferences and program performance are different than estimated in the Phase II EE&C Plan. Program delivery is not an exact science, and it is difficult to predict the exact number of customers willing to participate in the programs offered. The Commission recognizes this and allows EDCs to establish ranges in their EE&C Plan for incentive levels and customer participation. This flexibility allows PPL Electric to quickly adapt to changes in market conditions by adjusting incentive levels, such as "limited time offers," and adjusting participation estimates.

1.2.6. Stakeholder Involvement

Throughout the development of the initial EE&C Plan and this revised EE&C Plan, PPL Electric pursued opportunities to inform stakeholders of the Company's progress and to solicit input. Both formal and informal communication was maintained with many parties, including other Pennsylvania electric distribution companies; consumer and environmental advocates; chambers of commerce; state, local, and private economic development organizations; community-based organizations; trade associations; governmental agencies; trade allies; market partners; and CSPs.

Based upon the input of participating stakeholders, PPL Electric added new programs/measures and refined others, resulting in a more creative and robust portfolio than would have been possible otherwise.⁶ This collaborative process increased the likelihood of success in implementing the portfolio.

⁶ PPL Electric's stakeholder group includes but is not limited to representatives from: registered and other potential CSPs, environmental advocacy groups, chambers of commerce, public and private economic development organizations, community-based organizations, trade allies, including contractors, trade associations,

PPL Electric intends to meet with stakeholders as needed, but not less than twice annually until May 31, 2016.

Key information about stakeholder participation including meeting dates and topics discussed with the participants is summarized in **Table A**. PPL Electric also meets regularly with its CSPs, trade allies, equipment installers, engineers, consultants, equipment dealers, retailers, etc., who provide products and services to customers, and potential CSPs (companies who would like to contract with PPL Electric to provide EE&C products and services) to review the Plan progress, consider new products and services, and/or identify opportunities to improve EE&C programs.

Table A: Stakeholder Coordination Activities and Participation

Meeting	Invitees or Attendees	Topics Discussed
2/9/2012	Low-income advocates, contractors, CBOs, PUC Staff, and other interested parties.	Presented information about Act 129 Phase I low-income programs and sought input for Act 129 Phase II program design. At the time of this meeting, the Secretarial Letter had not been released. Included group discussions on: 1) possible ways to reduce low-income program costs, 2) ways to improve the low-income initiatives in Act 129 Phase II, 3) program models from other areas outside of PPL Electric’s territory that may hold merit for PPL Electric in designing Phase II low-income programs, 4) barriers to program participation. Notes from this meeting were distributed.
6/5/2012	Full stakeholder group ⁶	Reviewed Act 129 timeline for Plan development. Described PPL Electric’s process for developing the Plan. Identified possible issues and concerns. Established best process for obtaining future stakeholder input. Presented proposed funding targets, challenges faced with reductions in savings, mandatory savings targets and funding, and obtained broad stakeholder input. From this meeting, it was decided to hold two small focus group meetings: combined heat and power, and lighting.
7/11/2012	Low-income	Reviewed possible savings requirements.

energy services companies, and vendors, market partners that deliver or promote energy-efficiency programs, including Keystone HELP, PHFA, SEDA-COG, Community Action Committee of the Lehigh Valley, Schuylkill Community Action, Community Action Program of Lancaster, other Community Action Groups, property/facilities management companies; Pennsylvania Public Utility Law Project, the Sustainable Energy Fund, statutory advocates, the PA Department of Environmental Protection, municipal and local government groups, county commissioners, township commissioners, the EFMR Monitoring Group, the Pennsylvania Department of Community & Economic Development (DCED) Energy-efficiency engineers and consultants, Penn Future, PPLICA and Commission staff.

Meeting	Invitees or Attendees	Topics Discussed
		Presented comments following up on suggestions made in February meeting.
7/12/2012	Combined Heat and Power (CHP) meeting	Meeting led by a facilitator with discussion about the role of CHP projects in Phase II. Suggestions included offering fewer projects with a higher kWh incentive while others recommended a lower kWh incentive and more projects.
7/26/ 2012	Lighting Meeting	Meeting led by a facilitator with discussion centering on the role of lighting in Act 129 Phase II. Recommendations included offering Direct Discount to Large C&I customers and schools.
8/7/2012	Full stakeholder group ⁶	Updated stakeholders on progress of Plan development. Presented “top-down” savings and possible costs by sector. Reviewed, by sector, programs under consideration. Highlighted the Master Metered Low-Income Multifamily Housing Program and asked for stakeholder comments. Provided responses to the majority of questions, comments, or issues raised in the 6/5/2012 Stakeholder meeting.
8/3/2012	PPL Electric’s residential survey panel	Survey focused on several residential measures and programs being considered for Phase II.
9/26/2012	Full stakeholder group ⁶	Reviewed the timeline and focused on discussing challenges posed by the TRC comparing Act 129 Phase I TRC’s with initial Phase II TRC results. Presented possible distribution of costs and savings by sector and programs under consideration. Addressed outstanding questions from the 7/11/2012 Stakeholder meeting.
From February 2012-September 2012	Meetings with many of the stakeholders individually.	Discussed issues specific to that stakeholder or issues a stakeholder did not want to discuss in large group meetings for competitive or other reasons.
May 1, 2013	Full stakeholder group meeting ⁶	Updated stakeholders on Phase II programs and presented the Multifamily Master Meter Low-Income education component, asking for attendees to provide feedback.
October 16, 2013	Full stakeholder group meeting ⁶	Presented preliminary results from Phase I, discussed lessons learned, presented Phase II launch and discussed Phase II Plan enhancements.

1.3.1. Summary tables of portfolio savings goals, budget and cost-effectiveness.

The following tables provide summaries of estimated savings, budget and cost-effectiveness for PPL Electric’s entire portfolio.

These include:

- **Table 1:** Portfolio Summary of Lifetime Costs and Benefits for PPL Electric's entire portfolio
- **Table 2:** Shows an estimated portfolio of energy and demand savings.
- **Table 3:** Shows the overall estimated portfolio budget, broken out by sector and program year.

Table 1: Portfolio Summary of Lifetime Costs and Benefits

Portfolio	Discount Rate	Total Discounted Lifetime Costs (\$000)	Total Discounted Lifetime Benefits (\$000)	Total Discounted Net Lifetime Benefits (\$000)	Cost- Benefit Ratio
Residential <i>(exclusive of Low-Income)</i>	8.14%	\$83,668	\$184,265	\$100,597	2.20
Residential Low-Income	8.14%	\$16,499	\$13,048	(\$3,451)	0.79
Commercial/Industrial Small	8.14%	\$38,629	\$127,992	\$89,362	3.31
Commercial/Industrial Large	8.14%	\$48,246	\$69,293	\$21,047	1.44
Governmental/Educational/Non-Profit	8.14%	\$44,468	\$68,512	\$24,044	1.54
Common Costs	8.14%	\$32,674			
Total	8.14%	\$264,185	\$463,109	\$198,924	1.75

Notes:

1. "Net" refers to the arithmetic difference between the previous two columns. It does not refer to net verified savings.
2. Includes savings from measures installed and operable between June 1, 2013 and May 31, 2016. Excludes carryover of Phase 1 savings.

Table 2: Summary of Portfolio Energy and Demand Savings

MWh/Yr and kW Saved for Consumption Reductions	PY5		PY6		PY7		Total	
	MWh/Yr Saved	kW Saved	MWh/Yr Saved	kW Saved	MWh/Yr Saved	kW Saved	MWh/Yr Saved	kW Saved
Baseline ¹	38,214,368		38,214,368		38,214,368		38,214,368	
Residential Sector (<i>exclusive of Low- Income</i>) - Cumulative Projected Portfolio Savings ²	83,686	13,361	157,791	25,107	253,485	39,063	253,485	39,063
Residential Low-Income Sector - Cumulative Projected Portfolio Savings ²	5,411	668	9,647	1,192	22,223	2,744	22,223	2,744
Commercial/Industrial Small Sector - Cumulative Projected Portfolio Savings ²	70,072	12,796	109,297	19,997	144,386	26,390	144,386	26,390
Commercial/Industrial Large Sector - Cumulative Net Weather Adjusted Savings ²	30,939	4,830	71,089	11,307	107,417	17,248	107,417	17,248
Governmental/ Educational/Non-Profit Sector - Cumulative Projected Portfolio Savings ²	34,425	5,758	60,832	10,134	88,184	14,645	88,184	14,645
EE&C Plan Total - Cumulative Projected Savings ²	224,532	37,414	408,655	67,737	615,695	100,090	615,695	100,090
EE&C Plan Total - Percentage of Target to be Met ¹	27%		50%		75%		75%	
Estimated Phase 1 Carryover Savings	551,704		551,704		551,704		551,704	
Total Cumulative Projected Savings Phase 2 and Phase 1 Carryover	776,236		960,359		1,167,399		1,167,399	
Percent Reduction From Baseline	2.03%		2.51%		3.05%		3.05%	
Commission Identified Goal							821,072	
Percent Savings Due to Portfolio Above or Below Commission Goal	95%		117%		142%		142%	

¹As defined in the August 3, 2012 Implementation Order, Docket No. M-2012-2289411.

²Adjusted for weather and extraordinary load as applicable.

³Includes only the savings for low-income programs. An additional 55,176 MWh/yr. is from Low-income participation in non-low income programs

⁴Includes low-income saving in general residential programs.

Table 3: Summary of Portfolio Costs

Note: Program Year is June 1-May 31.

	Estimated Direct Costs						Total Direct Costs		Estimated Common Costs, All Years		Total Portfolio Budget	
	PY5		PY6		PY7		Portfolio Budget		\$	% of budget	\$	% of budget
	Portfolio Budget		Portfolio Budget		Portfolio Budget		Portfolio Budget					
	\$	% of budget	\$	% of budget	\$	% of budget	\$	% of budget	\$	% of budget	\$	% of budget
Residential Portfolio Annual Budget	\$ 12,852,636	29.24%	\$ 24,589,397	38.84%	\$ 16,496,418	37.84%	\$ 53,938,451	35.75%	\$ 12,285,902	34.84%	\$ 66,224,353	35.58%
Residential Low-Income Portfolio Annual Budget	\$ 5,596,783	12.73%	\$ 6,290,789	9.94%	\$ 5,946,689	13.64%	\$ 17,834,261	11.82%	\$ 4,062,222	11.52%	\$ 21,896,483	11.76%
Commercial/Industrial Small Portfolio Annual Budget	\$ 11,084,069	25.22%	\$ 9,766,606	15.43%	\$ 5,412,095	12.42%	\$ 26,262,770	17.41%	\$ 6,280,908	17.81%	\$ 32,543,678	17.49%
Commercial/Industrial Large Portfolio Annual Budget	\$ 4,548,102	10.35%	\$ 9,491,974	14.99%	\$ 6,185,948	14.19%	\$ 20,226,024	13.41%	\$ 4,837,182	13.72%	\$ 25,063,206	13.47%
Governmental/Educational/Non-Profit Portfolio Annual Budget	\$ 9,870,026	22.46%	\$ 13,176,824	20.81%	\$ 9,550,174	21.91%	\$ 32,597,024	21.61%	\$ 7,795,786	22.11%	\$ 40,392,810	21.70%
Total Portfolio Annual Budget	\$ 43,951,615	100.00%	\$ 63,315,591	100.00%	\$ 43,591,324	100.00%	\$ 150,858,530	100.00%	\$ 35,262,000	100%	\$ 186,120,530	100%

Note: Common costs and Total Portfolio Budget include \$3MM SWE costs that are not subject to the \$184.5MM cost cap.

1.4. Summary Description of Implementation Schedule

Figure 2: Summary of Program Implementation Schedule over Three-Year Plan Period

Sector	Program CSP	PY5				PY6				PY7				Post Phase II		
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
		Mar Apr May	June July Aug	Sept Oct Nov Dec	Jan Feb Mar Apr May	June July Aug	Sept Oct Nov Dec	Jan Feb Mar Apr May	June July Aug	Sept Oct Nov Dec	Jan Feb Mar Apr May	June July Aug	Sept Oct Nov			
Residential	Appliance Recycling	●	→	→	→	→	→	→	→	→	→	→	→			
	Residential Retail	●	→	→	→	→	→	→	→	→	→	→	→			
	Residential Home Comfort	●	→	→	→	→	→	→	→	→	→	→	→			
	Residential Energy-efficiency Behavior & Education	●	→	→	→	→	→	→	→	→	→	→	→			
	Low-Income WRAP	●	→	→	→	→	→	→	→	→	→	→	→			
	E-Power Wise	●	→	→	→	→	→	→	→	→	→	→	→			
	Low-Income Energy-efficiency Behavior & Education	●	→	→	→	→	→	→	→	→	→	→	→			
Small C & I	Prescriptive Efficient Equipment Incentive - Small C&I	●	→	→	→	→	→	→	→	→	→	→	→			
	Custom Incentive - Small C&I	●	→	→	→	→	→	→	→	→	→	→	→			
Large C & I	Prescriptive Efficient Equipment Incentive - Large C&I	●	→	→	→	→	→	→	→	→	→	→	→			
	Custom Incentive - Large C&I	●	→	→	→	→	→	→	→	→	→	→	→			
Gov't, Inst and Non-Profit	Prescriptive Efficient Equipment Incentive Program- GNI	●	→	→	→	→	→	→	→	→	→	→	→			
	Custom Incentive - GNI	●	→	→	→	→	→	→	→	→	→	→	→			
	Student and Parent Energy Efficiency Education	●	→	→	→	→	→	→	→	→	→	→	→			
	Continuous Energy Improvement	●	→	→	→	→	→	→	→	→	→	→	→			
	Multifamily Master Metered Housing Efficiency Program	●	→	→	→	→	→	→	→	→	→	→	→			
	School Benchmarking	●	→	→	→	→	→	→	→	→	→	→	→			
	Functional CSPs															
	Advertising, Marketing & PR	●	→	→	→	→	→	→	→	→	→	→	→			
	QA	●	→	→	→	→	→	→	→	→	→	→	→			
	EM&V	●	→	→	→	→	→	→	→	→	→	→	→			
	Tracking	●	→	→	→	→	→	→	→	→	→	→	→			
	Reports PA PUC	●			■	■	■	■	▲	■	■	■	■	▲	■	■

Key	
■	Program operation
→	Program development
■	PPL Electric provides quarterly report to PUC
▲	PPL Electric provides 4Q Report - Preliminary Annual Report
■	PPL Electric provides final Annual Report to PUC
▲	PPL Electric provides energy savings rec. report to PUC
●	CSP selected ad placed under contract

1.5. Summary Description of Strategy to Achieve 25% Reduction in each Program Year

Consistent with the Commission's Implementation Order, PPL Electric developed a strategy to ensure at least 25% of the total consumption reduction target is achieved each program year. Implementation Order at 28. However, as EDCs may not start implementing Phase II programs until June 1, 2013 and retroactive transactions are not permitted (the measure must be installed and operable no earlier than June 1, 2013), the first year of Phase II poses ramp-up challenges. It is very difficult for PPL Electric to directly control actual participation rates (market forces) with tight precision. PPL Electric has addressed these challenges through the following activities and its Phase II Plan has approximately 25% of its savings in each of the plan years.

In an attempt to ensure that the 25% reduction target is met in PY5, PPL Electric identified and evaluated programs that were successful in Act 129 Phase I, and is negotiating contracts with CSPs, as well as making arrangements to continue those programs on June 1, 2013. Those programs should have a seamless and quick transition from Phase I to Phase II.

PPL Electric will monitor actual performance in near "real time" and will adjust marketing, advertising, and incentives to attempt to increase or decrease participation levels as necessary to ensure at least 25% of the savings in each year.

1.6. Summary Description of Implementation Strategy to Engage Customers and Trade Allies

PPL Electric's implementation strategy relies on a broad range of contractors, partners, trade allies, community agencies, and other entities engaged in energy-efficiency to promote, deliver, and support the effective deployment of programs.

PPL Electric uses CSPs to deliver services in support of its programs, with many CSPs operating as turnkey program delivery contractors and others providing specific functions across multiple programs. CSPs, in some instances, engage subcontractors as well as trade allies to provide comprehensive customer service.

PPL Electric's implementation strategy is based on an assessment of features needed to encourage customer energy-efficiency actions and generate a high level of energy savings. The approach includes:

- Ongoing targeted market research to ensure programs are meeting customer needs.
- A wide range of voluntary customer programs that provide tangible benefits.
- Flexibility to allow eligible customers to use their own resources and combine incentives from multiple programs or from other sources to form the best solution for any facility or system.
- Ongoing evaluation of customer feedback.
- Targeted marketing that blends PPL Electric's in-house resources with external expertise from CSPs and trade allies to match specific program outreach to the customers most likely to participate.
- Coordination with trade allies, community-based organizations, and other local market participants through outreach, training, and potential co-marketing to ensure that these critical partners are well aware of PPL Electric's programs, are able to effectively articulate program features and benefits to potential customers, and can support customers in their decision to take energy-efficiency and demand reduction actions.

PPL Electric's programs depend on trade allies and other market partners to engage customers, promote programs, evaluate projects, and install energy-efficient equipment. The Company's objective is to strike a reasonable balance of costs, ratepayer value, customer choice, quality service, and energy and capacity savings.

1.7.1. Summary of Data Management, Quality Assurance and Evaluation Processes

PPL Electric's Energy Efficiency Management Information System ("EEMIS") allows program activities to be tracked in near real-time. This system generates reports and queries to allow ongoing monitoring, management, analysis, and reporting of activities. A detailed description of PPL Electric's EEMIS is provided in **Section 5.2**.

1.7.2. Quality Assurance

Quality assurance and quality control (QA/QC) is integral to implementation plans for each program. QA/QC procedures have been deployed at various levels of program development and implementation, including CSP recruitment and training, program operations, and implementation. PPL Electric's internal QA/QC staff meet with PPL Electric Customer Program Specialists responsible for the managing each Program. PPL Electric's internal QA/QC procedures for Act 129 include:

- Focus on anticipating, detecting, and preventing problems or errors rather than reacting to them.
- Strive to ensure work is done correctly the first time.
- Ensure CSPs utilize qualified individuals to perform all work functions through:
 - A thorough, competitive hiring process for each CSP that mandates the use of appropriately skilled personnel;
 - Proper training of personnel to maintain current knowledge and skills needed for their position;
 - Adequate planning, coordination, supervision, and technical direction; and
 - Proper definition and a clear understanding of job requirements and procedures.

A detailed description of PPL Electric's Quality Assurance/Quality Control process and standards is provided in **Section 6.1.1**.

1.7.3. Evaluation Process

PPL Electric will prepare an Evaluation Plan for each program and submit it to the SWE for approval. Each program will have an impact evaluation, a process evaluation, a net-to-gross evaluation and a cost-effectiveness evaluation. All of these evaluations will be conducted by PPL Electric's independent evaluator (EM&V CSP).

The impact evaluation will be conducted yearly and will focus on developing accurate estimates of the program's actual savings, based on protocols developed by the SWE and the Commission. The process evaluation will focus on qualitative assessments of the program's design, operation, and implementation. The process evaluation also will include an assessment to ensure all data required for the impact evaluation are collected. The cost-effectiveness evaluation will be conducted yearly to determine the cost-effectiveness of the programs and portfolio using the Total Resource Cost Test method specified by the Commission. The net-to-gross evaluation will be conducted yearly to determine the net verified savings of each program. Net savings includes

the effects of free-ridership and spillover. PPL Electric develops an Evaluation Plan that describes the EM&V requirements for each program.

1.7.4. Updating the Plan

Over the life of the Phase II Plan, PPL Electric expects that a number of assumptions will have to be revisited and revised to reflect updated market conditions. The Company anticipates the need to continually refine its proposed programs. Required revisions will be submitted to the Commission for its review in accordance with the Commission's requirements for revising EE&C Plans.

1.8. Summary of cost recovery mechanism

Section 2806.1(g) of Act 129 requires that the total cost of any EE&C Plan cannot exceed 2% of the EDC's total annual revenues as of December 31, 2006. PPL Electric's total annual revenues for calendar year 2006 were approximately \$3 billion. Accordingly, the 2% cost cap established by Act 129 is approximately \$61.5 million. In the Implementation Order entered on August 3, 2012, at Docket No., M-2012-2289411; M-2008-2069887 the Commission concluded that this limitation on the "total cost of any plan" should be interpreted as an annual amount, rather than an amount for the full term of the Plan. Implementation Plan at 103.

The total spending cap for three years is \$184.5 million plus an additional \$3 million of estimated costs for the Statewide Evaluator that are not subject to the \$184.5 million cost cap.

PPL Electric projects spending most of the \$184.5 million to implement its EE&C Plan, including administrative costs with some funds directed at the costs incurred to develop its EE&C Plan.

Section 2806.1(a)(11) of Act 129 requires that EE&C measures must be paid for by the same customer class that receives the energy and conservation benefits of those measures. PPL Electric will follow this direct assignment approach wherever possible. However, some costs will relate to EE&C measures that are applicable to more than one customer class or that provide system-wide benefits. In Act 129, Phase I, the Commission directed EDCs to allocate those costs, and general administrative costs, using reasonable and generally acceptable cost of service principles as are commonly utilized in base rate proceedings. As in Phase I, PPL Electric proposes to allocate such costs using an allocation factor equal to the percentage of the EE&C costs directly assigned to each customer class to the total of the EE&C costs directly assigned to all customer classes.

Section 2806.1(k)(1) of Act 129 authorizes EDCs to recover the costs of their EE&C Plan through a reconcilable adjustment clause under Section 1307 of the Public Utility Code. The Commission reiterated this requirement in its August 3, 2012 Implementation Order. Implementation Order at 118.

In its EE&C Plan filing, PPL Electric has included tariff pages to implement such a cost recovery mechanism. The Implementation Order also directs that such cost recovery mechanisms must be non-bypassable, and not affect the EDC's price-to-compare, if the EE&C Plan benefits both shopping and non-shopping customers. Because all of the programs included in PPL Electric's proposed EE&C Plan will benefit both shopping and non-shopping customers, the Company has designed its cost recovery mechanism to be non-bypassable. For residential customers, the cost recovery mechanism will be applied as a levelized cents/kWh component included in the distribution charge. For Small C&I customers, the cost recovery mechanism will be applied as a

levelized cents/kWh charge that will be a separate line item on the customer's bill. For Large C&I customers, the cost recovery mechanism will be applied as a \$/kW charge, as a separate line item on the customer's bill, where the demand (kW) is the customer's PJM Interconnection, LLC Peak Load Contribution (PLC) which may change yearly.

The Company proposes to calculate separately the applicable Plan costs for each of the three major customer classes on its system: (1) residential, (2) small commercial and industrial, and (3) large commercial and industrial. These costs will vary in each program year of the Plan. However, over the three program years, the total costs of the Plan for all customer classes will not exceed \$184.5 million.⁷

Although costs will vary year-to-year, PPL Electric proposes to recover those costs on a levelized basis as the preference of stakeholders. Annual budget amounts for each customer class will be developed on a levelized basis for the three years of the Company's proposed EE&C Plan. The budget amounts will be adjusted by \$1 million to include the annual costs that PPL Electric will incur to pay for the SWE. Section 2806.1(h) of Act 129 provides that the Commission can recover such program implementation costs from EDCs, and logically it follows that EDCs can recover those costs from customers. The costs for the SWE and for the Company's net-to-gross evaluations are not included under the Company's 2% cost cap. In establishing that cost cap, Section 2806.1(g) specifically characterizes the cap as a limitation on the "total costs of any plan required under this section." Because the costs of the SWE are not the costs of PPL Electric's EE&C Plan, they are not subject to the limitation set forth in Section 2806.1(g). The Commission has determined that costs for annual net-to-gross evaluations are not subject to the cost cap.

For each customer class, PPL Electric proposes to separately reconcile the revenues collected under the cost recovery mechanism with the adjusted budget amounts for that year. This reconciliation, which will be performed on an annual basis, primarily will reflect variations in actual sales from forecasted sales. The Company does not propose to reconcile the revenues collected under the cost recovery mechanism to its actual spending levels in each year. However, the Company will monitor the operation of the cost recovery mechanism and will make a mid-course adjustment to prevent a large reconciliation for a customer class(es) at the end of the Plan. As discussed above, those spending levels can vary from year-to-year. Although allowed in the Implementation Order, PPL Electric does not propose to collect or pay interest on under- or over-collections of Act 129 costs.

In addition to the annual reconciliation, PPL Electric proposes to make "mid-course" corrections in the cost recovery mechanism to reflect major changes to any of its EE&C programs. Mid-course corrections will be submitted to the Commission for approval. Finally, at the end of the three-year EE&C Plan, the Company will reconcile total revenue collected to its total budget for the three-year EE&C Plan. It is understood that the annual reconciliation, any "mid-course" corrections, and the end of Plan reconciliation all will be subject to Commission review and approval before PPL Electric adjusts customers' rates.

Finally, PPL Electric is not proposing an expiration date for the cost recovery mechanism. The mechanism will be needed to refund any over collection or recover any under collection existing

⁷ Excludes approximately \$3 million for the Statewide Evaluator that will be included in the cost recovery tariff.

at the end of the three-year EE&C Plan and for the purpose of any ongoing program cost recovery.

PPL Electric is not including any capital costs as part of the Act 129 Phase II cost recovery rider nor will any capital costs be placed into rate base outside of a base rate proceeding.

2. Energy-Efficiency Portfolio/Program Summary Tables and Charts

2.1. Residential, Commercial/Industrial Small, Commercial/Industrial Large and Governmental/Non-profit Portfolio Summaries.

- Provides a summary of estimated net lifetime energy savings for each program in PPL Electric’s portfolio, by customer segment.
- Includes only savings from measures installed and operable between June 1, 2013 and May 31, 2016, and excludes carryover from Phase I Savings.

Table 4: Program Summaries

	Program Name	Program Market	Program Two Sentence Summary	Program Years Operated	Lifetime MWh Savings	Lifetime kW Savings *	Percentage of Portfolio Annual MWh Savings	Percentage of Total Lifetime MWh savings
Residential Portfolio Programs (exclusive of Low Income)	<i>Appliance Recycling</i>	All customers	Free pick up, environmentally responsible recycling and disposal of appliances and participant rebate.	PY5, PY6, PY7	192,401	25,143	4.26%	2.51%
	<i>Residential Home Comfort</i>	Existing and new residential homes	New home construction rebates, audits and weatherization and rebates for efficient equipment	PY5, PY6, PY7	166,946	22,332	2.07%	2.18%
	<i>Prescriptive Efficient Equipment Incentive - Residential</i>	Residential Farms	Audits and rebates for farms.	PY5, PY6, PY7	17,413	2,883	0.19%	0.23%
	<i>Residential Retail</i>	All customers	CFL and LED lighting buy down and efficient equipment rebates.	PY5, PY6, PY7	2,087,961	346,069	27.43%	27.23%
	<i>Residential Energy-Efficiency Behavior & Education</i>	All customers	High-use customers receive report cards comparing them to similar customers. Energy tips and suggestions.	PY6, PY7	45,523	5,612	5.23%	0.59%
	<i>Student and Parent Energy Efficiency Education Program</i>	Students, parents and teachers	In-school sessions with children teaching energy efficiency. Workshops for teachers. Parent workshops in low-income neighborhoods held at local schools. All participants receive energy take-home kit.	PY5, PY6, PY7	124,307	15,325	1.98%	1.62%
	Totals for Residential Sector					2,634,550	417,364	41.17%

Section 2: Energy-Efficiency Portfolio/Program Summary Tables and Charts

Table 4: Program Summaries (Cont.)

Residential Low-Income Sector Programs	<i>E-Power Wise Program</i>	Income qualified customers	Energy kits and workshops for low-income customers.	PY5, PY6, PY7	23,311	2,874	0.55%	0.30%
	<i>Low-Income Energy-Efficiency Behavior & Education</i>	Income qualified customers	Low-income customers receive report cards comparing them to similar customers. Energy tips and suggestions.	PY6, PY7	11,475	1,415	1.35%	0.15%
	<i>Low-Income Weatherization Assistance</i>	Income qualified customers	Baseline WRAP and HPWH for low-income customers.	PY5, PY6, PY7	156,794	19,386	1.71%	2.04%
	Totals for Low-Income Sector					191,580	23,675	3.61%
Commercial/Industrial Small Portfolio Programs	<i>Custom Incentive Program - Small C&I</i>	All Small C&I customers	Incentives for custom energy efficiency projects.	PY5, PY6, PY7	67,620	9,870	0.73%	0.88%
	<i>Prescriptive Efficient Equipment Incentive - Small C&I</i>	All Small C&I customers	Prescriptive list of rebates for installation of energy-efficient equipment. Direct Discount component.	PY5, PY6, PY7	1,175,847	204,939	12.91%	15.34%
	<i>Residential Retail - Small C&I</i>	All Small C&I customers	CFL and LED lighting buy down and efficient equipment rebates allocated to the Small C&I sector.	PY5, PY6, PY7	738,854	145,353	9.81%	9.64%
	Totals for C/I Small Sector					1,982,321	360,162	23.45%
Commercial/Industrial Large Portfolio Programs	<i>Custom Incentive Program - Large C&I</i>	All Large C&I customers	Incentives for custom energy efficiency projects.	PY5, PY6, PY7	807,030	113,220	8.74%	10.53%
	<i>Prescriptive Efficient Equipment Incentive - Large C&I</i>	All Large C&I customers	Prescriptive list of rebates for installation of energy-efficient equipment. Direct Discount component.	PY5, PY6, PY7	792,998	143,476	8.71%	10.34%
	Totals for C/I Large Sector					1,600,027	256,695	17.45%

Section 2: Energy-Efficiency Portfolio/Program Summary Tables and Charts

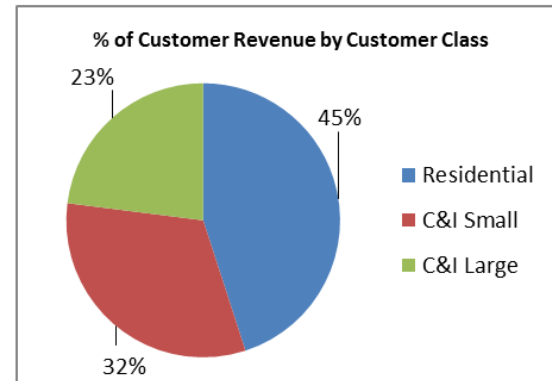
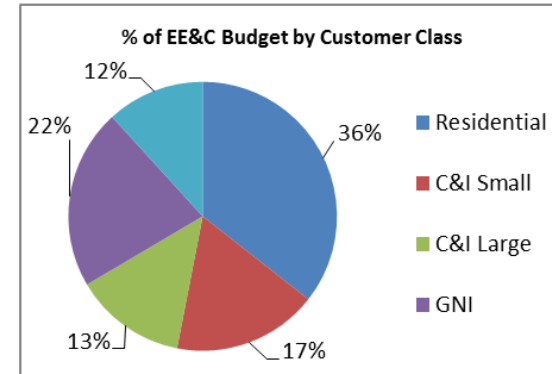
Governmental/ Educational/Non- Profit Portfolio Programs	<i>Continuous Energy Improvement</i>	School buildings	Schools selected to develop a Sustainable Energy Management Plan. Series of workshops and training.	PY6, PY7	9,450	1,353	0.51%	0.12%
	<i>Custom Incentive Program - Govt/Non-Profit</i>	GNI New and Existing Facilities	Incentives for custom energy efficiency projects.	PY5, PY6, PY7	110,250	15,780	1.19%	1.44%
	<i>Master Metered Low-Income Multifamily Housing Program</i>	Master Metered Low-Income Multifamily buildings	Audits, direct installation and rebates for low-income master metered buildings.	PY5, PY6, PY7	88,804	12,710	1.12%	1.16%
	<i>Prescriptive Efficient Equipment Incentive Program - GNI</i>	GNI existing facilities	Prescriptive list of rebates for installation of energy-efficient equipment. Direct Discount component.	PY5, PY6, PY7	1,050,507	180,457	11.50%	13.70%
	<i>School Benchmarking</i>	School buildings	Benchmarking service available to up to 25% schools per program year.	PY5, PY6, PY7	-	-	0.00%	0.00%
	Totals for Gov't/NP Sector Programs					1,259,011	210,299	14.32%
Total for Plan	(excluding Phase 1 carryover)				7,667,489	1,268,195	100.00%	100.00%

* Lifetime kW savings are cumulative values that assume the peak load reduction recurs each year, for the life of the measure.

2.3 Budget and Parity Analysis

Table 5: Budget and Parity Analysis Summary

Customer Class	Budget	% of Total EDC Budget	% of Total Budget Excluding Other Expenditures	% of Total Customer Revenue ¹	Difference
Residential	\$ 66,224	36%	36%		
Residential Low Income	\$ 21,896	12%	12%		
Residential Subtotal	\$ 88,121	47%	47%	45%	2%
C&I Small	\$ 32,544	17%	17%	32%	-15%
C&I Large	\$ 25,063	13%	13%	23%	-10%
C&I Subtotal	\$ 57,607	31%	31%	55%	-24%
Governmental/Educational/Non-Profit	\$ 40,393	22%	22%	Included in Small & Large C&I	22%
Governmental/Educational/Non-Profit Subtotal	\$ 40,393	22%	22%		
Non-Residential (C&I Small, C&I Large, GNI) Subtotal	\$ 98,000	53%	53%	55%	-2%
Residential/C&I/Governmental/Educational/Non-Profit Subtotal					
	\$ 186,121	100%	100%	100%	
Other Expenditures	N/A				
Other Expenditures Subtotal	\$ -				
EDC TOTAL	\$ 186,121				



- 2008 revenue was used as it was the last year without significant shopping. Subsequent years have had significant shopping and much of the EGS revenue from C&I customers is billed directly by EGSs and is not known by PPL Electric.
 - Includes common costs allocated to sectors.
1. Excludes GNI customers who are in the Small C&I and Large C&I rate schedules.

Table 5a. Program Summary by Sector (\$1000)

Program	Residential	Low Income	Small C&I	Large C&I	Govt/Non-Profit	Total Cost	Total MWh/yr Reduction ⁴	\$/kWh ³	Total MW Reduction ⁴	Benefit-to-Cost Ratio
Appliance Recycling	\$5,189	\$0	\$0	\$0	\$0	\$5,189	26,243	\$0.20	3.59	3.06
Residential Retail	\$30,128	\$0	\$3,506	\$0	\$0	\$33,634	229,276	\$0.15	39.89	3.63
Residential Home Comfort	\$9,851	\$0	\$0	\$0	\$0	\$9,851	12,739	\$0.77	1.78	0.49
Residential Energy-Efficiency Behavior & Education	\$2,389	\$0	\$0	\$0	\$0	\$2,389	32,205	\$0.07	3.97	1.80
Low-Income WRAP	\$0	\$15,635	\$0	\$0	\$0	\$15,635	10,519	\$1.49	1.30	0.71
Low-Income Energy-Efficiency Behavior & Education	\$0	\$1,164	\$0	\$0	\$0	\$1,164	8,325	\$0.14	1.03	0.93
E-Power Wise Program	\$0	\$1,036	\$0	\$0	\$0	\$1,036	3,378	\$0.31	0.42	1.90
Prescriptive Efficient Equipment Incentive	\$286	\$0	\$21,194	\$11,408	\$26,047	\$58,935	205,116	\$0.29	35.91	1.86
Custom Incentive	\$0	\$0	\$1,563	\$8,818	\$2,204	\$12,585	65,660	\$0.19	9.26	1.43
Student and Parent Energy Efficiency Education	\$6,096	\$0	\$0	\$0	\$0	\$6,096	12,199	\$0.50	1.50	1.61
Master Metered Low-Income Multifamily Housing Program	\$0	\$0	\$0	\$0	\$3,103	\$3,103	6,886	\$0.45	0.99	1.45
Continuous Energy Improvement	\$0	\$0	\$0	\$0	\$943	\$943	3,150	\$0.30	0.45	0.54
School Benchmarking	\$0	\$0	\$0	\$0	\$300	\$300	-		-	-
Total - Direct Program Cost	\$53,938	\$17,834	\$26,263	\$20,226	\$32,597	\$150,859				
Common Cost Allocation ¹	\$12,286	\$4,062	\$6,281	\$4,837	\$7,796	\$35,262				
TOTAL ESTIMATED COST	\$66,224	\$21,896	\$32,544	\$25,063	\$40,393	\$186,121				1.75
Total Estimated Phase 2 MWh/yr Reduction ^{2,4,5}	253,487	22,223	144,386	107,417	88,184		615,697			
Estimated Phase 1 Carryover MWh/yr ^{4, 6}					90,735		551,704			
Total MWh/yr Savings (including carryover)	253,487	22,223	144,386	107,417	178,919		1,167,401			
MWh/yr Reduction Target ⁴		36,948			82,107		821,072			
\$/kWh (direct & common) ³	\$0.26	\$0.99	\$0.23	\$0.23	\$0.46			\$0.30		
Total Estimated MW Reduction ⁴	39.06	2.74	26.39	17.25	14.65				100.09	
MW Reduction Target									0	

1. Includes SWE costs that are not subject to the cost cap.
2. Savings are for measures installed and operable 6/1/13-5/31/16 and exclude Phase I carryover .
3. Program acquisition cost equals program costs divided by first year's savings.
4. MWh/yr. and MW are on a verified gross basis – MW have been grossed-up to reflect T&D losses (compliance is at the “Generation” level). MW are cumulative at 5/31/2016.
5. Low-income program total is for Low-income programs only. There is a total of 55,176 MWh/yr., including low-income customer participation in non-low-income programs.
6. Estimated Phase I Carryover MWh/yr. from preliminary PY4 Annual Report verified savings.

3. Program Descriptions

3.1. Process Used for Selection of Programs.

3.1.1. Portfolio objectives and metrics that define success.

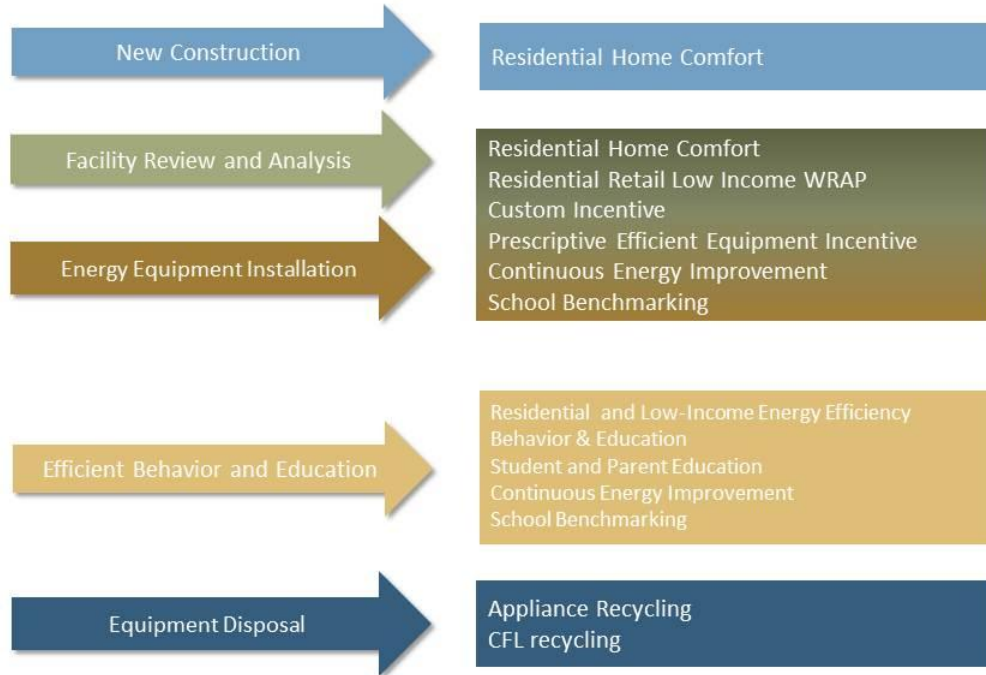
PPL Electric's primary objective is to deliver a portfolio of programs that will meet customers' needs, fulfill the Company's Plan objectives as defined in **Section 1.1.2.**, and achieve the results required by Act 129 Phase II. PPL Electric is well positioned to deliver customized energy-efficiency and conservation programs to meet the needs of its customers. The Company has ongoing relationships, regular communications with its customers using a variety of methods, and understands the unique characteristics and needs of various customer segments.

To achieve these goals, PPL Electric has designed a portfolio that:

- Is based on a strategic targeted approach that is flexible enough to adjust and expand as warranted by changing market conditions and progress toward Plan goals.
- Focuses on depth and sustainability of savings by offering customers a logical continuum of actions coupled with increasingly valuable incentives for cost-effective efficiency strategies.
- Builds customer, trade ally, and stakeholder relationships through ongoing training, education, upgrades, marketing strategies, and customer support.
- Supports the local economy by reducing customer utility costs, utilizing local labor to deliver elements of the programs where appropriate, helping owners to increase the value and marketability of their buildings, and promoting the adoption of high quality energy-efficient equipment and services.
- Utilizes precision targeted marketing techniques that capitalize on PPL Electric's market research and customer feedback to match program marketing with likely participants and to promote depth of savings in every customer facility.

PPL Electric's programs are designed to provide a cohesive structure intended to support residential, low-income, Small and Large C&I, and GNI sector customers through a logical continuum of energy-efficiency actions, starting with facility review, analysis and implementation, change when necessary and ending with verification, and evaluation. Marketing and education functions, customer care and quality assurance, program tracking, and evaluation, monitoring, and verification are all common features of the programs. The entire continuum is supported by financial incentives and a delivery approach focused on providing customers with the support they need to achieve their efficiency objectives. Implementation activities range from simple, common energy-efficiency measures that can be installed with minimal oversight or administrative burdens to more complex measures that are vetted and may (but are not required to) be part of a facility-wide energy management strategy. The Plan identifies opportunities for all customers to participate in one or more programs. From simply installing an energy-saving CFL or LED to participating in an energy audit and installing qualifying energy-efficient equipment on a farm, there are program opportunities available to all PPL Electric customers. This approach is depicted in **Figure 3.**

Figure 3. PPL Portfolio Continuum



The ultimate objective of the proposed Plan is to meet the requirements of Act 129 and encourage more efficient use of electric power by PPL Electric’s customers without diminishing the quality of electrical services they receive. In the case of measures and program options where the nature of electrical service may be affected, participants will be compensated through financial incentives. PPL Electric intends to accomplish this objective by offering its customers an extensive mix of technically sound and economical EE&C products and services.

PPL Electric will monitor its progress in meeting these objectives by tracking specific indicators of success and identify corrective action when necessary. At least five key indicators will be tracked, including market response, impacts, customer satisfaction, operating efficiency and cost-effectiveness, using the criteria and metrics, shown in **Table B**.

Table B: Key Indicators and Metrics for Monitoring Portfolio Success

Key Indicator	Metrics
Market Response	<ul style="list-style-type: none"> • Number of participants • Number of measures installed
Impacts	<ul style="list-style-type: none"> • kWh/yr. savings
Customer Satisfaction	<ul style="list-style-type: none"> • Responses to periodic surveys administered as part of quality assurance
Operating Efficiency	<ul style="list-style-type: none"> • Application processing time • Incentive processing time • Expenditures in each category
Cost-Effectiveness	<ul style="list-style-type: none"> • TRC benefit-to-cost ratio

3.1.2. How programs were constructed.

PPL Electric’s program structure was designed after carefully considering the requirements of Act 129, market characteristics of its service territory, best practices of programs and incentives offered by other utilities and organizations around the country and barriers associated with deploying energy-efficiency solutions to PPL Electric’s customers. At various points in the program development process, the Company met with stakeholders individually and in large groups to seek input, discuss progress, convey certain program constraints, and generate new ideas and perspectives. PPL Electric used these resources and information to compile a mix of proven energy-efficiency strategies to enable PPL Electric to reach its program goals, within the parameters set forth in Act 129.

Once a robust set of customer programs were identified, PPL Electric completed an extensive technical and economic program screening analysis (see **Section 8**), and examined a number of other factors to determine how best to structure the portfolio and implement individual programs. PPL Electric also determined how to facilitate a program launch and delivery schedule that would capitalize on existing activities, account for the seasonal nature of some programs, address CSP functions, and allow PPL Electric to achieve its Act 129 goals.

In compliance with the Secretarial Letter, PPL Electric has differentiated its programs according to the five customer classes defined in the EE&C Plan Template. PPL defines large commercial and industrial customers as those customers served at primary and transmission voltage levels (rate schedules (LP4, LP5, LP6, IST, LPEP, ISA, PR1, and PR2). Small commercial and industrial customers include all nonresidential accounts served at secondary voltage levels (i.e., any rate schedule that is not “Large C&I” and not “residential”). However, PPL Electric’s programs are defined according to delivery strategies, the nature of customers’ businesses, types of facilities, and types of energy-using equipment rather than on the PPL Electric rate class for that customer. In other words, where programs offer customer benefits across multiple classes, and where similar implementation, marketing, and administrative strategies may be utilized to capture functional efficiencies, those programs will be offered to all appropriate customer segments. However, PPL Electric will document,

track and report on its program results and progress toward goals by the customer classes identified in this Plan.

The distribution of program eligibility and energy savings are listed in **Table C**.

Table C: Customer Eligibility by Program

	Residential	Low-Income	Small C&I	Large C&I	GNI	TRC
Appliance Recycling	■	■				3.06
Residential Retail	■	■				3.63
Residential Home Comfort	■	■				0.49
Residential Energy-Efficiency Behavior & Education	■	■				1.80
Student and Parent Energy Efficiency Education	■	■				1.61
Prescriptive Equipment - Residential	■		■			1.86
Low-Income WRAP		■				0.71
Low-Income Energy-Efficiency Behavior & Education		■				0.93
E-Power Wise Program		■				1.90
Prescriptive Equipment - Small C&I	■		■			2.48
Prescriptive Equipment - Large C&I				■		1.44
Prescriptive Equipment - GNI					■	1.62
Custom Incentive - Small C&I			■			1.56
Custom Incentive - Large C&I				■		1.43
Custom Incentive - GNI					■	1.37
Master Metered Low-Income Multifamily Housing Program					■	1.45
Continuous Energy Improvement					■	0.54
School Benchmarking					■	0.00

Primary Customer Target	■
Eligible Customers	■

Residential customers are, in addition to being eligible for programs designed for residential customers, are eligible for the agricultural component of the Prescriptive Equipment Program (Small C&I) with savings and associated costs directed toward Residential Savings. Initial PPL Electric Market research suggests that at least 50% of the farms in the PPL Electric territory have a residential rate class. Although available to residential customers, participation in the Custom Incentive Program is expected to be minimal. Recycling, again in Act 129 Phase II is available to any customer with a residential grade refrigerator or freezer disregarding rate class.

For programs that are being introduced in Phase II, ramp rates were assigned to each programs’ participation estimates that account for a gradual build-up of customer outreach

and acceptance, leading to market adoption rates that would be realistic but sufficiently aggressive to support the Company's goals. For example, the newly offered Residential Home Comfort Program will require outreach and development of the delivery infrastructure to ensure customers are aware of the program and program benefits. The same is true for the Continuous Energy Improvement Program requiring outreach to school districts to ensure a solid "take rate." For new programs, estimated participation will start at a low level, will steadily increase in PY6, and level off to full participation rates that represent expected total saturation by the end of PY7. Other programs, those that were offered in Phase I and are being carried forward in Phase II will require less time to ramp-up. These assumptions, both for new program offerings and ongoing programs, were guided by the SWE Market Potential Study and the market characteristics in PPL Electric's territory, and research by Program Staff that reflected in the experience of other utilities operating similar, successful programs.

Savings estimates for most measures in the Plan are drawn from the Commission's 2013 TRM and the Proposed 2014 TRM or estimates by Cadmus for PPL Electric for measures that weren't available in the TRM. Incremental measure and labor costs were determined through the Pennsylvania Incremental Cost Database, the Commission's Market Potential Study, online research and discussions with installation contractors, with cost-of-living adjustments for PPL Electric's service territory. It is understood that technical interactions may slightly alter savings if multiple measures are installed together. In the instance of the Residential Home Comfort Program, the New Homes component takes this into account. In other instances, PPL Electric's analysis treats individual measure savings as independent.

3.1.3. PPL Electric chose not to include solar photovoltaic systems (PV) in this Plan. It was determined that these systems have a benefit cost ratio below 1 and such large participant costs would adversely impact the TRC of a program, as experienced in Phase I. However, as the price for solar continues to change, PPL Electric will continue to examine the viability of adding solar PV to the EE&C Plan and whether the TRC is the ideal method to determine its cost-effectiveness.

3.1.4. Comprehensive measures to be offered to the Residential and Small C&I rate classes.

Residential: Comprehensive measures being offered to the residential sector include measures within the Residential Home Comfort Program and Residential Retail program. The first, Residential Home Comfort offers three comprehensive opportunities. This includes:

- A new homes component providing incentives to builders installing a mix of energy-efficient measures and a rebate to customers who purchase a manufactured home.
- An audit and weatherization component providing several options for home audits with a direct install component, with individualized audit results that lead to customers making the choice to install measures that will assist in making their homes energy-efficient.
- An audit and installation program for farmers. Some PPL Electric farms are classified as Residential and some are classified as Small C&I. Further description follows in next paragraph.

Small C&I: Comprehensive measures being offered to the Small C&I rate class include:

- An audit program specifically designed to address energy-efficiency needs of farmers. The farming industry is a significant part of the regional economy in PPL Electric's territory. This program will help farmers address increasing costs to managing their farms by assisting in reducing their energy consumption. As noted above, some farms in PPL Electric's territory are classified as Residential and some are classified as Small C&I. Savings and costs for this comprehensive program will be allocated based on customer rate class.
- A custom incentive program. The Custom Incentive Program will provide Small C&I customers with the opportunity to identify comprehensive measures needed to make their businesses energy-efficient.

GNI: Comprehensive measure being offered to GNI customers includes:

- Comprehensive approach to Master Metered Low-Income Multifamily Program. These buildings will receive incentives to upgrade equipment such as cooling, heating and lighting above and beyond the standard measures provided by the program.

Program Descriptions

Following are descriptions of each program. Estimated program participation levels, savings, costs, and specific incentives and incentive ranges are approximate and subject to change.

Residential Programs

Section 3.2

Appliance Recycling Program (Residential Sector)

2013–2016

Summary

Appliance recycling provides customers with a rebate for recycling inefficient refrigerators, freezers and room air conditioners. The program is available to all PPL Electric customers with a residential size refrigerator, freezer or room air conditioner. JACO Environmental Inc. (JACO) was the Phase I turnkey CSP for this program and will continue to provide this service in Phase II.

Objectives

The objectives of the Appliance Recycling Program are to:

- Encourage customers to dispose of their existing, inefficient refrigerators, freezers, and air-conditioning units.
- Reduce the use of secondary, inefficient refrigerators, freezers, and air-conditioning units.
- Ensure appliances are disposed of in an environmentally responsible manner.
- Enhance relationships with box stores and independent retailers to encourage participation in the “Buy new and recycle”⁸ component.
- Decommission appliances on-site to ensure they are not able to be resold in a secondary market.
- Promote other PPL Electric energy-efficiency programs.
- Collect and recycle approximately 37,000 appliances, with a total reduction of approximately 26,200 MWh/yr.

Target Market

The Appliance Recycling Program primarily targets residential customers, but it is available to all PPL Electric customers with working, residential grade refrigerators, freezers, or room air-conditioning units. In addition, PPL Electric may encourage retailers, landlords, or building managers in its service territory to recycle their refrigerators and freezers. Refrigerators must be between 10 and 30 cubic feet. Actual units, savings and costs are allocated to the appropriate customer sector.⁹ The majority of units are expected to come from the residential sector with a few units from other customer sectors. **Table D1** identifies eligibility parameters.

⁸ “Buy New and Recycle,” managed by the CSP, provides customers with the advantage of being able to coordinate the delivery of a new unit with the removal and recycling of their old unit.

⁹ Allocation to the low-income sector will be determined as part of the annual impact evaluation of low-income participation in general residential programs.

Table D1: Appliance Recycling Customer Eligibility Parameters

Customer Sector(s)	All
Rate Class	All
Building Type	All
Building Vintage	All
Building Ownership	Owner or tenant

Program Description

The Appliance Recycling Program offers free pick-up and recycling of inefficient refrigerators, freezers, and room air conditioners. An incentive is paid to a customer for each eligible appliance. Room air conditioners are picked up with a refrigerator/freezer but are not picked up as a stand-alone service. Eligible appliances must be plugged in and functioning when picked up.

All units are decommissioned on site and disposed of in an environmentally responsible manner. This involves removing hazardous materials such as chlorinated fluorocarbons from the refrigerant and foam insulation, preparing refrigerant for reclamation, and recycling other materials including metal and plastic.

Implementation Strategy

The turnkey CSP from Phase I, JACO, will be engaged to manage the program. PPL Electric staff will provide overall strategic direction and program management. The program design and delivery will basically remain the same with the transition appearing seamless to customers from Phase I to Phase II.

Program Issues, Risks and Risk Management Strategy

Table D2 presents key market risks to an effective Appliance Recycling Program, as well as the strategies the program will use to mitigate each risk.

Table D2: Appliance Recycling Program Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
Convenient time required for customer to be available for pick-up.	<ul style="list-style-type: none"> Customer may have the interest to recycle but not have the available time to do so. 	<ul style="list-style-type: none"> CSP responsible to work with customer to ensure the pick-up is as convenient as possible. On a case-by-case basis, special pick-up times may be arranged to meet customer needs.
Lack of program awareness among customers.	<ul style="list-style-type: none"> Customer participation might be low. 	<ul style="list-style-type: none"> Marketing strategy, including distributing materials at community events, to CBOs, a media campaign and PPL Electric bill inserts.
Customer may not see the benefit of recycling qualified appliance(s).	<ul style="list-style-type: none"> Customer disposes of units through channels other than this program. 	<ul style="list-style-type: none"> CSP will work with retailers, where new units are sold, to display information about the benefits of recycling. Customize educational material to

		highlight the high cost of operating an inefficient unit and the benefits of eliminating inefficient units.
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Anticipated Costs to Participating Customers

There are no direct costs incurred by customers in this program.

Ramp-Up Strategy

The Appliance Recycling Program will be managed by JACO Environmental Inc., the CSP that provided this service in Phase I. The program will continue to operate in the same manner in Phase II as in Phase I with the transition being seamless to customers.

Marketing Strategy

Marketing for this program will be the responsibility of the Appliance Recycling CSP. The marketing strategy may include:

- Promoting the program in “Connect” and bill inserts.
- Providing online access to the Program via the Company’s website.
- Advertising through newspapers, radio, television, and other media.
- Designing program brochures for customers.
- Promoting “Buy new and recycle” with participating retailers.

Eligible Measures and Incentive Strategy

Qualified customers receive a rebate for recycling working refrigerators, freezers, and room air conditioners.¹⁰

There is an annual limit of two incentives for a refrigerator/freezer per customer address and up to four room air conditioners. Allowances are made for customer classes other than residential. For example, a commercial customer may be replacing multiple refrigerators in its break rooms and have more than two qualifying units. In that instance, JACO, with approval from PPL Electric staff, will pick up and recycle those units. Savings will be reported to the correct customer class.

The measures, eligibility requirements, number of participants, and incentives are approximate and may change to reflect market and other conditions. Eligible measures and rebates are shown in **Table D3**.

¹⁰ Room air conditioners may be picked up along with a qualified refrigerator or freezer, but will not be picked up as a stand-alone item.

Table D3: Appliance Recycling Eligible Measures

Measure	Eligibility Rating	Incentive Range
Refrigerator	Working unit; ≥ 10 CU FT. and ≤ 30 CU FT.	Between \$25 and \$50
Freezer	Working unit; ≥ 10 CU FT. and ≤ 30 CU FT.	Between \$25 and \$50
Room air conditioner	Working unit	Between \$10 and \$25

Program Start Date with Key Schedule Milestones

Strategic planning, execution, and schedule for the Appliance Recycling Program are listed in **Table D4**. PPL Electric staff will lead the process with input from PPL Electric’s EM&V staff.

Table D4: Appliance Recycling Program Schedule and Milestones

Schedule	Milestones
10/1/12	Revise detailed work scopes, terms and conditions, quality assurance, and budget for CSP.
10/31/12	Execute program implementation contract with CSP (Contract submitted with PPL Electric Act 129 Phase II Plan.)
TBD	Receive PUC response for approval/denial of contract.
3/1/13	Begin program development.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control (QA/QC). Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be similar to the Phase I Evaluation Plan for the Appliance Recycling Program. Reported and verified savings will be determined using the method specified in the TRM (fully stipulated savings for each measure type) to calculate the savings of each measure, and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of each measure and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric will oversee the operations and administration of the Appliance Recycling Program. The major anticipated roles for the program are listed in **Table D5**.

Table D5: Appliance Recycling Stakeholder Roles

<p>Primary Conservation Service Provider (CSP)</p>	<ul style="list-style-type: none"> • Marketing and advertising. • Providing call center services, including customer intake and scheduling. • Verifying customer and appliance eligibility. • Processing applications and rebates. • Utilizing a “Buy New and Recycle” component. • Scheduling and executing appliance collection. • On-site decommissioning. • Picking up and transporting appliances to recycling facility. • Recycling applicable components and appropriately disposing of remaining components. • Tracking customer data, appliances, and outcomes throughout the process. • Submitting customer transaction information to PPL Electric’s EEMIS tracking system. • Processing and sending rebates to customers. • Submitting required monthly information to PPL Electric. • Maintaining systems to ensure customer data is protected.
<p>PPL Electric</p>	<ul style="list-style-type: none"> • Guiding program strategy. • Confirming CSP uploads to EEMIS. • Reviewing, verifying and approving CSP invoices. • Overseeing CSP activities to ensure compliance with PPL Electric’s EE&C Plan and Pennsylvania Public Utility Commission protocols.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the SWE.
<p>Retailers</p>	<ul style="list-style-type: none"> • Promoting the “Buy New and Recycle” component. • Educating customers on energy-efficient appliances.
<p>Customer</p>	<ul style="list-style-type: none"> • Scheduling the recycling of their appliances. • Being available at designated pick-up time so their units may be decommissioned and removed for recycling.

Estimated Participation

Estimated participation levels are shown for general guidance only. These numbers may increase or decrease based on the rebate levels. **Table D6** identifies projected participation.

Table D6: Appliance Recycling Projected Participation

	PY5	PY6	PY7	Total
Refrigerators and Freezers	12,000	11,300	11,300	34,600
Room Air Conditioners	1,200	600	600	2,400
Total	13,200	11,900	11,900	37,000

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

The Appliance Recycling program is expected to achieve electricity consumption savings of approximately 26,200 MWh/yr. during the Plan. The budget allocation MWh/yr. savings through 2016 and overall program cost-effectiveness for the residential customer sector are shown in **Table D7**.

Table D7: Appliance Recycling Summary of Projected Benefits, Costs, and Cost-effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	9,121	8,561	8,561	26,243
Capacity Savings (MW)	1.30	1.14	1.14	3.59
Total Resource Cost	\$1,733,852	\$2,033,210	\$1,422,210	\$5,189,271
Direct Participant Costs	\$0	\$0	\$0	\$0
Direct Utility Costs	\$1,733,852	\$2,033,210	\$1,422,210	\$5,189,271
Customer Incentives	\$379,200	\$899,875	\$288,875	\$1,567,950
EDC Labor, Materials & Supplies	\$105,000	\$105,000	\$105,000	\$315,000
CSP Variable Costs	\$1,249,652	\$878,335	\$878,335	\$3,006,321
CSP Labor, Supplies & Marketing	\$0	\$150,000	\$150,000	\$300,000

	TRC Test
NPV Benefits	\$14,781,863
NPV Costs	\$4,830,177
Net Benefits (NPV)	\$9,951,686
Benefit-Cost Ratio	3.06

**Residential Retail Program
(Residential Sector)**

2013–2016

Summary

The Residential Retail Program provides a comprehensive program grouping together energy-efficiency products used by residential customers and found in retail stores. A turnkey CSP will manage this program. Participating customers will be able to purchase a variety of energy-efficient light bulbs at a discount. Customers will also be able to receive rebates for energy-efficient equipment. The CSP will provide a call and rebate processing center. The CSP will also present the program to retailers as one program and not two distinct programs (lighting and residential efficient equipment) as in the past. Offering this as one comprehensive retail program will create operational and economic synergy.

Objectives

The objectives of the Residential Retail Program are to:

- Provide a mechanism for customers to easily obtain discounted ENERGY STAR® qualified energy-efficient light bulbs (primarily CFLs in PY5 and LEDs in PY6 and PY7) and efficient-equipment sold in retail stores.
- Achieve widespread visibility through independent and regional retailers that carry the eligible ENERGY STAR® products.
- Develop and execute strategies aimed at transforming the market for ENERGY STAR® qualified LED bulbs and equipment.
- Provide customers with the opportunity to recycle CFLs through retailers and municipalities and provide customer education on proper recycling.
- Educate customers on new technologies, such as LEDs, for light bulbs and the impact that the Energy Independence and Security Act (EISA) will have on energy-efficient light bulbs.
- Engage retailers by educating and training retail sales associates about the energy-efficient equipment.
- Provide a one-stop call and rebate processing center.
- Promote other PPL Electric energy-efficiency programs.
- Obtain approximately 221,600 MWh/yr. of savings from the lighting component of the program and 7,700 MWh/yr. from the energy-efficiency component.

Target Market

The Residential Retail Program will be available for all PPL Electric customers. The savings and costs will be assigned to the actual participants' rate class when known. For the upstream lighting program component where the actual participant is not known, a portion of the savings and costs will be allocated to the residential and to the small C&I sectors based on the cross-sector sales adjustment factors determined by PPL Electric's independent evaluator. **Table E1** identifies eligibility parameters.

Table E1: Residential Retail Customer Eligibility Parameters

Customer Sector(s)	All
Rate Class	All
Building Type	All
Building Vintage	All
Building Ownership	Owner, Tenant

Program Description

The Residential Retail Program brings together energy-efficiency products found in retail stores. A CSP will manage this turnkey program including working directly with manufacturers and retail stores and providing a call and rebate processing center.

- **Residential Lighting** - The lighting component of the program includes offering discounted CFLs and LEDs in PY5 and phase in LEDs in PY6 and PY7.

A lighting brochure will be developed and distributed at community events. The brochure will provide customers with information needed to make educated decisions when buying lighting.

CFL recycling buckets and recycling educational materials will be made available throughout the PPL Electric territory. For bucket placement, the program CSP will target retail locations where CFLs are or have been discounted and municipalities within the PPL Electric service territory. CFL recycling locations will be posted on PPL Electric’s website.

- **Efficient Equipment** – The efficient equipment portion of the program will provide customers with rebates for specific residential retail efficient equipment.

The CSP will establish and manage a call and rebate processing center, accepting customer calls, supporting customer participation, cross-marketing, processing rebates, and providing basic customer care and quality assurance for the Residential Retail Program. The center is expected to provide information to customers on the application process, rebate application status, and basic information on energy-efficiency. The center will also need to efficiently direct customers to other CSPs for programs that are self-contained, such as the Appliance Recycling Program.

Implementation Strategy

PPL Electric will identify and select, through a CSP bid process, a turnkey CSP to manage the Residential Retail Program, which will include residential lighting, efficient equipment, and a call and rebate processing center. PPL Electric staff will provide overall strategic direction and program management for the Residential Retail Program.

The CSP will establish a call and rebate processing center to handle all calls for the Residential Retail Program and all of its components. This center will be a critical entry point for many customers to participate in the Program and will be fully operational by July 2013.

Program Issues, Risks, and Risk Management Strategy

Table E2 presents key market risks to an effective Residential Retail Program, as well as the strategies the program will use to mitigate each risk.

Table E2: Residential Retail Program Issues, Risks, and Risk Management Strategy

Program Issues	Risks	Risk Management Strategy
Cost of energy-efficient bulbs may be higher than the customer is willing to pay. The cost is increasing because of the cost of materials used in the bulbs and manufacturing.	<ul style="list-style-type: none"> • Low sales translating to low savings. • Customers may not be willing to purchase new, more-efficient light bulbs if their light bulbs are currently functioning. • Economic conditions may limit customer’s ability to purchase bulbs. 	<ul style="list-style-type: none"> • Provide upstream incentive providing affordable bulbs at retail locations and free bulbs at customer give-away events. • Educate customers on the long-term energy cost-saving benefits of higher efficiency equipment.
Lack of customer awareness about traditional energy bulb usage.	<ul style="list-style-type: none"> • Customers do not see a need to use more efficient bulbs. 	<ul style="list-style-type: none"> • Deliver a robust marketing strategy, including point-of-sale promotions and discounts.
Reduction in savings due to the new EISA standards.	<ul style="list-style-type: none"> • Higher cost for each kWh saved. 	<ul style="list-style-type: none"> • Determine the proper product mix to offset the saving changes for specific bulbs and optimize energy savings, given budget constraints.
Improper disposal of CFLs, and negative media attention associated with CFL mercury content and CFL disposal.	<ul style="list-style-type: none"> • Customers may not purchase CFLs if they do not think there is a way to safely recycle used bulbs. • Customers may not know where to recycle CFLs. 	<ul style="list-style-type: none"> • Provide locations for customers to dispose of CFLs. • Provide customer education and outreach on the proper handling and disposal of CFLs and mercury content.
Lack of customer awareness about LED bulbs.	<ul style="list-style-type: none"> • When PPL Electric phases out CFLs and promotes LEDs, customers may not purchase LEDs and may revert to incandescent bulbs. 	<ul style="list-style-type: none"> • Provide significant customer education/marketing to inform customers about the benefits of LEDs and how to select appropriate LEDs. Adjust LED incentives as required.
Energy-efficient bulb performance	<ul style="list-style-type: none"> • Customer may not purchase energy-efficient bulbs as they may perceive that these bulbs do not perform well. 	<ul style="list-style-type: none"> • Ongoing retailer communications, training, outreach, and education.
Changing technology may affect lifecycle cost.	<ul style="list-style-type: none"> • Customer decision-making process may change as new technology becomes available in the market. 	<ul style="list-style-type: none"> • Add new programs or measures and/or increase eligible equipment efficiency levels as efficiency improves.

<p>Customers needing emergency replacement may not know about the program.</p>	<ul style="list-style-type: none"> • Distress purchases frequently don't involve product research before decision-making. 	<ul style="list-style-type: none"> • Provide retail store and trade ally training explaining the benefits of selling higher-efficiency equipment. • Develop in-store brochures and collateral. • Promote general energy-efficiency awareness to customers and trade allies.
<p>Identifying participating customers at time of purchase.</p>	<ul style="list-style-type: none"> • Retailers are not able to identify customers as PPL Electric participants at time of purchase. 	<ul style="list-style-type: none"> • Ensure retailers are trained to identify participating customers.
<p>When contacting the Call Center, Customers perceive they are talking to another entity and not PPL Electric.</p>	<ul style="list-style-type: none"> • Reps may not provide level of customer service acceptable to PPL Electric. 	<ul style="list-style-type: none"> • Monitor customer satisfaction and performance to avoid customer dissatisfaction.

Anticipated Costs to Participating Customers

The average customer cost of a discounted CFL under the Residential Retail Program is expected to be approximately \$2 or less. The average cost of discounted LEDs will vary. The average direct mail-in rebate and upstream incentive amount and final prices paid by customers vary by energy-efficient product. The Residential Retail Program CSP will propose recommendations to adjust the upstream incentives to ensure that they are appropriate and sales levels are controlled. Limited-time offers may be included, increasing incentives that coordinate with a manufacturer incentive to increase take rates.

Ramp-up Strategy

PPL Electric will utilize a turnkey CSP to deliver the Residential Retail Program. PPL Electric will work with the selected CSP to take advantage of the changes in EISA standards, promoting CFLs in PY5 , and encourage customers to purchase specialty and LED bulbs in PY5, PY6 and PY7. The CSP will be expected to develop a marketing strategy and delivery plan to achieve program goals. The selected CSP will need to develop a robust marketing strategy to engage both manufacturers and consumers to influence customers to make energy-efficient equipment choices. The CSP will begin operations with a ramp-up strategy that focuses heavily on marketing, recruiting, and engaging retail stores and manufacturers. The first half of PY5 will focus on relationship-building. It is expected that there will be a steady increase throughout the end of PY5 and then approximately equal program participation in PY6 and PY7.

The CSP will design, produce, distribute, and display creative retail point-of-purchase (POP) materials. These materials could include items such as brochures, fact sheets, and user guides. These materials should augment and complement the POP that partners are providing.

Additionally, the selected CSP will need to staff a center and train call center representatives on the specifics of the PPL Electric Plan. The CSP will design a user friendly tracking system for internal and customer use. This tracking system will allow customers to check, in real time, their rebate status and provide complete transparency to the PPL Electric program manager. The

CSP’s tracking system will be used to capture rebate application data and will interface with the PPL Electric Energy Efficiency Management Information System (EEMIS). The CSP will need to be able to efficiently verify applicant and measure eligibility. The CSP will all need to develop and implement a process to pay rebate requests in a timely manner.

Marketing Strategy

Marketing for this program will be led by the Residential Retail CSP with support from PPL Electric staff. The marketing strategy may include:

- Providing point-of-purchase advertising and marketing materials in retail stores and educating retail store personnel about the Residential Retail Program.
- Promoting the Program and identified energy-efficiency equipment in “Connect”.
- Communicating and providing access to program information, and participating retailers, on the Company’s website.
- Advertising using newspaper, radio, and other mass media and in-store advertising.
- Branding marketing material with the ENERGY STAR® and PPL Electric logos.
- Presenting program information at community events and home shows.
- Coordinating co-branding advertising opportunities with trade allies (i.e., equipment dealers, distributors, and manufacturers), and retailers.
- Developing, publishing and distributing a lighting brochure.
- Developing relationships with manufacturers for the upstream component.
- Cross-promoting through other PPL Electric efficiency programs.

Eligible Measures and Incentive Strategy

The CSP will manage the delivery of upstream incentives to participating energy-efficient light bulb manufacturers. In general, the incentives provided at the retail level are designed to cover between 25% to 50% of the retail cost of CFLs, LEDs, and other energy-efficient bulbs and 100% of the cost of giveaway bulbs

The program also provides a financial incentive in the form of a rebate to customers installing qualifying equipment and technologies.

Table E3A identifies PPL Electric’s proposed list of eligible equipment, incentive levels and efficiency qualifications.

Table E3A: Residential Retail Program Eligible Direct Mail-In Rebate Eligible Measures

Measure	Eligibility Rating	Incentive Range
Refrigerator	ENERGY STAR®	\$10- \$25
Refrigerator	ENERGY STAR® “Most Efficient”	\$50 - \$100
Heat Pump Hot Water Heater	ENERGY STAR®, EF>=2.3	\$200- \$300
Efficient non-electric hot water (oil, gas, propane) – Max. 100 units for all Programs.	Switch from electric to non-electric. Excluding new construction and non-electric to non-electric replacement. Tankless units – EF>=0.82; storage natural gas – EF>=0.67; propane EF>=0.594; oil EF>=0.514.	\$200-\$300

PPL Electric will perform periodic reviews of the Residential Retail Program at least annually, and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as conditions change.

Program Start Date with Key Schedule Milestones

Strategic planning, execution, and schedule for the Residential Retail Program are listed in **Table E4**. Some tasks will be led by PPL Electric; others will be led by various CSPs with oversight from PPL Electric.

Table E4: Residential Retail Program Schedule and Milestones

Schedule	Milestones
10/26/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
10/26/12	Issue RFP for CSP.
2/22/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement, and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control (QA/QC). Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

For the lighting portion of this program, the Evaluation Plan is expected to be similar to the Phase I Evaluation Plan. Reported and verified savings will be determined using the method specified in the TRM (algorithm with open variables) to calculate the savings of each bulb, and then sum the savings of all bulbs. The EM&V CSP will confirm the quantity of each bulb and will confirm savings were determined in accordance with the TRM.

For the efficient equipment portion of this program, the Evaluation Plan is expected to be similar to the Phase I Evaluation Plan for the Efficient Equipment Program. Reported and verified savings will be determined using the method specified in the TRM (algorithms with open variables for some measures; fully stipulated savings for some measures) to calculate the savings of each measure, and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of each measure and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Residential Retail Program. **Table E5** lists the major anticipated participant roles.

Table E5: Residential Retail Program Stakeholder Roles

<p>Primary Conservation Service Provider (CSP)</p>	<ul style="list-style-type: none"> • Marketing and advertising. • Educating and recruiting potential manufacturers and retailers. • Recruiting retailers to promote the direct mail-in rebate on efficient equipment. • Providing educational materials to retailers about energy-efficiency. • • Verifying measure eligibility and that the incentives are for PPL Electric customers only. • Monitoring measure quantities and trends and recommending possible changes to PPL Electric. • Reviewing, verifying, and processing payments to retailers, manufacturers, and customers. • Collaborating with community groups to educate customers on the benefits of energy-efficient lighting and equipment. • Monitoring the industry and developing a lighting product mix that will enable PPL Electric to meet its goals. • Educating customers on the proper disposal of CFLs, and identifying and placing CFL recycling buckets in key locations throughout the territory. • Providing a call center, fielding customer calls and inquiries and tracking call center statistics. • • • Tracking sales and saving results and reporting monthly to PPL Electric. • Maintaining systems to ensure customer data is protected.
<p>PPL Electric</p>	<ul style="list-style-type: none"> • Guiding program strategy. • Providing administrative support. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. • Overseeing CSP activities to ensure compliance with EE&C, PPL Electric and Pennsylvania Public Utility Commission protocols. • Ensure all reporting and documentation is submitted in a timely manner and accurate.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement, and verification of energy savings. • Coordinating protocols with the SWE.
<p>Manufacturers/</p>	<ul style="list-style-type: none"> • Providing sales data to the CSP on a monthly basis.

Retailers	<ul style="list-style-type: none"> • Educating customers on energy-efficient bulbs, based on training from the CSP. • Following the required Memorandum of Understanding (MOU) provided by the CSP. • Working with CSP, if feasible, to develop a recycling plan.
Customer	<ul style="list-style-type: none"> • Purchasing energy-efficient equipment and lighting to replace outdated non-efficient equipment and lighting. • Recycling CFLs.

Estimated Participation

Program participation rates were developed by analyzing the SWE Market Penetration Study, PPL Electric’s and CSP’s experience from Phase I EE&C programs, and from the Annual PPL Electric residential lighting survey. Approximately 5.9 million energy-efficient bulbs will be distributed over the course of Phase II. Approximately 14,300 energy-efficient heat pump water heaters (EF 2.3 or better), ENERGY STAR® refrigerators and ENERGY STAR® “Most Efficient” refrigerators will be eligible for customer rebates.

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets, and Cost-Effectiveness

The lighting portion of the Residential Retail Program is expected to achieve approximately 221,600MWh/yr. savings in electricity consumption over the three-year program with the efficient equipment components achieving approximately 7,700 MWh/yr. Overall cost-effectiveness and projected savings levels are summarized in the **Table E6**.

Table E6: Residential Retail Summary of Projected Benefits, Costs, and Cost-effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	90,054	76,373	62,848	229,274
Capacity Savings (MW)	16	13	11	39.89
Total Resource Cost	\$12,733,424	\$26,840,119	\$18,310,698	\$57,884,241
Direct Participant Costs	\$4,750,094	\$10,166,839	\$9,333,405	\$24,250,338
Direct Utility Costs	\$7,983,330	\$16,673,280	\$8,977,293	\$33,633,903
Customer Incentives	\$5,338,000	\$15,430,500	\$7,707,500	\$28,476,000
EDC Labor, Materials & Supplies	\$225,000	\$225,000	\$225,000	\$675,000
CSP Variable Costs	\$203,800	\$0	\$0	\$203,800
CSP Labor, Supplies & Marketing	\$2,216,530	\$1,017,780	\$1,044,793	\$4,279,103

	TRC Test
NPV Benefits	\$192,945,455
NPV Costs	\$53,211,064
Net Benefits (NPV)	\$139,734,392
Benefit-Cost Ratio	3.63

**Residential Home Comfort Program
(Residential Sector)**

2013–2016

Summary

The Residential Home Comfort Program provides a comprehensive energy-efficiency program for new home construction and for existing homes. A turnkey CSP will be engaged to manage this program. There are five components to the program: incentives for home builders; customer rebates for ENERGY STAR® manufactured homes¹¹; audits, surveys and insulation rebates for existing home customers; customer rebates for ENERGY STAR® rated equipment; and, trade ally equipment (thermal imagery guns) and training. The program will provide builders and customers with one central “point of entry.” This CSP will be required to maintain a call and rebate processing center, recruit and train contractors, and to market the program to ensure solid program participation.

Objectives

The objectives of the Residential Home Comfort Program are to:

- Encourage customers to view energy-efficiency in a holistic manner.
- Promote construction of energy-efficient new homes.
- Educate construction industry professionals about the benefits of energy-efficient new homes.
- Provide customers with audits, surveys, and energy-saving solutions.
- Provide immediate energy savings to customers by providing free direct install measures.
- Improve audit diagnostics by adding thermal imagery guns and providing technical training to participating BPI contractors on their use.
- Obtain participation by approximately 13,900 customers and trade allies through 2016, with a total reduction of approximately 12,700 MWh/yr.

Target Market

The Residential Home Comfort Program targets residential customers. **Table F1** identifies customer eligibility parameters.

¹¹ Modular also known as manufactured homes are defined homes that require a building permit and are subject to local zoning and building code standards. Manufactured homes must meet building standards defined by the Dept. of Housing and Urban Development (HUD) and are defined as a movable dwelling, 8 feet or more wide and 40 feet or more long, designed to be towed on its own chassis, with transportation gear integral to the unit when it leaves the factory, and without need of a permanent foundation.

Table F1: Residential Home Comfort Program Customer Eligibility Parameters

Customer Sector(s)	Residential
Rate Class	RS,RTS,RTD
Building Type	Residential
Building Vintage	New and Existing Construction
Building Ownership	Owner

Program Description

The Residential Home Comfort Program is designed to offer energy-saving measures and rebates for new construction as well as existing homes. The program offers a wide range of energy-efficient measures, rebates, education, and services that provide customers options to customize solutions to meet their home’s energy-efficiency. The program includes:

- **New home component** that encourages construction of energy-efficient new homes by offering a rebate to builders for installing a specific package of measures.
- **Manufactured Homes and efficient heating** that offer rebates to encourage customers to purchase high-efficiency manufactured homes and energy-efficient heating.
- **Audit and weatherization component** that provides customer rebates for professional home energy audits. Based on recommendations from an audit, rebates will be offered for insulation and duct sealing.
- **Energy-efficiency equipment component** that provides rebates for high-performance heat pumps and pool pumps.

Implementation Strategy

PPL Electric will engage a turnkey CSP to implement all aspects of the Residential Home Comfort Program. With direction from PPL Electric, the CSP will be responsible for the following:

- **New homes:** Identifying, recruiting and training potential builders; assisting new home builders with completion of paperwork; and, answering program-specific questions.
- **Manufactured Homes** identify and market rebates to manufactured home market, includes potential home owners and builders.
- **Audit and weatherization:** Identifying, recruiting and training HVAC contractors; offering thermal imagery guns and technical training to BPI contractors; maintaining a trade ally network; and, answering program-specific questions.
- **Energy-efficient equipment:** Working with retailers and manufacturers to advertise the program’s energy-efficiency rebates.

The CSP will develop and implement a marketing strategy for all five components of the program. The CSP will provide a call center and rebate processing service. The call center and rebate processing service will be in place by early fall 2013.

Program Issues, Risks and Risk Management Strategy

Table F2 presents key market risks to an effective Residential Home Comfort Program, as well as the strategies the Program will use to mitigate each risk.

Table F2: Residential Home Comfort Program Issues, Risks, and Risk Management Strategy

Program Issues	Risks	Management Strategy
Efficiency is not a common priority for builders and customers.	<ul style="list-style-type: none"> Builders are not able to take advantage of rebates. 	<ul style="list-style-type: none"> Educate builders on the value and benefits associated with energy-efficiency.
Builders may not install all of the measures required for the rebate.	<ul style="list-style-type: none"> Builders may choose cheaper, less-efficient equipment. 	<ul style="list-style-type: none"> Educate builders that all required measures must be installed in order to participate in the program.
Economic environment may limit customer’s ability to purchase energy-efficient equipment and appliances because of the higher up-front costs.	<ul style="list-style-type: none"> High-efficiency equipment is viewed as too expensive. There is little incentive to upgrade equipment that is still operational, or to weatherize a home. Builders or customers may choose cheaper, less-efficient equipment. 	<ul style="list-style-type: none"> Robust marketing of program and general energy-efficiency information to customers. Offer rebates that help reduce incremental costs. Educate customers on the long-term energy cost-saving benefits of higher-efficiency equipment and home weatherization.

Anticipated Costs to Participating Customers

- New homes component:** Builders will receive a rebate of approximately \$2,000 for installing all program required measures. This incentive is approximately 50% of the incremental cost of the required measures.
- Manufactured homes component:** Homeowner will receive a rebate in the range of \$1,000-\$1,500 for purchasing an energy-efficient manufactured home that will be served by a PPL EU residential meter. The incentive for this is approximately 50% of the incremental cost of the measure. The customer will also receive an additional rebate between \$200 and \$300 for installing an energy-efficiency heating system. This incentive is approximately 30% of the incremental cost of the required measure.
- Audit and weatherization component:** The customer cost for a survey is \$50. The cost of a comprehensive audit may vary depending on the auditor chosen by the customer. PPL Electric estimates a comprehensive audit will cost around \$500, and customers will receive a rebate of varying amounts, depending on the type of heating and cooling equipment in the customer’s home. PPL Electric will provide a rebate of \$250 to an audit customer with central air conditioning and all-electric heat, and \$125 for a home with either central air conditioning or electric heat. In addition, customers who complete an audit or survey have the opportunity to be refunded up to \$500 if they complete one or more of the ceiling or wall weatherization measures within 180 days of the audit. Customers will be provided with a report of energy saving recommendations, and information about available energy-efficiency rebates. Unlike the Program in Phase I, in order to receive a rebate for home insulation and duct sealing, customers must first have an audit. This was changed so customers would have the opportunity to understand all possible energy-efficiency choices and their payback, prior to making a choice.
- Energy-efficient equipment component:** Customers will receive rebates for installing energy-efficient HVAC equipment and pool pumps. Customers currently on the Residential

Thermal Storage (RTS) rate will receive an additional \$200 bonus rebate for upgrading heating system to an ASHP or ductless heating system that qualifies for a rebate from PPL EU.

Ramp-Up Strategy

The ramp-up strategy will vary for different aspects of the program. The CSP will be expected to develop a plan with a detailed timeline and implementation strategy for each component of the Program. Because the new homes component is new in Phase II, it is expected that the program will require extensive work with new home builders and manufactured home builders and distributors in PY5 to make them aware of the benefits of participating in the program. Although audit and weatherization is not a new component in Phase II, the program has been changed as a result of an extensive program review, and it is expected that it will require significant time to ramp-up.

Marketing Strategy

The CSP will be responsible for marketing all five components to ensure full program participation. The CSP will identify builders and manufactured home dealers through collaboration with state and regional builders' associations and present them with details about the program. Trade advertising will serve as an outreach to attract and inform builders and contractors about the program. The CSP will ensure there are a sufficient number of qualified contractors trained and available to perform surveys and audits. Finally, the CSP will work with heat pump and pool pump retailers to provide them with rebate information.

Eligible Measures and Incentive Strategy

The following tables outline the different measures that will be offered in the Residential Home Comfort Program. Some measures will be directly installed as part of the audit service. Eligible measures and rebates are shown in **Table F3**.

Table F3: Residential Home Comfort Program Eligible Measures

Measure Package	Requirements	Range of Incentives and Rebates and customer costs	Unit Definition
<i>Audit Package:</i> Direct installation of six CFLs phasing out CFLs and phasing in LEDs, two faucet aerators, one smart strip, water heater set-back, maximum 10-ft. hot water pipe insulation	Electric main source heat and central air conditioning	\$250 Rebate	Per audit
	Electric main source heat or central air conditioning	\$125 Rebate	Per audit
		Audit costs range from \$300 to \$600 depending on the home.	
<i>Survey Package:</i> Direct installation of six CFLs phasing out CFLs and phasing in LEDs, two faucet aerators, one smart strip, water heater set-back, maximum 10-ft. hot water pipe insulation	Electric main source heat or central air conditioning	Customer cost is \$50	Per survey
<i>Weatherization Measures:</i> Ceiling Insulation Wall Insulation Duct sealing	Audit or survey dependent. Minimum of R11 above Code installed.	Up to \$750 Up to \$650 Up to \$100	Per audit or survey
<i>Bonus incentive-Weatherization Measures:</i>	For completion of one or more measure recommended from an audit.	Bonus up to \$375 (difference between audit rebate and audit costs up to \$500)	Per audit
<i>Thermal Imagery Guns and Training:</i>	BPI Certified	Max \$2,000	Per Contractor
<i>Builder Package:</i> Air Source Heat Pump Heat Pump Water Heater ENERGY STAR® refrigerators and dishwasher Wall Insulation Ceiling insulation	SEER 16 Heat Pump Water Heater EF≥ 2.3 ENERGY STAR® refrigerator and dishwasher R≥20+5 R≥49	\$2,000 paid to contractor	Per new home
<i>Manufactured Homes:</i> ENERGY STAR®	ENERGY STAR®	\$1,000-\$1,500	Per new manufactured

			home
<i>Manufactured Homes:</i> ENERGY STAR® Air-Source Heat Pump Ductless Heat Pump	ENERGY STAR® SEER 15 – 16	\$200-\$300	Per unit
<i>Efficient Equipment:</i> Air-Source Heat Pump Air-Source Heat Pump Pool Pumps Non-electric high efficiency central heat (gas, oil, propane.) Max. of 100 units for all programs	SEER 15(PY5, PY6) SEER 16(PY5, PY6, PY7) Multi-speed Natural Gas or propane – AFUE 90 Oil Furnace – AFUE 85 Fossil Fuel Boilers – AFUE 85	\$50 to \$150 \$100 to \$250 \$50 to \$150 \$100- \$250 per unit	Per unit Per unit Per unit Per unit
RTS high-efficiency bonus ASHP Ductless Heat Pump	SEER 15 (PY5,PY6) – 16 (PY5, PY6, PY7) SEER 15, 17, 19 (PY5, PY6, PY7)	Bonus of \$200 Bonus of \$200	Per unit

Program Start Date with Key Schedule Milestones

Strategic planning, execution, and schedule for the Residential Home Comfort Program are listed in **Table F4**. Some tasks will be led by PPL Electric; others will be led by various CSPs with oversight by PPL Electric.

Table F4: Residential Home Comfort Program Start Date with Key Schedule Milestones

Schedule	Milestones
11/19/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/21/12	Issue RFP for CSP.
3/20/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement, and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

Reported and verified savings will be determined using the method specified in the TRM (algorithms with open variables for some measures; fully stipulated savings for some measures) to calculate the savings of each measure, and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of each measure and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Residential Home Comfort Program. **Table F5** lists the major anticipated participant roles for the program.

Table F5: Residential Home Comfort Program Stakeholder Roles

Primary Conservation Service Provider (CSP)	<ul style="list-style-type: none"> • Marketing and advertising to promote the Residential Home Comfort Program. • Recruiting potential builders, retailers, contractors, and manufacturers. • Collaborating with builders’ associations, contractors, manufacturers, and other interested parties to promote the program. • Verifying eligibility of the builders and participating homes. Verify that incentives paid are to PPL Electric customers. • Assisting with the completion of rebate applications. • Processing rebate payments. • Managing and reporting participant data. • Customer service.
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<p>PPL Electric</p>	<ul style="list-style-type: none"> • Guiding program strategy. • Overseeing CSP activities to ensure compliance with PPL Electric’s EE&C Plan and Pennsylvania Utility Commission protocols. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/customers. • Ensuring all reporting and documentation is submitted in a timely manner and is accurate.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement, and verification of energy savings. • Coordinating protocols with the SWE.
<p>Customer</p>	<ul style="list-style-type: none"> • Participating in the audit and weatherization component. • Following up on audit recommendations. • Purchasing energy-efficient equipment to replace outdated equipment.

Estimated Participation

- **New home component:** It is estimated contractors will participate in the program generating 720 new homes receiving incentives.
- **Manufactured Homes:** It is estimated that 200 customers will participate in this program.
- **Audit and Weatherization component:** It is estimated that approximately 6,000 customers will have an audit or survey. Of those customers, it is estimated that 1,800 will weatherize their homes with ceiling and wall insulation and duct sealing. It is estimated that approximately 75 contractors will participate in the thermal imagery gun training program.
- **Efficient Equipment component:** It is estimated that approximately 6,700 customer rebates will be approved for quality air-source heat pumps, ductless heat pumps, pool pumps, and fuel switching.

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets, and Cost-Effectiveness

Over the duration of the Plan, the Residential Home Comfort Program is expected to achieve savings in electricity consumption savings of approximately 12,700 MWh/yr. The annual budget allocation, cumulative MWh/yr. and overall program cost-effectiveness for the residential customer sector are shown in the **Table F6**.

Table F6: Residential Home Comfort Program Summary of Project Benefits, Costs, and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	3,541	4,901	4,298	12,739
Capacity Savings (MW)	0.50	0.68	0.60	1.78
Total Resource Cost	\$6,251,119	\$10,241,157	\$8,428,933	\$24,921,209
Direct Participant Costs	\$3,816,894	\$6,201,280	\$5,052,236	\$15,070,410
Direct Utility Costs	\$2,434,225	\$4,039,876	\$3,376,698	\$9,850,799
Customer Incentives	\$938,150	\$2,379,825	\$1,793,250	\$5,111,225
EDC Labor, Materials & Supplies	\$150,000	\$150,000	\$150,000	\$450,000
CSP Variable Costs	\$660,875	\$680,851	\$582,248	\$1,923,974
CSP Labor, Supplies & Marketing	\$685,200	\$829,200	\$851,200	\$2,365,600

	TRC Test
NPV Benefits	\$11,214,857
NPV Costs	\$22,929,148
Net Benefits (NPV)	(\$11,714,291)
Benefit-Cost Ratio	0.49

**Residential Energy-Efficiency Behavior & Education Program
(Residential Sector)**

2013–2016

Summary

The Residential Energy-Efficiency Behavior & Education Program provides high-usage residential customers with a series of “report cards” comparing their usage to comparable customers. These reports will also include energy savings recommendations. Savings for this program are not cumulative; therefore, the program will begin in PY6 with savings recorded in PY7. The program was offered in Phase I and will be offered in Phase II.

Objectives

The objectives of the Energy-Efficiency Behavior & Education Program are to:

- Provide customers with a report card that encourages them to adopt energy-efficient behaviors, to install energy-efficiency measures, and to become more aware of how their behavior and practices affect their energy usage.
- Educate customers about free or low-cost measures and behavior changes that may reduce energy consumption.
- Educate customers about PPL Electric’s online resources.
- Promote other PPL Electric energy-efficiency programs.
- Obtain participation by approximately 128,000 customers through 2016, with a total reduction of approximately 32,000 MWh/yr.

Target Market

The Residential Energy-Efficiency Behavior & Education Program targets high-use residential customers. Table G1 identifies customer eligibility parameters.

Table G1: Residential Energy-Efficiency Behavior & Education Program Customer Eligibility Parameters

Customer Sector(s)	Residential
Rate Class	RS,RTS,RTD
Building Type	Residential
Building Vintage	All
Building ownership	Owner or tenant

Program Description

The Residential Energy-Efficiency Behavior & Education Program focuses on ways customers may implement free or low-cost measures and behaviors that reduce energy consumption or demand. The program’s education and awareness is separate from the advertising and promotion of PPL Electric’s specific energy-efficiency programs. The Residential Energy-Efficiency Behavior & Education Program includes:

- Periodic reports to customers comparing their usage with other, comparable customers in the same geographical area.
- Energy-efficiency tips such as turning down the thermostat, turning off the lights, taking shorter showers, etc.
- Low-cost energy-efficiency tips such as replacing incandescent light bulbs with LEDs, installing weather stripping, and using power strips.

Implementation Strategy

PPL Electric will engage a turnkey CSP to provide a home energy reporting system. That system will use behavioral science and data analytics to drive reductions in residential energy consumption. Customers will receive approximately 10 reports during the Plan. The reports will encourage customers to take action and make behavioral changes. Residential customers who use more electricity than average will be targeted for the program since their potential to save is greater.

The CSP, with support from PPL Electric, will identify approximately 128,000 customers to receive energy report cards. Approximately 25,000 additional customers will be identified to serve in a control group.

Program Issues, Risks and Risk Management Strategy

Table G2 presents key market risks to an effective Residential Energy-Efficiency Behavior & Education Program as well as the strategies the program will use to mitigate each risk.

Table G2: Residential Energy-Efficiency Behavior & Education Program Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
A large number of customers may opt-out of the program.	<ul style="list-style-type: none"> Fewer customers participating in the program would negatively affect energy savings. 	<ul style="list-style-type: none"> Monitor opt-outs on a monthly basis to ensure the number of customers remains at an acceptable level. Ensure there is a pool of customers available who meet the selection criteria to receive home energy reports to maintain program participation.
Customers do not change behavior based on recommended tips.	<ul style="list-style-type: none"> Tips are not resonating with customers; therefore they will not change their behavior. 	<ul style="list-style-type: none"> Monitor savings on a monthly basis. Adjust and change report card messaging should monthly savings targets not meet goals.
Customers become confused with information on the energy report card because it may be different than what is found on their PPL Electric account Home Energy Analyzer.	<ul style="list-style-type: none"> Customers who receive report cards and are signed up for PPL Electric’s Energy Analyzer may receive contradictory information regarding their efficiency (i.e., one will state the customer is more efficient than similar homes and the other will state they are less efficient). 	<ul style="list-style-type: none"> Monitor customer inquiries. Provide customers with information about the difference between a baseline home for the energy report cards and Energy Analyzer to ensure customers understand why the information could be dissimilar.

<p>Customers think neighbor comparisons are not accurate.</p>	<ul style="list-style-type: none"> Customers believe the information in the reports is incorrect and don't change their behavior. 	<ul style="list-style-type: none"> Periodically and at least once per program year review the accuracy of the data that is used to make up the neighbor comparisons to determine if there is additional public information available, and/or if there are other ways to increase the accuracy of other customer data (such as the heating source).
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Anticipated Costs to Participating Customers

There are no direct costs incurred by customers for this program.

Ramp-Up Strategy

The CSP, working with PPL Electric staff, will identify qualified customers to participate in this program. The CSP will prepare energy report cards for review and approval by PPL Electric staff.

Marketing Strategy

The program does not require marketing.

Eligible Measures and Incentive Strategy

No specific incentives will be provided through this program. Rather, by virtue of providing energy conservation education, information, and strategies, customers will make behavioral changes and gain energy savings.

Program Start Date with Key Schedule Milestones

Strategic planning, execution and schedule for the Residential Energy-Efficiency Behavior & Education Program are listed in **Table G3**. Some tasks will be led by PPL Electric; others will be led by various CSPs with oversight by PPL Electric.

Table G3: Residential Energy-Efficiency Behavior & Education Program Start Date with Key Schedule Milestones

Schedule	Milestones
10/24/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
10/26/12	Renegotiate contract with CSP.
3/1/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/14	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE's Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be similar to the Phase I Evaluation Plan for the Residential Behavior and Education Program. Reported and verified savings will be determined using a billing regression analysis. The regression analysis compares the difference in usage (actual billing data) of the participant group (treatment group) with a comparable non-participant group (control group).

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Residential Energy-Efficiency Behavior & Education Program. **Table G4** lists the major anticipated participant roles for the program.

Table G4: Residential Energy-Efficiency Behavior & Education Program Stakeholder Roles Participation

<p>Primary Conservation Service Provider (CSP)</p>	<ul style="list-style-type: none"> • Generating customized energy report cards that incorporate electricity usage comparisons and recommendations. • Incorporating documented behavior change research findings into reports. • Receiving and processing data (e.g., billing, rate, program, real property, demographic and consumer data) from multiple sources to generate reports in paper and electronic forms. • Acquiring and incorporating data from other sources, such as GIS, weather, demographic, and assessor’s data, into the reports to improve accuracy and customization. • Printing, inserting and mailing or emailing reports. • Developing and hosting a web application for PPL Electric staff to view electronic reports and change report preferences. • Following established procedures that maintain confidential customer data usage.
<p>PPL Electric</p>	<ul style="list-style-type: none"> • Guiding program strategy. • Overseeing CSP activities to ensure compliance with PPL Electric’s EE&C Plan and Pennsylvania Public Utility Commission protocols. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. • Providing CSP with usage data for all homes in the service territory on a weekly basis. • Providing responses to customer inquiries.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the SWE.
<p>Customer</p>	<ul style="list-style-type: none"> • Reading reports about their home’s energy use and taking action.

Approximately 128,000 customers will receive home energy reports starting halfway through PY6, and continuing throughout all of PY7. Note: Projected participation is not cumulative and the total number of customers receiving reports is 128,000. **Table G5** outlines projected participation.

Table G5: Residential Energy-Efficiency Behavior & Education Program Projected Participation

	PY5	PY6	PY7	Total
Participants	0	128,000	128,000	128,000

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

The Energy-Efficiency Behavior & Education program is expected to achieve savings in electricity consumption that amount to approximately 32,000 MWh/yr. The expected measure life is one year. Savings, therefore, are not cumulative over multiple program years. Overall cost-effectiveness and projected savings levels are summarized in **Table G6**.

Table G6: Residential Energy-Efficiency Behavior & Education Program Summary of Projected Benefits, Costs, and Cost-Effectiveness. Benefit/Cost Component

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	-	13,318	32,205	32,205
Capacity Savings (MW)	-	1.64	3.97	3.97
Total Resource Cost	\$0	\$1,022,250	\$1,366,250	\$2,388,500
Direct Participant Costs	\$0	\$0	\$0	\$0
Direct Utility Costs	\$0	\$1,022,250	\$1,366,250	\$2,388,500
Customer Incentives	\$0	\$0	\$0	\$0
EDC Labor, Materials & Supplies	\$0	\$56,250	\$56,250	\$112,500
CSP Variable Costs	\$0	\$0	\$0	\$0
CSP Labor, Supplies & Marketing	\$0	\$966,000	\$1,310,000	\$2,276,000

	TRC Test
NPV Benefits	\$3,814,580
NPV Costs	\$2,113,611
Net Benefits (NPV)	\$1,700,969
Benefit-Cost Ratio	1.80

**Student and Parent Energy-Efficiency Education Program
(Residential Sector)**

2013–2016

Summary

The Student and Parent Energy-Efficiency Education Program is a new program being added to Phase II. For several years, PPL Electric has offered this successful program outside of Act 129.

There are five components to the program. Participants in all components will receive an energy-efficiency kit and educational materials. Three of the components provide school-based workshops for children of varying ages. The fourth component provides teachers with training and classroom materials. The remaining component targets schools in low-income communities and provides incentives to Parent Teacher Organizations for inviting parents to participate in an interactive energy-efficiency workshop in their community. Parents attend these sessions at schools in their community.

Objectives

The objectives of the Student and Parent Energy-Efficiency Education Program are to:

- Expand and promote energy-efficiency literacy through education outreach programs.
- Provide energy-efficiency education to students offered through school assemblies and classroom curriculum and presentations to parent groups.
- Ensure energy-efficiency education correlates to Pennsylvania Education Academic Standards.
- Build awareness of energy-efficiency in targeted lower-income neighborhoods.
- Provide students, parents and teachers with a take-home kit of energy-efficiency measures that can be installed at home.
- Provide teachers with energy-efficiency information, lesson plans, activities, training, materials and support for classroom use.
- Obtain participation by approximately 65,000 students, parents, and teachers through 2016, with a total reduction of approximately 12,200 MWh/yr.

Target Market

The Student and Parent Energy-Efficiency Education Program targets residential customers.

Table H1 identifies customer eligibility parameters.

Table H1: Student and Parent Energy-Efficiency Education Program Customer Eligibility Parameters

Customer Sector(s)	Residential
Rate Class	RS,RTS,RTD
Building Type	Residential
Building Vintage	Existing buildings
Building Ownership	Owner or tenant

Program Description

The Student and Parent Energy-Efficiency Education Program will consist of five separate components:

- **Primary Grade Energy-Efficiency Education**
 - Interactive classroom presentation consisting of general energy and energy-efficiency information, as well as hands-on activities.
 - Curriculum correlated to PA Education Academic Standards for the appropriate grade level(s) and endorsed by the Pennsylvania Department of Education.
 - Take-home energy-efficiency kit.
- **Intermediate Grade Energy-Efficiency Education**
 - Interactive classroom presentation consisting of general energy and energy-efficiency information, as well as hands-on activities.
 - Curriculum correlated to PA Education Academic Standards for the appropriate grade level(s) and endorsed by the Pennsylvania Department of Education.
 - Take-home energy-efficiency kit.
- **Secondary Grade Energy-Efficiency Education**
 - Interactive classroom presentation consisting of general energy and energy-efficiency information, as well as hands-on activities.
 - Curriculum correlated to PA Education Academic Standards for the appropriate grade level(s) and endorsed by the Pennsylvania Department of Education.
 - Take-home energy-efficiency kit.
- **Teacher Workshops**
 - Series of regional teacher training workshops focused on energy-efficiency.
 - Workshops are designed to address the sustainability standard of the Pennsylvania academic standards and endorsed by the Pennsylvania Department of Education.
 - Teachers receive seven hours of credit applicable to Act 48 requirements.
 - Take-home energy-efficiency kit.
- **Parent Teacher Organization Fundraiser/Parent Workshops**
 - Fundraising opportunity for the school or Parent Teacher Organization by securing parents to attend a customer energy-efficiency workshop held at their school.
 - Presentation given to attendees consisting of general energy and energy-efficiency information.
 - Take-home energy-efficiency kit.

- Targets lower-income communities.

Implementation Strategy

PPL Electric will identify and select, through a competitive bid process, a CSP that will manage the Student and Parent Energy-Efficiency Education Program. The CSP will undertake a broad spectrum of responsibilities, including marketing to and recruiting potential schools, teachers, and Parent Teacher Organizations; creating curriculum correlated to PA Education Academic Standards; securing endorsement of the program(s) by the Pennsylvania Department of Education; conducting the various energy-efficiency presentations; and assembling and shipping the take-home energy-efficiency kits. PPL Electric will collaborate with the CSP on the Program’s strategic direction while maintaining overarching Act 129 administrative, program support, evaluation and data management systems.

Program Issues, Risks and Risk Management Strategy

Table H2 presents key market risks to an effective Student and Parent Energy-Efficiency Education Program as well as the strategies the program will use to mitigate each risk.

Table H2: Student and Parent Energy-Efficiency Education Program Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
Teachers may not have the time in their schedules to incorporate the presentations.	<ul style="list-style-type: none"> • Lesson plans are often created far in advance and teachers may not see value in the presentation, and therefore may not sign up. 	<ul style="list-style-type: none"> • Ensure that the curriculum is correlated to the PA Education Academic Standards and fits into planned lessons.
Customers do not install the energy-efficiency measures and complete the survey included in their take-home kits.	<ul style="list-style-type: none"> • Although the education component of the program would be completed, the measurable energy savings would not be achieved. 	<ul style="list-style-type: none"> • Provide instructions on how to install the devices in the kits, and additionally offer a customer service number for participants to call if they have any questions.
The take-home kits include CFLs, and customers may be concerned about mercury in the bulbs.	<ul style="list-style-type: none"> • Teachers and parents may not want to participate and/or install the CFLs if they are concerned about mercury. 	<ul style="list-style-type: none"> • Provide information on the proper handling of CFLs.

Anticipated Costs to Participating Customers

There are no direct costs incurred by customers for this program.

Ramp-Up Strategy

The CSP will begin operations with a ramp-up strategy that focuses heavily on marketing and recruiting eligible schools and teachers, beginning in the summer of 2013, if not before,

followed by the execution of the presentations starting in the fall of 2013. It is critical that the CSP build credibility with the schools within the service territory as more than one of the program components could be run with the individual school or district (for example, the same district could participate in the Primary, Intermediate, and Secondary Energy-Efficiency Education programs). The CSP will ensure that in PY6 and PY7, at least 30% of participating schools are new to the program.

Marketing Strategy

The Student and Parent Energy-Efficiency Education Program will rely on recruitment of teachers, schools, and parents to participate in the Program. The CSP will be required to secure a qualified list of schools within the PPL Electric service territory for recruiting purposes. The list must have the names of educators and the grades they teach, as well as the principal name. Promotions for the program will be sent via U.S. mail as well as email.

Eligible Measures and Incentive Strategy

Participants of all five components receive a take-home energy-efficiency kit.

Program Start Date with Key Schedule Milestones

Strategic planning, execution and schedule for the Student and Parent Energy-Efficiency Education Program are listed in **Table H3**. Some tasks will be led by PPL Electric; others will be led by various CSPs with oversight by PPL Electric.

Table H3: Student and Parent Energy-Efficiency Education Program Schedule and Milestones

Schedule	Milestones
11/7/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/9/12	Issue RFP for CSP.
3/1/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control (QA/QC). Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

Reported and verified savings are expected primarily from the energy-efficiency kits and will be determined using the method specified in the TRM (algorithms with open variables for some measures; fully stipulated savings for some measures) to calculate the savings of each measure, and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of each measure and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Student and Parent Energy-Efficiency Education Program. **Table H4** lists the major anticipated participant roles for the program.

Table H4: Student and Parent Energy-Efficiency Education Program Stakeholder Roles

<p>Primary Conservation Service Provider (CSP)</p>	<ul style="list-style-type: none"> • Marketing to and recruiting potential schools, teachers, and parent teacher organizations. • Creating curriculum correlated to PA Education Academic Standards. • Securing endorsement of the program(s) by the Pennsylvania Department of Education • Conducting the various energy-efficiency presentations. • Assembling and shipping the take-home energy-efficiency kits. • Obtaining background checks on classroom presenters. • Providing responses to customer inquiries. • Reporting and uploading data to PPL Electric’s EEMIS.
<p>PPL Electric</p>	<ul style="list-style-type: none"> • Guiding program strategy. • Overseeing CSP activities to ensure compliance with PPL Electric’s EE&C Plan and Pennsylvania Public Utility Commission protocols. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the SWE.
<p>Customer</p>	<ul style="list-style-type: none"> • For the in-school components, kits will be taken home by children so that parents and children can install the measures together. • For the Teacher Workshops and Parent Workshop component, measures in kits will be installed by customers who attend sessions.

Estimated Participation

A combination of approximately 65,000 students, parents, and teachers will participate in the Student and Parent Energy-Efficiency Education Program.

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

The Student and Parent Energy-Efficiency Education Program is expected to achieve savings in electricity consumption that amount to approximately 12,200 MWh/yr. Overall cost-effectiveness and projected savings levels are summarized in **Table H5**.

Table H5: Student and Parent Energy-Efficiency Education Program Summary of Projected Benefits, Costs, and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	4,900	3,649	3,649	12,199
Capacity Savings (MW)	0.60	0.45	0.45	1.50
Total Resource Cost	\$1,325,237	\$2,546,315	\$2,224,315	\$6,095,867
Direct Participant Costs	\$0	\$0	\$0	\$0
Direct Utility Costs	\$1,325,237	\$2,546,315	\$2,224,315	\$6,095,867
Customer Incentives	\$0	\$0	\$0	\$0
EDC Labor, Materials & Supplies	\$60,000	\$60,000	\$60,000	\$180,000
CSP Variable Costs	\$666,737	\$1,881,815	\$1,559,815	\$4,108,367
CSP Labor, Supplies & Marketing	\$598,500	\$604,500	\$604,500	\$1,807,500

	TRC Test
NPV Benefits	\$9,005,408
NPV Costs	\$5,581,941
Net Benefits (NPV)	\$3,423,466
Benefit-Cost Ratio	1.61

Prescriptive Equipment - Residential (Residential Sector)

2013–2016

Summary

Within the Small C&I Prescriptive Equipment Program there are measures and services available to farmers. Some farms in the PPL Electric territory have a Residential rate class; although the Prescriptive Equipment Program will manage this component of Small C&I, savings and costs from residential agriculture customers who participate will be credited to the Residential Sector. Starting in PY6, for all projects, customers will be required to obtain pre-approval from PPL Electric before ordering energy-efficiency equipment.

For further details on this component including measures, see Prescriptive Equipment Program (Small C&I).

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

Table I1: Prescriptive Equipment Program (Residential) Summary of Project Benefits, Costs and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	69	631	496	1,196
Capacity Savings (MW)	0.01	0.11	0.08	0.20
Total Resource Cost	\$69,536	\$335,017	\$279,767	\$684,320
Direct Participant Costs	\$43,937	\$176,700	\$177,459	\$398,095
Direct Utility Costs	\$25,599	\$158,317	\$102,309	\$286,225
Customer Incentives	\$9,761	\$111,272	\$62,744	\$183,777
EDC Labor, Materials & Supplies	\$0	\$0	\$0	\$0
CSP Variable Costs	\$15,838	\$47,045	\$39,565	\$102,448
CSP Labor, Supplies & Marketing	\$0	\$0	\$0	\$0

	TRC Test
NPV Benefits	\$1,151,404
NPV Costs	\$618,570
Net Benefits (NPV)	\$532,834
Benefit-Cost Ratio	1.86

Low-Income
Section 3.2.1

PPL Electric is offering the following programs designed for Low-Income customers. In addition to its low income programs, all low-income customers are eligible to participate in all general residential programs. PPL Electric estimates it will achieve approximately 33,000 MWh/yr. from low-income participation in general residential programs. The actual savings from low-income participation in general residential programs will be determined by PPL Electric's independent evaluator during the yearly impact evaluation in accordance with the method approved by the SWE. The estimate included in the EE&C Plan is based on actual data (the percentage of participation by low-income in each specific program) from Phase I.

**Low-Income WRAP
(Low-Income Sector)**

2013-2016

Summary

Low-Income WRAP offers qualified low-income customers with what is known as “baseload” WRAP and/or the installation of an energy-efficient heat pump water heater (HPWH), if needed. There is no cost to the customer for participation. This program is managed by PPL Electric in conjunction with the Company’s LIURP. CBOs and contractors provide services for this program.

Low-Income WRAP was offered in Phase I. Changes were made for Phase II that includes offering only “baseload” WRAP in Phase II and not, as in Phase I, all three types of WRAP work (baseload, low-cost and full-cost).

Objectives:

The objectives of the Low-Income Winter Relief Assistance Program (WRAP) are to:

- Provide low-income customers with education and measures to help reduce their energy costs and increase their energy-efficiency.
- Maintain partnerships with local CBOs and contractors to ensure customers receive maximum and timely customer assistance.
- Promote other PPL Electric energy-efficiency programs.
- Install WRAP measures in approximately 10,000 low-income¹² customer’s homes through 2016 with a total approximate reduction in energy use of 10,500MWh/yr.

Target Market

Low-Income WRAP targets customers at or below 150% of the Federal Poverty Income Guideline. The program, operated in conjunction with PPL Electric’s Low Income Usage Reduction Program (LIURP), aims at providing service to customers who have not received WRAP in the past as well as customers who have received WRAP and may need further service.

Table J1 identifies eligibility parameters.

Table J1: Low- Income WRAP Program Customer Eligibility Parameters

Customer Sectors	Low-income qualified residential
Rate Class	RS, RTS, RTD
Building Type	Residential
Building Vintage	Existing buildings
Building Ownership	Owner or tenant with owner’s approval

Program Description

WRAP is PPL Electric’s Low-Income Usage Reduction Program (LIURP) with three types of service, a/k/a “jobs” (baseload, low-cost and full-cost), designed to meet the needs of low-income customers. The programs offered by PPL Electric for Phase II include: 1) baseload jobs 2) a heat pump water heater (HPWH) replacement component and a limited number of “full cost” jobs. **Implementation Strategy**

¹² Low-income is defined at 150% of FPIG or below.

PPL Electric funds, administers, monitors, and recruits customers to participate in WRAP. The program is delivered by CBOs and private contractors, who conduct energy audits, provide energy conservation education, and install measures. PPL Electric provides payments directly to contractors. PPL Electric also uses contractors to conduct third-party inspections.

PPL Electric may design and implement a “neighborhood blitz” program identifying low-income neighborhoods that may benefit from WRAP services. Qualified customers would receive any of the three types of WRAP jobs offered by PPL Electric. Baseload jobs, for customers at or below 150% of FPIG, would be credited to Phase II with customers receiving low-cost and full-cost jobs credited to PPL Electric WRAP.

CBOs that currently deliver PPL Electric’s WRAP program will continue to provide services. Key steps in program participation include:

- PPL Electric staff, in conjunction with CBOs, marketing to and recruiting customers.
- CBOs and private contractors completing on-site energy audits, providing energy education, and directly installing energy-efficiency measures.
- CBOs and private contractors coordinating, where appropriate, with equipment installation contractors for measure installation.
- CBOs and private contractors documenting and reporting all audit results and measure installations to PPL Electric.

Program Issues, Risks and Risk Management Strategy

Table J2 presents key market risks to an effective Low-Income WRAP, as well as the strategies the Program will use to mitigate each risk.

Table J2: Low-Income WRAP Program Issues, Risks and Risk Management Strategy

Program Issues	Market Risks	Management Strategies
Customers reluctant to ask for help.	<ul style="list-style-type: none"> • Low program participation. 	<ul style="list-style-type: none"> • Provide audits and measures free for income-qualified customers. • Market to customers through traditional (CBO) and non-traditional organizations (hospital waiting room) where customers may have developed a level of trust. • Provide discreet qualification process with attention to customer confidentiality.
Homeowner and landlord lack of program awareness.	<ul style="list-style-type: none"> • Low program participation. 	<ul style="list-style-type: none"> • Market to customers through CBOs and other community organizations. • Market program directly to landlords.

Customer not willing to participate because of the perception there is a fee for the service.	<ul style="list-style-type: none"> Customers will continue to pay higher energy bills because of participation concerns. 	<ul style="list-style-type: none"> Provide marketing materials stating the service and measures are free for income-qualified customers.
Need to verify customer eligibility. Customers reluctant to share income information.	<ul style="list-style-type: none"> Customers not willing to share income information. 	<ul style="list-style-type: none"> Work with CBOs to verify customer eligibility. Deliver program through CBOs to retain customer confidentiality.
Possible saturation of WRAP participants or customers who receive energy-efficiency measures from other programs.	<ul style="list-style-type: none"> Low program participation. 	<ul style="list-style-type: none"> Offer a “neighborhood blitz” to neighborhoods where there has not been a large number of customers participating in WRAP.
High mobility in the low-income sector.	<ul style="list-style-type: none"> Higher drop-out rate. Customers may move before work is completed, leading to higher program costs. 	<ul style="list-style-type: none"> Work with CBOs to identify length of time a customer has been at a residence and frequency of moving.

Anticipated Costs to Participating Customers

There are no costs incurred by customers in this program.

Ramp-Up Strategy

Low-Income WRAP is an existing WRAP program and therefore will continue into Act 129 Phase II. PPL Electric staff meets with CBOs and contractors on an ongoing basis to discuss program elements. Participating CBOs and contractors will be fully informed about applicable low-income WRAP policies and procedures by the summer of 2013.

Providing HPWHs for low-income customers is a new component to the program. PPL Electric program staff will review records of customers who have received WRAP in the past and at the time did not need a new water heater. Staff will then contact those customers to discuss a HPWH replacement. PPL Electric staff will also identify and qualify potential new customers that would benefit from a HPWH replacement. PPL Electric staff will work with manufacturers of HPWHs and negotiate costs and a process for installation.

Marketing Strategy

PPL Electric will conduct marketing through its existing WRAP infrastructure, but it plans to ramp-up marketing efforts to increase the program’s reach to new customers. Continued and new marketing activities may include:

- Conducting outreach efforts with existing CBO agencies.
- Promoting the program via the E-power team at community presentations.
- Marketing activities to low-income neighborhoods including promoting neighborhood WRAP.

- Promoting the program in PPL Electric’s customer bill newsletter, “*Connect*,” including promoting the availability of heat pump water heaters to qualified low-income customers.
- Designing and implementing a “neighborhood blitz” program.
- Targeting marketing to customers participating in PPL Electric “OnTrack”, LIHEAP, and other energy-efficiency and weatherization programs.

Eligible Measures and Incentive Strategy

All services and measures are provided to income-qualified customers at no cost. PPL Electric will continue to encourage CBOs and WRAP contractors to combine Act 129 funding with federal, state, or other human services funding to provide a whole-house energy-efficiency solution.

Baseload is offered to customers who have the potential to receive and benefit from energy-saving measures. Measures include:

- Energy education
- Installation of LEDs
- Refrigerator replacement
- Air conditioner replacement
- Dehumidifier replacement
- Changing or cleaning of heating/cooling filters
- Dryer venting (electric dryer)
- Power Strips/Smart Plugs

Full Cost is offered to customers who have the potential to receive and benefit from energy savings measures. Those measures include:

All of the following “Low-Cost” measures if the customer has an electric water heater

- Energy education and baseload measures
- The installation of a heat pump water heater or water heater replacement (if HPWH is not suitable)
- The installation of a Gravity Film Exchange (GFX)
- Repair of water leaks
- Installation of kitchen and bathroom aerators
- Installation of an energy-efficient showerhead
- Water pipe insulation

And

- Energy Education and Baseload Measures
- Attic, wall, and floor insulation
- Blower door testing and associated air sealing
- Sealing of attic bypasses
- Attic vents and hatches
- Crawl space and header insulation
- Electric heating equipment repair and replacement
- Central cooling system repair and replacement
- Duct insulation and repair
- Caulking and weather-stripping

In addition, PPL Electric will offer a HPWH replacement and follow-up education component to qualified low-income customers with electric water heating at no cost.

PPL Electric will perform periodic reviews of its programs at least annually and may adjust measures, rebate levels, performance criteria and/or eligibility ratings in the future as market conditions change.

Program Start Date with Key Schedule Milestones

Planning and implementation tasks and schedule for Low-Income WRAP are listed in **Table J3**. Some tasks will be led by PPL Electric; other tasks will be led by CBOs and private contractors with oversight from PPL Electric.

Table J3 Low-Income WRAP Program Schedule and Milestones

Schedule	Milestones
1/2/12	Develop participation standards and delivery guidelines for Act 129-funded WRAP program (where they differ from existing programs) with state low-income departments and community-based organizations.
ongoing	Coordinate with other utilities and stakeholders.
2/1/12	Confirm CBOs have ramped-up staffing and capabilities to meet the program requirements.
5/1/13	Develop marketing plan and materials.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control (QA/QC). Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be similar to the Phase I Evaluation Plan for the WRAP Program. Reported and verified savings will be determined using a billing analysis that compares usage pre- and post-installation of the measures. Since the Baseload WRAP measures are expected to mirror those installed in Phase I Act 129 WRAP and LIURP WRAP, PPL Electric will use the LIURP billing analysis (submitted to the PaPUC for USP) for participants during program year 2011 (measures installed June 1, 2011 – May 31, 2012) to allow one year for post-installation billing data.¹³ The savings determined from the LIURP billing analysis will become the fully stipulated deemed savings for all WRAP Baseload projects in Program Year 5 (measures installed June 1, 2013 – May 31, 2014). If there are no longer any Baseload WRAP projects in LIURP, then PPL Electric or its EM&V CSP will perform a separate billing analysis on Phase II Act 129 WRAP participants.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of Low-Income WRAP. Listed below are the major anticipated participant roles for Low-Income WRAP.

Summary of administrative requirements:

- PPL Electric’s WRAP Program staff manages all aspects of this program, including reporting activities and results directly associated with Act 129 funding.
- CBOs and private contractors will track program activities and report to PPL Electric.
- The EM&V CSP conducts evaluation, measurement, and verification activities and coordinates with the statewide EE&C Plan evaluator.

Table J4 lists the major anticipated participant roles for Low-Income WRAP.

WRAP contractors/ CBOs	<ul style="list-style-type: none"> • Verifying customer eligibility for the program. • Providing education session to customer during installation of measures. • Providing audits and installing measures in the homes of qualified customers. • Managing and reporting customer data.
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¹³ This date range may have to be adjusted (earlier) to permit enough time to perform the billing analysis and apply that deemed savings values prospectively to measures installed starting June 1, 2013.

PPL Electric	<ul style="list-style-type: none"> • Marketing and advertising. • Guiding program strategy. • Directing program outreach and intake. • Fielding customer calls and inquiries. • Directing program administration. • Providing administrative support. • Overseeing contractor activities to ensure compliance with PPL Electric’s Plan and Pennsylvania Public Utility Commission protocols. • Reviewing, verifying and processing invoices matching payment requests to kWh/savings/customers. • Reporting and uploading data to PPL Electric’s EEMIS. • Ensure all reporting and documentation is submitted in an accurate and timely manner.
EM&V CSP	<ul style="list-style-type: none"> • Conducting evaluation, measurement, and verification of energy savings. • Coordinating protocols with the Statewide Evaluator.
Low-income customer	<ul style="list-style-type: none"> • Allowing contractors to complete work within their home. • Participating in education session provided by contractor.

Estimated Participation

Estimated participation levels are shown for general guidance only. **Table J5** outlines projected participation.

Table J5: Low-Income WRAP Program Projected Participation

	PY5	PY6	PY7	Total
Base Load WRAP	3,000	3,000	3,000	9,000
Heat Pump Water Heater replacement (EF of 2.3 or greater)	200	200	200	600
Full Cost WRAP	200	100	100	400

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

Low-Income WRAP is expected to achieve electricity consumption savings of approximately 10,500MWh/yr. during the Plan. The budget allocation MWh/yr. savings through 2016, and overall program cost-effectiveness are shown in **Table J6**.

Table J6: Low-Income WRAP Program Summary of Project Benefits, Costs and Cost-Effectiveness¹⁴

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	3,655	3,432	3,432	10,519
Capacity Savings (MW)	0.45	0.42	0.42	1.30
Total Resource Cost	\$5,336,667	\$5,311,667	\$4,986,667	\$15,635,001
Direct Participant Costs	\$0	\$0	\$0	\$0
Direct Utility Costs	\$5,336,667	\$5,311,667	\$4,986,667	\$15,635,001
Customer Incentives	\$0	\$0	\$0	\$0
EDC Labor, Materials & Supplies	\$826,667	\$826,667	\$826,667	\$2,480,001
CSP Variable Costs	\$4,510,000	\$4,485,000	\$4,160,000	\$13,155,000
CSP Labor, Supplies & Marketing	\$0	\$0	\$0	\$0

	TRC Test
NPV Benefits	\$10,270,277
NPV Costs	\$14,512,711
Net Benefits (NPV)	(\$4,242,434)
Benefit-Cost Ratio	0.71

¹⁴ In accordance with the Commission’s TRC Order, the cost of measures provided to participants at no cost are categorized as Direct Utility Costs, not Incentives.

**E-Power Wise Program
(Low-Income)****2013–2016****Summary**

The E-Power Wise program provides low-income customers with energy-efficiency kits and education materials. The kits are distributed by CBOs at workshops and by direct mail. A turnkey CSP will be engaged to manage the program. This program was offered in Phase I and will be offered in Phase II.

Objectives

The objectives for the E-Power Wise program are to:

- Provide energy-efficiency and conservation education to low-income customers so they can make informed choices about their energy use.
- Provide information about low-cost/no-cost energy-efficiency strategies low-income¹⁵ customers can use in their homes.
- Provide low-income customers with energy-efficiency measures in a free, take-home energy-efficiency kit.
- Promote other PPL Electric energy-efficiency programs.
- Obtain participation of approximately 7,900 customers through 2016 with a total reduction of approximately 3,400 MWh/yr.

Target Market

The program targets PPL Electric customers at or below 150% of the Federal Poverty Income Guideline. Customer eligibility parameters for the E-Power Wise Program are outlined in **Table K1**.

Table K1: E-Power Wise Program Customer Eligibility Parameters

Customer Sector(s)	Low-income qualified residential
Rate Class	RS, RTS, RTD
Building Type	Residential
Building Vintage	Existing buildings
Building Ownership	Owner or tenant

Program Description

The E-Power Wise program delivers kits to customers by two methods: direct mail and Customer Based Organization (CBO). The Program has the following components:

- **Train-the-trainer sessions for CBO staff.** These in-person sessions provide CBO staff with tools needed to introduce energy education and low-cost/no-cost energy-efficiency measures to their low-income clients.
- **Energy Education workshop or one-to-one sessions with CBO staff.** CBOs will assist in recruiting qualified customers through their day-to-day interactions with their clients. Participants may attend a one-hour energy-education workshop to be held days, evenings, and weekends.

¹⁵ Low-income defined at 150% of FPIG or less.

- **Energy Savings Kits.** During the workshops and one-to-one sessions, customers will be introduced to the energy savings measures and educational materials in the kits. The kits may include CFLs in PYS phasing in LEDs, faucet aerators and high-efficiency shower heads as well as installation instructions.
- **Direct mail to qualified customers.** Customers will be able to receive a kit via direct mail. In order to receive a kit, qualified customers will receive a card, with a reply card, in the mail outlining the program. Customers who return the reply card will receive, via mail, an energy-savings kit. Note: PPL Electric generates a list of qualified customers by reviewing customers that have received LIHEAP or had qualified for PPL Electric’s “On-track” program. That list is then reviewed removing customers who had participated in E-Power Wise in the past. The remaining customers are sent a prepaid post card inviting them to participate in the program.

Implementation Strategy

PPL Electric staff provides overall strategic direction and program management. PPL Electric will engage a turnkey CSP to provide the following:

- Building relationships with CBOs.
- Hiring qualified trainers and implementing a train-the-trainer program.
- Updating and implementing the program curriculum and ensuring materials are in English and Spanish.
- Producing, delivering, distributing and maintaining an inventory of kits.
- Tracking monthly savings, providing reports, and uploading data to PPL Electric’s EEMIS.
- Mailing kits to income qualified customers.

PPL Electric’s staff will provide overall strategic direction and program management, and with support from other CSPs, marketing, evaluation, and other administrative functions.

Program Issues, Risks and Risk Management Strategy

Table K2 presents key market risks to an effective E-Power Wise Program, as well as the strategies the program will use to mitigate each risk.

Table K2: E-Power Wise Program Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
CBO unaware of program.	<ul style="list-style-type: none"> • Customers in a CBO area are unaware of energy-efficiency kit program. 	<ul style="list-style-type: none"> • Outreach and marketing directed at CBOs.
CBOs not interested or able to participate.	<ul style="list-style-type: none"> • Customers visiting a non-participating CBO would not be aware of the program. 	<ul style="list-style-type: none"> • Use direct mail method to reach customers in areas without CBO participation.

<p>CBOs need to verify customer eligibility; customer reluctant to share information.</p>	<ul style="list-style-type: none"> • Unqualified customers receive kits. 	<ul style="list-style-type: none"> • Use approved list of government-funded programs as qualifiers for program. • Use PPL Electric low-income qualified customer list. • For those not receiving a government program, provide income application verification process.
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Anticipated Costs to Participating Customers

There are no direct costs incurred by customers for this program.

Ramp-Up Strategy

PPL Electric will engage a CSP to deliver this turnkey program. The CSP will be expected to develop a program plan that includes outreach to hard-to-reach low-income seniors. Additionally the CSP will be expected to engage PPL Electric customers who qualified for WRAP but were not able to participate because they were not able to obtain landlord approval.

CBOs will be recruited and trained by the summer of 2013, and CBOs will begin implementing the program in early fall 2013 (PY5).

Marketing Strategy

The E-Power Wise CSP, with assistance from PPL Electric, will lead the marketing efforts for this program through its existing CBO infrastructure. Additional marketing efforts will focus on senior housing as well as low-income housing. Marketing will be directed to:

- CBO agencies.
- Community groups and human services organizations that interact with low-income customers.¹⁶
- Grassroots marketing in low-income neighborhoods.
- Cross-promoting through other PPL Electric efficiency programs.

Eligible Measures and Incentive Strategy

Services and measures provided through the E-Power Wise program include:

- Train-the-trainer opportunity and incentives for CBOs.
- Energy-efficiency educational workshops.
- Energy Savings Kit with educational materials for participating customers.

Eligible measures and rebates are shown in **Table K3**.

Table K3: E-Power Wise Program Eligible Measures

Measure	Eligibility Rating	Incentive
Energy Savings Kit	Low-income residential at or below 150% of FPIG	No direct cost to customer

¹⁶ Community groups may include Visiting Nurse Associations, Head Start, AARP, churches, senior low-income housing, etc.

PPL Electric will perform periodic reviews of the E-Power Wise Program at least annually and may adjust measures, performance standards and participation criteria as market and other conditions change. PPL Electric will track customer installations and include such data with its annual report on the program.

Program Start Date with Key Schedule Milestones

Strategic planning, execution and schedule for the E-Power Wise Program are listed in **Table K4**. Some tasks will be led by PPL Electric; others will be led by various CSPs with oversight from PPL Electric.

Table K4: E-Power Wise Program Schedule and Milestones

Schedule	Milestones
11/14/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/30/12	Renegotiate contract with CSP.
1/31/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be similar to the Phase I Evaluation Plan for the E-Power Wise Program. Reported and verified savings will be determined for the kits using the method specified in the TRM (algorithm with open variables for some measures; fully stipulated savings for some measures) to calculate the savings of each measure and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of the measure and the installation rate, and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the E-Power Wise Program. External staffing needs will be a function of the CSP. **Table K5** lists the major anticipated participant roles for the E-Power Wise Program.

Table K5: E-Power Wise Program Stakeholder Roles

Primary Conservation Service Provider (CSP)	<ul style="list-style-type: none"> • Marketing and advertising of program. • Recruiting potential CBOs. • Confirming with CBO that customer is eligible for the program. • Distributing energy-efficiency kits. • Managing inventory to prevent shrinkage. • Educating participating CBOs about the program.
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	<ul style="list-style-type: none"> • Implementing train-the-trainer training. • Evaluating and updating kits and instruction. • Providing multilingual materials on energy-efficiency. • Managing and reporting customer data. • Reporting and uploading data to PPL Electric’s EEMIS. • Fielding customer calls and inquiries. • Operating with sensitivity to unique customer group. • Implementing direct mailing of kits to targeted low-income customers. • Following established procedures that maintain confidential customer data usage.
PPL Electric	<ul style="list-style-type: none"> • Guiding program strategy. • Providing administrative support. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. • Overseeing CSP activities to ensure compliance with PPL Electric’s Plan and Pennsylvania Public Utility Commission protocols. • Ensuring all reporting and documentation is submitted in a timely manner and is accurate.
EM&V CSP	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the Statewide Evaluator.
CBO	<ul style="list-style-type: none"> • Confirming customer eligibility. • Scheduling energy education classes. • Educating customers on energy-efficiency, kit measures, and installation of measures.
Customer	<ul style="list-style-type: none"> • Installing the measures from the energy-efficiency kit. • Completing form requesting kit to be mailed. • Completing and mailing survey form documenting completed measures.

Estimated Participation

Estimated participation levels in **Table K6** are shown for general guidance only.

Table K6: E-Power Wise Program Projected Participation

Measure	PY5	PY6	PY7	Total
Customer participation/kits delivered	2,700	2,600	2,600	7,900

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

The Program is expected to achieve approximately 3,400 MWh/yr. This number includes a reduction of 848 MWh/yr. in education energy savings that will expire in PY6 and PY7. The annual budget allocation savings through 2016 and overall program cost-effectiveness for the residential customer sector are summarized in **Table K7**.

Table K7: E-Power Wise Program Summary of Project Benefits, Costs and Cost-Effectiveness¹⁷

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	1,756	804	819	3,378
Capacity Savings (MW)	0.22	0.10	0.10	0.42
Total Resource Cost	\$260,116	\$441,772	\$333,772	\$1,035,660
Direct Participant Costs	\$0	\$0	\$0	\$0
Direct Utility Costs	\$260,116	\$441,772	\$333,772	\$1,035,660
Customer Incentives	\$0	\$0	\$0	\$0
EDC Labor, Materials & Supplies	\$30,000	\$30,000	\$30,000	\$90,000
CSP Variable Costs	\$123,066	\$308,772	\$200,772	\$632,610
CSP Labor, Supplies & Marketing	\$107,050	\$103,000	\$103,000	\$313,050

	TRC Test
NPV Benefits	\$1,817,238
NPV Costs	\$954,050
Net Benefits (NPV)	\$863,188
Benefit-Cost Ratio	1.90

¹⁷ In accordance with the Commission’s TRC Order, the cost of measures provided to participants at no cost are categorized as Direct Utility Costs, not Incentives.

**Low-Income Energy-Efficiency Behavior & Education Program
(Low-Income Sector)**

2013–2016

Summary

The Low-Income Energy-Efficiency Behavior & Education Program provides qualified low-income customers with a series of “report cards” comparing their usage to comparable customers. These reports will also include energy savings recommendations specifically designed to help low-income customers. The program was offered to high-use residential customers in Phase I and is being adapted for low-income customers for Phase II. Savings for this program are not cumulative; therefore, the program will begin in PY6 with savings recorded in PY7.

Objectives

The Objectives of the Low-Income Energy-Efficiency Behavior & Education Program are to:

- Educate targeted low-income customers (at or below 150% of Federal Poverty Income Guideline) about free (no-cost) or low-cost measures and behavior changes that may reduce energy consumption or demand.
- Educate customers about PPL Electric’s online resources.
- Encourage low-income customers to adopt more energy-efficient behaviors and to install energy-efficiency measures in their homes by becoming more aware of how their behavior and practices impact their energy usage.
- Promote other PPL Electric energy-efficiency programs and programs for low-income customers.
- Obtain participation of approximately 50,000 customers through 2016, with a total reduction of approximately 8,300 MWh/yr.

Target Market

The Low-Income Energy-Efficiency Behavior & Education Program targets low-income residential customers. Customer eligibility parameters for the residential sector are outlined in **Table L1**.

Table L1: Low-Income Energy-Efficiency Behavior & Education Program Customer Eligibility Parameters

Customer Sector(s)	Low-income qualified residential
Rate Class	RS, RTS, RTD
Building Type	Residential
Building Vintage	Existing buildings
Building Ownership	Owner and tenants

Program Description

Low-income customers have the greatest economic need for energy-efficiency savings but are often hard to reach and have limited resources to make changes. The Low-Income Energy-Efficiency Behavior & Education Program is designed to provide low-income customers with information on free or low-cost measures and behaviors that may reduce energy consumption. While low-income weatherization programs may provide substantial savings, due to funding constraints, not all customers are able to participate in these programs. The Low-Income Energy-Efficiency Behavior & Education Program will provide no-cost and low-cost energy

savings education to a large number of low-income customers. Armed with information, this customer group will be able to take advantage of ways to lower their energy consumption without a large investment.

Awareness and education will be tailored for the PPL Electric's low-income customers and may include:

- Periodic reports to low-income customers comparing their usage with other, comparable low-income customers.
- General conservation tips such as turning down the thermostat, turning off the lights, taking shorter showers, etc.
- Low-cost energy-efficiency tips, such as replacing incandescent light bulbs with CFLs, LEDs, installing weather stripping, and using power strips.

Customized home energy reports will be delivered to low-income households through the mail. The reports will provide customers with no-cost/low-cost behavioral tips that will help their households manage their energy and save money. The reports will also be used to market other low-income and residential programs using targeted program promotion modules.

Since energy costs for average and low-income households are similar, but are a higher burden for low-income consumers, the Home Energy Reports can be particularly beneficial. Low-income households benefit from energy savings by more than twice that of the average customer.¹⁸ Improved efficiency may also lead to better and health and comfort, including more retained heat in winter.

This program will be delivered by a CSP.

Additional Program Description Details

The primary way the Low-Income Behavior and Education Program is tailored to low-income customers (compared to the general Residential Behavior and Education Program) is the messaging. Messages for the low-income program will focus on no-cost ways for customers to reduce electricity use and reduce their electric bill, including the Low-income WRAP Program which is free to customers. The messaging will also inform customers about other low-income services such as On Track. No other residential rebate programs will be promoted to the low income customers.

Another way the program is tailored to low-income customers is in the selection of the treatment group (the customers who get the Report Cards) and the control group (the customers who do not get the Report Cards). In the Low-Income Program, both the participant group and the control group will consist of low-income customers who have comparable usage and comparable homes. In the general residential program, the participant group and the control group are not selected based on income criteria.

The general residential and the low-income Education and Behavior Programs both address the distinction between homes with electric heating and homes without electric heating. In order to ensure customers are compared to neighbors that have the same fuel type and have other

¹⁸ Assumes median "average" income of \$50,000, median "low-income" of \$20,000, and \$1,800/year in energy costs.

similar characteristics the CSP uses a number of data sources. For example, it acquires “Parcel Data” that includes information about how customers heat their home. When providing “neighbor comparisons” to customers, the CSP uses this data to find the correct set of similar homes nearby to compare any given customer to. To generate neighbor comparisons, the CSP uses a progressive search routine that identifies similar homes based on characteristics including:

- Heating fuel: Customers with electric heat are compared to the same, and those with gas heat are compared with the same.
- Building type: Single family homes are compared to other single family homes, and apartments and condominiums are compared to other apartments and condominiums.
- Proximity: Customers are compared to other households within the same geographic area. In most cases this is typically less than one mile and often much closer, with the same zoning and climate zone.
- Dwelling size (in square feet) and age: Customers are compared to others with homes that are similar in size.
- Meter read cycle: Customers are compared to other customers with similar meter read cycles to prevent different cycles from impacting comparisons.

The CSP incorporates third-party data including:

- Parcel Data (square footage, age of home, presence of pool or hot tub, heating type, assessed value, number of stories, number of rooms, presence of garage, presence of basement or attic, presence of fireplace etc.) is acquired from CoreLogic or the respective County Assessor’s office, which supplies up to 70 unique data points per household.
- Demographic Data (owner/renter, age, income, etc.) is acquired from Datalogix, which offers dozens of unique data points per household.
- GIS Data is acquired from Google, and allows the CSP to precisely plot the location of each customer’s home, facilitating identification all homes that could be used to develop each set of neighbors.
- Weather Data is provided by AnythingWeather.com, which utilizes a network of more than 17,000 government, personal, and proprietary weather stations around the country. The CSP receives daily feeds of hourly weather data for every ZIP code in the country. This ensures that we use actual local weather for the billing period.

PPL Electric Utilities will work with the CSP to identify low-income program participants. A major source of potential participants will be PPL Electric Utilities’ residential customer segmentation data base that includes purchased, public information about household income and household size for specific customers. This method will help to get Home Energy Reports (and thus energy efficiency information) into the hands of low-income customers who were previously unaware of PPL EU’s low-income programs.

The Home Energy Reports are intended as a first step to engage low income customers in becoming more energy-efficient, providing them with guidance and motivation to incorporate

more energy-efficient behaviors, and to provide them with information about other programs for low-income customers that may be able to assist them at no cost.

An estimated 50,000 low-income households in the treatment group will each receive 4 reports in PY6 and 6 reports in PY7.

The Behavior and Education Program, unlike the other energy-efficiency programs, does not provide incentives to homeowners to install measures nor does it provide other financial incentives. Other programs, in contrast to the behavior program, do not provide repeated and personalized information about energy use in the customer's home over one or more years, nor do they compare usage to neighbors (to induce behavioral change). The personalized home energy reports increase customer awareness and knowledge of energy-efficiency, which is a necessary first step in reducing energy use. The behavior program also induces behavioral changes that lead to reduced energy usage. Knowledgeable customers may then make more informed decisions about the costs and benefits of availing themselves of other program resources. Further, the knowledge is "transferable" if a customer moves. The Low-Income Behavior and Education Program has the potential to reach thousands of low-income customers who would otherwise be unaware of the potential for energy savings.

Implementation Strategy

The Home Energy Reports will be tailored for the low-income consumers and targeted specifically for them. It will include promotions for other low-income programs (e.g., E-power Wise, Low-Income WRAP), education on local support resources, and focus on efficiency tips for low-cost high-impact improvements (less than a two-year payback).

Program Issues, Risks and Risk Management Strategy

Table L2 presents key market risks to an effective the Low-Income Energy-Efficiency Behavior & Education Program, as well as the strategies the program will use to mitigate each risk.

Table L2: Low-Income Energy-Efficiency Behavior & Education Program Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
<p>A large number of customers opt-out of the program.</p>	<ul style="list-style-type: none"> Fewer customers participating in the program would negatively affect energy savings. 	<ul style="list-style-type: none"> Monitor opt-outs on a monthly basis to ensure the number of customers remains at an acceptable level. Ensure there is a pool of customers available who meet the selection criteria to receive home energy reports that can be added to the program should opt-outs become too high.
<p>Customers do not change behavior based on recommended tips.</p>	<ul style="list-style-type: none"> Tips are not resonating with customers; therefore, they will not change their behavior. 	<ul style="list-style-type: none"> Monitor savings on a monthly basis. Ensure message is meaningful to low-income customers. Adjust and change messaging should monthly savings targets not meet goals.
<p>Customers become confused with information on the energy report card that may be different than what is found on their PPL Electric account Home Energy Analyzer.</p>	<ul style="list-style-type: none"> Customers who receive Home Energy Reports and are signed up for PPL Electric’s Energy Analyzer may receive contradictory information regarding their efficiency (i.e., one will state the customer is more efficient than similar homes and the other will state they are less efficient). 	<ul style="list-style-type: none"> Monitor customer inquiries. Provide customers with information about the difference between a baseline home for the energy report cards and Energy Analyzer to ensure customers understand why the information could be dissimilar.
<p>Customers think the neighbor comparisons are not accurate.</p>	<ul style="list-style-type: none"> Customers do not change their behavior, and therefore savings are negatively impacted. 	<ul style="list-style-type: none"> Periodically, and at least once per program year, review the accuracy of the data that is used to make up the neighbor comparisons to determine if there is additional public information available, and/or if there are other ways to increase the accuracy of other customer data such as the heating source.

<p>Customers move frequently.</p>	<ul style="list-style-type: none"> • Low-income customers are more transient and therefore there could be a large number of participating customers who could close their account when they move. 	<ul style="list-style-type: none"> • Ensure there is a pool of customers available that meet the selection criteria to receive home energy reports who can be added to the program should closed account drops become too high.
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Anticipated Costs to Participating Customers

There are no direct costs incurred by customers for this program.

Ramp-Up Strategy

The Low-Income Energy-Efficiency Behavior & Education Program CSP will develop home energy reports tailored for low-income customers and will include promoting other low-income programs including E-Power Wise, Low-Income WRAP, information on local and state resources, and energy-efficiency tips for low-cost, high-impact improvements.

Marketing Strategy

The program does not require specific marketing. Participants will be selected from customers that have participated in other low-income programs offered by PPL Electric.

Eligible Measures and Incentive Strategy

No specific incentives will be provided through this program. Rather, by virtue of providing simple energy conservation education, information, and strategies, customers will gain energy cost savings on their monthly utility bills.

Program Start Date with Key Schedule Milestones

Strategic planning, execution, and schedule for the Program are listed in Table L3. PPL Electric will led and provide oversight of the program.

Table L3: Low-Income Energy-Efficiency Behavior & Education Program Schedule and Milestones

Schedule	Milestones
10/24/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
10/26/12	Negotiate contract with CSP.
3/1/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/14	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be similar to the Phase I Evaluation Plan for the Residential Behavior and Education Program. Reported and verified savings will be determined using a billing regression analysis. The regression analysis compares the difference in usage (actual billing data) of the low-income participant group (treatment group) with a comparable low-income non-participant group (control group).

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Low-Income Energy-Efficiency Behavior & Education Program. **Table L4** lists the major anticipated participant roles for the program.

Table L4: Low-Income Energy-Efficiency Behavior & Education Program Stakeholder Roles

<p>Primary Conservation Service Provider (CSP)</p>	<ul style="list-style-type: none"> • Generating customized energy report cards that incorporate electricity usage comparisons and recommendations. • Incorporating documented behavior change research findings into reports. • Receiving and processing data (e.g., billing, rate, program, real property, demographic and consumer data) from multiple sources to generate reports in paper and electronic forms. • Reporting and uploading data to PPL Electric’s EEMIS. • Acquiring and incorporating data from other sources, such as GIS, weather, demographic, and assessor’s data, into the reports to improve accuracy and customization. • Printing, inserting and mailing or emailing reports. • Developing and hosting a web application for PPL Electric staff to view electronic reports and change report preferences. • Following established procedures that maintain confidential customer data usage.
<p>PPL Electric</p>	<ul style="list-style-type: none"> • Guiding program strategy. • Overseeing CSP activities to ensure compliance with PPL Electric’s EE&C Plan and Pennsylvania Public Utility Commission protocols. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. • Providing CSP with usage data for all homes in the service territory on a weekly basis. • Providing responses to individual customer inquiries.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the Statewide Evaluator.
<p>Customer</p>	<ul style="list-style-type: none"> • Reading reports about their energy use.

Participation

The approximately 50,000 low-income customers will receive a home energy report card mid-PY6 and will continue to receive report cards throughout PY7. Please note that the projected participation is not cumulative and the total number of customers receiving reports is 50,000. **Table L5** outlines projected participation.

Table L5: Low-Income Energy-Efficiency Behavior & Education Program Projected Participation

	PY5	PY6	PY7	Total
Participants	0	50,000	50,000	50,000

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

The Low-Income Energy-Efficiency Behavior & Education Program is expected to achieve savings in electricity consumption of approximately 8,300 MWh/yr. The expected measure life is one year; therefore, savings are not cumulative over multiple program years. Overall cost-effectiveness and projected savings levels are summarized in **Table L6**.

Table L6: Low-Income Energy-Efficiency Behavior & Education Program Summary of Projected Benefits, Costs, and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	-	3,150	8,325	8,325
Capacity Savings (MW)	-	0.39	1.03	1.03
Total Resource Cost	\$0	\$537,350	\$626,250	\$1,163,600
Direct Participant Costs	\$0	\$0	\$0	\$0
Direct Utility Costs	\$0	\$537,350	\$626,250	\$1,163,600
Customer Incentives	\$0	\$0	\$0	\$0
EDC Labor, Materials & Supplies	\$0	\$56,250	\$56,250	\$112,500
CSP Variable Costs	\$0	\$0	\$0	\$0
CSP Labor, Supplies & Marketing	\$0	\$481,100	\$570,000	\$1,051,100

	TRC Test
NPV Benefits	\$960,632
NPV Costs	\$1,032,421
Net Benefits (NPV)	(\$71,789)
Benefit-Cost Ratio	0.93

Small C&I

Section 3.3

Prescriptive Equipment Program (Small C&I) (Small C&I Sector)

2013–2016

Summary

The Prescriptive Equipment Program (Small C&I) provides rebates and incentives from a list of specific energy-efficiency measures and services. The program also offers a Direct Discount component. Direct Discount is designed to make it easier and more economical for small businesses and institutions to install energy-efficient lighting and commercial refrigeration upgrades. Customers may choose to have a contractor evaluate and install energy-efficient lighting and refrigeration. The contractor completes and submits required paperwork providing ease of use. Starting in PY6, for all projects, customers will be required to obtain pre-approval from PPL Electric before ordering energy-efficiency equipment.

Recognizing the needs of farmers in PPL Electric’s territory, audits and measures specific to farms are included in the Prescriptive Equipment Program (Small C&I). This component will be managed by the CSP. Some farms in PPL Electric’s territory have a residential rate class. In those instances, savings and costs will be allocated to the residential sector.

One CSP will be engaged to manage and coordinate the Prescriptive Equipment Incentive Program and the Custom Incentive Program. The CSP will be responsible to provide a call center and rebate processing services. One CSP serving all non-residential sectors provides synergy saving and a “one-stop” service for customers.

Objectives

The objectives of the Prescriptive Equipment Program (Small C&I) are to:

- Provide energy-saving opportunities to qualified customers.
- Increase the market penetration of high-efficiency technologies and building systems for customers by incentivizing high-efficiency and ENERGY STAR®-rated appliances, lighting equipment and HVAC systems.
- Approve and train contractors to conduct on-site facility assessments and pass through financial incentives for energy-efficient refrigeration measures, lighting upgrades, and lighting control upgrades through a direct discount delivery mechanism.
- Engage trade allies to provide high-efficiency technology options to customers.
- Promote other PPL Electric energy-efficiency programs.
- Collect energy and operating data from customers, as required.
- Obtain participation of approximately 1,100 customers through 2016, with a total reduction of approximately 79,500 MWh/yr.

Target Market

The Prescriptive Equipment Program (Small C&I) will be available to PPL Electric non-residential customers. This program targets customers who would benefit from replacing older, inefficient equipment. The program also provides education to customers on cost-effective ways to reduce energy consumption. **Table M1** outlines the eligibility requirements for this program.

Table M1: Prescriptive Equipment Program (Small C&I) Customer Eligibility Parameters

Customer Segment	Small C&I
Rate Class	GS1, GS3, GH1, GH2, IS1, SLAL, (RS, RTS, RTD –Agricultural only)
Building Type	Small commercial, small industrial, barn, residential farms
Building Vintage	Existing and new construction
Building Ownership	Owner, tenant with owner approval

Program Description

The Prescriptive Equipment Program (Small C&I) promotes the purchase and installation of a wide range of high-efficiency equipment, including technologies appropriate to specific building types for Small C&I customers and including customer owned LED area lighting. The program provides these customers with financial incentives to offset the higher purchase costs of energy-efficient equipment and offers information on the features and benefits of energy-efficient equipment.

Within the Prescriptive Equipment Program (Small C&I) there are measures and services available to the farmers. Some farms in the PPL Electric territory have a Residential rate class; although the Prescriptive Equipment Program (Small C&I) will manage this component of Small C&I, savings and costs from residential agriculture customers who participate will be credited to the Residential Sector.

Implementation Strategy

PPL Electric staff will manage the Program CSP. The CSP will undertake a broad spectrum of responsibilities. The CSP will perform customer, trade ally, and manufacturer outreach and training along with program marketing. The Prescriptive Equipment (Small C&I) CSP will develop, update, and process rebate applications and payments.

Key steps in this program are:

- Directing customers to the program through PPL Electric’s marketing activities, the Company website, equipment dealers, and equipment installation contractors/trade allies.
- Working with equipment/appliance distributors and installation contractors to fill out program applications to help ensure customers have required documentation to submit for processing.
- Reviewing documentation to verify the applicant is a PPL Electric customer and the installed equipment meets eligibility criteria.
- Starting in PY6, for all projects customers will be required to obtain pre-approval from PPL Electric before ordering energy-efficiency equipment.

- Recruiting and developing a robust network of trade allies and holding Direct Discount contractors accountable for completing work and adhering to the Program requirements.
- Processing rebate checks for qualified equipment.
- Verifying equipment/appliance installation for a sample of participants, which will be a part of measurement and verification.
- Conducting farm assessments and educating agricultural customers on energy-efficient equipment.

Program Issues, Risks and Risk Management Strategy

Table M2 presents key market risks to an effective Prescriptive Equipment Program (Small C&I) as well as the strategies the program will use to mitigate each risk.

Table M2: Prescriptive Equipment Program (Small C&I) Issues, Risk Management Strategy

Program Issues	Risks	Management Strategy
Higher up-front costs for high-efficiency equipment.	<ul style="list-style-type: none"> • Decision-makers choose cheaper, less efficient equipment. • Payback or IRR for projects is too long for customers. • Restricted amount of capital available, energy using equipment not a priority for business. 	<ul style="list-style-type: none"> • Make customer operations more attractive with higher-efficiency equipment installed. • Offer incentives and programs to reduce payback and IRR for business owners. • Educate customers on long-term benefits of energy-efficiency, available incentives and other programs that may help.
Equipment is typically replaced only upon failure.	<ul style="list-style-type: none"> • Customers see no need to replace functioning equipment. • Customers not informed about the most efficient equipment available when the need to replace it is immediate. Some efficient-equipment may have longer delivery time that would affect customer operations. 	<ul style="list-style-type: none"> • Educate and encourage trade allies and owners to replace equipment in order to obtain rebates and start realizing energy savings sooner. • Educate trade allies and customers on energy-efficient choices available before equipment fails and encourage equipment replacement planning for their business.
Energy-efficiency is not commonly prioritized by the customer or building owner.	<ul style="list-style-type: none"> • High-efficiency equipment is viewed as being too expensive and/or too complicated. • Owners not informed on how their facility uses energy. • Servicing existing debt may limit funds to 	<ul style="list-style-type: none"> • Provide information to customers on value of energy-efficiency. • Offer planning assistance and incentives to enhance energy savings.

	<p>purchase new efficient equipment.</p> <ul style="list-style-type: none"> • Customers place priority on fluctuating commodity prices. 	
<p>Training is not a priority</p>	<ul style="list-style-type: none"> • Customers nor trade allies understand importance nor have time to participate in training. 	<ul style="list-style-type: none"> • Promote the importance of value of training.

Anticipated Costs to Participating Customers

Incremental costs incurred by Small C&I customers participating in the Prescriptive Equipment Program (Small C&I) will be subject to their level of participation and the specific type of efficient equipment installed in the program.

No-cost audits will be offered to a limited number of farms interested in becoming more energy-efficient.

Ramp-Up Strategy

During Phase II, PY5, the Prescriptive Equipment Program (Small C&I) CSP will develop marketing material, including initial program offering information and case studies, to distribute to customers through both trade allies and various groups.

Marketing Strategy

The Prescriptive Equipment Program relies on projects initiated by the customer, trade allies, and the CSP.

The CSP will promote the various energy-efficiency options available to this varied customer segment through a host of different media. The CSP will leverage trade ally and manufacturer relationships to co-market energy-efficient equipment. In addition, the CSP may hold webinars, seminars, and participate in trade shows and individual outreach to trade ally and manufacturers to reinforce current program offerings. Marketing materials with case studies will be used to market the program.

Strategies for marketing incentives may include:

- Offering no-cost audits to farms to generate interest in energy-efficiency.
- Advertising in local newspaper and other mass media.
- Cross-promoting through other PPL Electric efficiency programs.
- Developing relationships with farm associations.
- Use limited time offers, special promotions, and no-customer-cost measures to promote energy-efficiency.

Eligible Measures and Incentive Strategy

Rebates and incentives will be paid to qualified customers that submit completed applications and documentation of the efficiency measures installed. Customers will have the option to assign rebate payments to a third party. Customers may work with a program-approved Direct

Discount contractor and the contractor will conduct a free energy assessment to identify potential energy-saving equipment options and determine the amount of potential incentives paid by the Direct Discount service. Direct Discount rebates will be dependent on calculated energy savings due to installation of the energy-efficiency measures and hours of use. Direct Discount rebates will be paid directly to the contractor after review of required paper work and documentation of installed measures.

A limited number of agricultural customers will have the option to receive a farm energy assessment with no direct customer cost. During the assessment, educational material highlighting Program rebates will be distributed to the customer. Prescriptive rebates and performance eligibilities will be fixed for each measure. Other measures and their rebates will be dependent on calculated energy savings upon installation through the Custom Incentive Program.

PPL Electric will perform periodic, at least annually, reviews of the Prescriptive Equipment Program (Small C&I) and may adjust incentive levels, performance standards and participation criteria as market conditions change in the future. PPL Electric will track customer installations and include such data within its annual report on the program.

Table M3 lists the proposed measures and incentive levels for the Prescriptive Equipment Program (Small C&I) offered to PPL Electric to eligible customers. The listing includes those measures deemed to be appropriate for the Prescriptive Equipment Program participants and may be changed with measures added or deleted based on customer need and technology improvements.

Table M3: Eligible Prescriptive Equipment Program (Small C&I) Measures

Measure	Eligibility Rating	Approximate Incentive
ASHP	SEER 15,16	\$50 to \$200/unit
ASHP (>5.4 tons)	Qualifying EER or COP	\$15 to \$25/ton
Ductless mini split heat pump	<5.4 tons SEER >15.0 and HSPF >8.6	\$100-\$200/ton
Evaporator fans for refrigeration	Determined by pre and post customer choice of fan motor type	\$10 to \$120/fan
Steam Cookers	ENERGY STAR®	\$50 to 100/pan
Commercial refrigerators	ENERGY STAR®	\$70/unit
Ice makers	ENERGY STAR® or CEE tier 2	\$115
New construction lighting	A minimum 5% Energy-efficiency achieved above ASHRAE 90.1-2007 standard	\$0.10/annual kWh
LED exit signs	LED replacing incandescent	\$25/sign
Occupancy sensors	Wall, ceiling or fixture mounted	Up to \$45/sensor
T5	New T5 lamps and ballasts	\$1 to \$6/lamp installed
T8 high performance fixtures	Retrofit fixture with new high performance T8 lamp and ballast (cee1.org list)	\$2 to \$10/lamp installed

High performance T8 lamps	Retrofit T8 with qualified high performance (cee1.org list)	\$1/lamp installed
High bay T5	New T5 fixture (>100watts)	\$6 to \$16/lamp installed
De-lamp and install reflectors	Replace existing fixture with T5, high performance T8 fixture with one or more lamps removed, must include electronic ballast and reflector (cee1.org list)	\$5 to \$30 depending on number and type of lamps
LED (bulk purchase outside of other programs)	Replace existing incandescent lamps with ENERGY STAR® LED	Up to 50% cost of bulb, up to \$5/LED
Rebate for non-ENERGY STAR® and non-Design Lights Consortium LED bulbs	Requires pre-approval, limited to a total of ten LED bulb types per customer	Up to 50% of cost of bulb, up to \$2/LED
LED area lights	ENERGY STAR®, Design Lights Consortium Listed or LM 79/LM 80 tested and approved	\$0.10 per annual kWh calculated saved per PA lighting form
Non-electric high efficiency central heat (oil, gas, propane) – Max. 100 units for all Programs.	Natural Gas or propane – AFUE 90 Oil Furnace – AFUE 85 Fossil Fuel Boilers – AFUE 85	\$100-\$250
LED lighting	ENERGY STAR®, Design Lights Consortium Listed, or LM 79/LM 80 tested and approved	\$0.10 per annual kWh calculated saved per PA lighting form

Eligible Direct Discount Measures (Small C&I)

Measure	Eligibility Rating	Approximate Incentive
LED lamps	ENERGY STAR®, Design Lights Consortium or must be LM-79 and LM-80 tested and approved	\$0.05/annual kWh saved
Other lighting fixtures	ENERGY STAR® fixtures/LED Exit signs	\$0.17/annual kWh saved
LED Interior Lighting	ENERGY STAR®, Design Lights Consortium or must be LM-79 and LM-80 tested and approved	\$0.17/annual kWh saved
LED Street /Area Lighting	ENERGY STAR® or Design Lights Consortium listed. (exceptions will require LM-79/ LM-80 data and PPL Electric’s approval)	\$0.17/annual kWh saved
Lighting occupancy sensors	Wall, Fixture or Ceiling Mounted	\$0.17/annual kWh saved
T5, high performance T8	New/Retrofit with T5 or high	\$0.17/annual kWh

	performance T8 lamp and ballast (cee1.org list)	saved
High Bay T5, high performance T8	New T5, high performance T8 fixture (>100 watts (cee1.org list)	\$0.17/annual kWh saved
Refrigeration measures	Includes measures such as anti-sweat heater controls, evaporator fans (ECM or PSC motor)	\$0.17/annual kWh saved

Eligible Agricultural Customer Measures

Measure	Eligibility Rating	Incentive
Farm Energy Assessments	Residential and Small C&I Farms	Free to customer (Approximately \$1,000 value)
Programmable Thermostat	Units controlling ventilation.	\$25/unit
Air Source Heat Pump	SEER>15,>16	\$50 to \$200/unit
LED Wall packs	ENERGY STAR® or Equivalent	Up to \$40/fixture
Occupancy Sensors	Wall, Ceiling or Fixture Mounted	Up to \$45/sensor
T5 Lamps	New T5 lamps and ballasts	\$1 to \$6/lamp installed
T5,T8 high-performance fixtures	Retrofit fixture with new high-performance T8 lamp and ballast	\$2 to \$12/lamp installed
High performance T5,T8 lamps	Retrofit T8 with qualified high performance (cee1.org list)	\$1/lamp installed
High bay T5	New T5 fixture (>100 watts)	\$6 to \$16/lamp installed
De-lamp and install reflectors	Replace existing fixture with T5,high performanceT8 fixture with one or more lamps removed, must include electronic ballast and reflector	\$5-\$30 depending on number and type of lamps
LED area lights	ENERGY STAR®, Design Lights Consortium Listed or LM 79/LM 80 Tested and approved	\$0.10 per annual kWh calculated saved per PA Lighting Form
LED interior lighting	ENERGY STAR®, Design Lights Consortium Listed or LM 79/LM 80 Tested and approved	\$0.10 per annual kWh calculated saved per PA Lighting Form
LED Exit Signs	Replace Incandescent	\$25/sign
Evaporator fans for Refrigeration	SP to ECM and PSC to ECM motors	\$10 to \$120/fan
VSD Controller for Dairy Vacuum Pumps	UL Listed, meets Institute of Electrical and Electronics Engineers (IEEE) standards	\$5/per cow
High Volume, Low Speed Fans	Must be tested by Air Movement & Control Association (AMCA) >16 feet in diameter	\$750/fan
Dairy Scroll Compressor	Variable-speed-drive for dairy vacuum pumps, UL listed meeting	\$250/unit

	IEEE harmonic control standards	
Low-Pressure Irrigation Systems	Replacement systems operating on 50% or less than existing system pressure	\$20/acre
Livestock Waterers	Thermatically controlled with 2 inches or more or factory-installed insulation	\$40/unit
Heat Reclaimers	Century-Therm, Therma-Store, Heat Bank, Sunset, Fre-Heater or Superheater Brands	\$5/cow
Automatic Milker Take-offs	Energy-efficient automatic milk take-offs that determine milking end time	\$5/cow
Ductless mini split heat pump	<5.4 tons SEER >15.0 and HSPF >8.6	\$100-\$200/ton
New construction lighting	A minimum 5% Energy-efficiency achieved above ASHRAE 90.1-2007 standard	\$0.10/annual kWh
Non-electric high efficiency central heat (gas, oil, propane. Max. of 100 units for all programs)	See Table M3 for details	

Program Start Date with Key Scheduled Milestones

Strategic planning and execution action items are listed for the Prescriptive Equipment (Small C&I) in **Table M4**. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table M4: Prescriptive Equipment Program (Small C&I) Schedule and Milestones

Schedule	Milestones
10/31/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/30/12	Renegotiate contract with CSP.
12/24/12	Execute program implementation contract with CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

Reported and verified savings will be determined using the method specified in the TRM (algorithms with open variables for some measures; fully stipulated savings for some measures) to calculate the savings of each measure, and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of each measure and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Prescriptive Equipment (Small C&I) Program. **Table M5** lists the major anticipated participant roles for the program.

Table M5: Prescriptive Equipment Program (Small C&I) Stakeholder Roles

<p>Primary Conservation Service Provider (CSP)</p>	<ul style="list-style-type: none"> • Outreach to customers, trade allies and manufacturers. • Assistance to customers in completing applications. • Operating with sensitivity to unique customer needs; being available to meet customers, often at off hours at their convenience. • Marketing to and recruiting potential agricultural customers who own farm buildings. • Developing and distributing targeted energy-efficiency educational materials to agricultural customers. • Collaboration with farming associations, trade allies and farm equipment dealers. • Recruit, manage and ensure Direct Discount contractors perform in compliance with program rules. • Verifying contractor eligibility for Direct Discount participation. • Educating Direct Discount approved contractors about energy-efficiency measures and offers. • Conducting QA/QC on pre and post project installation as determined by PPL Electric staff. • Review required pre-application forms. • Processing rebate payments to customers and contractors. • Managing and reporting savings data. • Fielding customer calls and inquiries. • Verifying Direct Discount installation conditions (pre and post), disburse incentives and provide program oversight. • Reporting and uploading data to PPL Electric’s EEMIS. • Performing audits and generating savings reports for farmers.
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<p>PPL Electric</p>	<ul style="list-style-type: none"> • Provide management oversight to CSP, direction for initiatives and comments on proposed changes as market changes. • Guiding program strategy. • Providing administrative support. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. • Ensure all reporting and documentation is submitted in a timely manner and accurate.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the Statewide Evaluator.
<p>Building Owner</p>	<ul style="list-style-type: none"> • Gaining knowledge of products and services best suited for increased energy-efficiency. • Allowing for pre and post audits. • Scheduling Farm Energy Assessments. • Informing their farming neighbors of the rebate program. • Purchasing energy efficient equipment to replace outdated or non-efficient equipment and completing PPL Electric Rebate Applications.
<p>Direct Discount Program Approved Contractors</p>	<ul style="list-style-type: none"> • Conducting free energy assessments and install energy efficient measures. • Providing customers with energy-efficiency options. • Operating in full compliance with the Direct Discount program requirements. • Attending required training for program participation.

Estimated Participation

It is estimated that 7,600 customers will participate in the Prescriptive Equipment Program (Small C&I). It is difficult to calculate an exact number by measures because of uncertainty in the marketplace, changes in the TRM that may require reducing or increasing a rebate, and customers not having available resources to participate.

It is estimated that approximately 1,100 Small C&I customers will participate in the Direct Discount component in Phase II. The average Direct Discount project is expected to be 30,000 kWh/yr.

It is estimated that 60 customers will take advantage of free farm audits during Phase II. It is further estimated that 120 measures, specifically chosen for farms, will be rebated during Phase II.

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

Table M6: Prescriptive Equipment Program (Small C&I) Summary of Project Benefits, Costs and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	44,211	17,819	17,477	79,506
Capacity Savings (MW)	7.80	3.06	2.99	13.86
Total Resource Cost	\$17,967,033	\$6,983,442	\$6,900,346	\$31,850,822
Direct Participant Costs	\$8,003,083	(\$207,318)	\$2,860,906	\$10,656,671
Direct Utility Costs	\$9,963,950	\$7,190,760	\$4,039,440	\$21,194,151
Customer Incentives	\$7,404,299	\$6,004,235	\$2,871,926	\$16,280,461
EDC Labor, Materials & Supplies	\$145,500	\$212,500	\$212,500	\$570,500
CSP Variable Costs	\$2,414,151	\$974,025	\$955,014	\$4,343,190
CSP Labor, Supplies & Marketing	\$0	\$0	\$0	\$0

	TRC Test
NPV Benefits	\$75,150,246
NPV Costs	\$30,325,439
Net Benefits (NPV)	\$44,824,807
Benefit-Cost Ratio	2.48

**Custom Incentive Program (Small C&I)
(Small C&I Sector)**

2013–2016

Summary

The Custom Incentive Program (Small C&I) offers customers flexibility in their choice of energy-efficiency projects. The Custom Incentive Program (Small C&I) is intended for energy-efficient custom measures that are considered too complex, highly variable from site to site, or too unique to be included in the list of standard measures provided in the TRM. An incentive is based on annual kWh reduced or project cost. Projects vary in size and scope. Customers must agree to pre- and post-testing to verify savings. The same CSP responsible for implementing the Prescriptive Equipment Program will also implement the Custom Incentive Program. This will make communications with customers and trade allies more effective, convenient and efficient.

Objectives

The objectives of the Custom Incentive Program (Small C&I) are to:

- Encourage PPL Electric Small C&I customers to install high-efficiency custom measures or processes. In PY5, “custom” measures can include any measure not included in PPL Electric’s Prescriptive Equipment Program. Starting in PY6, “custom” measures are only measures that are not included in TRM.
- Encourage qualifying equipment repairs and optimization and operational or process changes that reduce electricity consumption.
- Encourage a “whole facility” approach to energy-efficiency.
- Increase customer awareness of the features and benefits of electric energy-efficient equipment.
- Increase the market penetration of high-efficiency equipment.
- Support emerging technologies and non-typical efficiency solutions in cost-effective applications.
- Encourage advanced energy-efficiency strategies required for certification by national market transformation programs such as Leadership in Energy and Environmental Design (LEED), Architecture 2030, ENERGY STAR® Buildings, or Energy Policy Act of 2005 (EPA) tax credits.
- Promote other PPL Electric energy-efficiency programs.
- Achieve approximately 64 completed projects through 2016, with a total reduction of approximately 4,500 MWh/yr.

Target Market

PPL Electric’s Custom Incentive Program targets new and existing commercial and industrial facilities. The Plan divides the program into Small C&I, Large C&I and GNI market sectors, with target customers, and approximate participation, budgets, savings and impacts broken out for each sector. PPL Electric expects to use a consistent implementation strategy, incentive mechanism, and administrative process to deliver the program across all of these customer sectors. **Table N1** identifies eligibility parameters.

Table N1: Custom Incentive Program (Small C&I) Customer Eligibility Parameters

Customer Sector(s)	Small C&I
Rate Class	GS1, GS3, IS1, SLAL, G1D, GH2
Building Type	Small commercial, small industrial

Building Vintage	Existing and new construction
Building Ownership	Owner or tenant with owner approval

Program Description

The Custom Incentive Program (Small C&I) provides financial incentives to customers installing measures that are not included in the TRM. These measures may include new or replacement energy-efficient equipment, retro-commissioning, repairs, equipment optimization, and operational and process improvements that result in cost-effective energy-efficiency savings. To qualify for financial incentives, eligible customers are required to provide documentation that their proposed efficiency upgrades pass the Program’s cost-effectiveness threshold and technical criteria.

PPL Electric provides reimbursement following successful implementation of a cost-effective project. Reimbursements may be reduced based on type or size. The program offers performance-based incentives based on avoided or reduced kilowatt hours (kWh) resulting from the project. Incentives are subject to an annual cap for each project and for each participating customer. Incentives cannot exceed 50% of total project cost. In PY5, pre-approval is required before a customer’s project goes into service. Starting PY6, pre-approval is required before a customer purchases their measures.

Implementation Strategy

This program relies on both CSPs and trade allies for implementation. PPL Electric or the Custom Program CSP will handle customer intake, routing and processing of applications. The CSP works directly with trade allies and customers to: help identify and develop customer project ideas; and implement on behalf of the customer. The Custom CSP will perform scope analysis, cost, and potential energy savings of proposed projects; conduct field verification of completed projects; and help to determine the reported energy savings from installed projects. The EM&V CSP will conduct independent evaluations to determine verified savings, tracking those savings monthly, and provide reports to PPL Electric.

Program Issues, Risks and Risk Management Strategy

Table N2 presents key market risks to an effective Custom Incentive Program as well as the strategies the program will use to mitigate each risk.

Table N2: Custom Incentive Program (Small C&I) Issues, Risks and Risk Management Strategy

Market Risks	Implications	Management Strategy
Higher first cost of energy-efficient equipment.	<ul style="list-style-type: none"> Implementing a project can be expensive upfront. 	<ul style="list-style-type: none"> Offer customized incentives on equipment to offset higher cost.
Not a high priority; limited access to discretionary cash/credit.		
Lack of program awareness and “emergency replacement” scenario	<ul style="list-style-type: none"> This diverse market can run into situations in which a piece of equipment must be 	<ul style="list-style-type: none"> Market directly to customers, decision makers, facility operators, equipment dealers, distributors and trade allies/contractors.

among target customers.	replaced or added immediately. If they are unaware of the program, they may implement ineligible measures.	
Tenant/landlord issues; reaching the decision maker or trade ally/contractor.	<ul style="list-style-type: none"> • Decision makers are unaware. • Trade allies/contractors have significant influence on what the customer is buying and installing. 	<ul style="list-style-type: none"> • Develop specific outreach activities and educational/promotional messages to target decision makers and facility operators to facilitate understanding of capital budget and operating concerns. • Engage trade allies/contractors to promote the program to their customers.

Anticipated Costs to Participating Customers

The measure rebates are designed to cover no more than 50% of the customer incremental cost of the project, up to a cap of \$500,000 per customer site per year, or \$1 million per parent company per year for customers with multiple facilities, not to exceed 50% of project cost. These values were chosen to increase participation and provide equity within each sector.

Ramp-Up Strategy

The Custom Incentive Program CSP will develop marketing material, including initial program offering information and case studies, to distribute to customers through both trade allies and various groups.

Marketing Strategy

The program relies on customer marketing and trade ally promotion. PPL Electric, the Advertising CSP, and the Custom C&I CSP will develop a marketing strategy, which may include:

- Communicating and providing access to program information on the Company’s web site.
- Promoting the program in PPL Electric’s C&I customer web newsletter.
- Advertising using newspaper, radio, direct mail, bill inserts, cross-program advertisements, commercial ads, and other mass media.
- Coordinating advertising opportunities with trade allies.
- Developing, publishing and distributing program brochure and case studies.
- One-on-one marketing to Small C&I customers through Trade Allies, Business Accounts Specialists, and outreach.
- Targeting marketing to facility managers and building or process engineers, building owners and managers associations, HVAC contractors, energy services firms, architects and engineers, real estate developers, economic development organizations, customer advocacy groups, trade associations, and other trade allies to encourage installation of new energy-efficient technologies and adoption of best operating practices.
- Specific outreach to individual tenants as well as building owners and property managers in leased commercial buildings to encourage participation in the program.
- Targeted marketing to specific sectors identified as having a high level of unrealized energy-efficiency potential.

- Provide limited time offer initiatives.

Eligible Measures and Incentive Strategy

The per-customer-site cap is defined as one building with one or more meters. Multiple sites and parent company cap will apply to a campus setting or multiple buildings (on the same property or in different locations) with a common owner.

The measures, eligibility requirements, number of participants, and incentives are approximate and may change to reflect progress, changes in TRM, changes in market conditions, and other factors. For clarity, the measure description, eligibility rating, and incentive description may not include all details. Examples of custom projects include chiller replacements, air compressor improvements, equipment control projects, and experimental technologies.

Energy-efficiency projects must meet a TRC of greater than 1.1 to be eligible for incentives.

During meetings with stakeholders, questions were raised about including Combined Heat and Power as part of the Custom Incentive Program. CHP projects will be accepted with the caveat that they meet a TRC of 1.25 or greater. Experience in Phase I with CHP projects provided valuable insights about the high degree of uncertainties CHP projects that go into calculating savings. (e.g. hours of operation, energy costs, savings over the lifetime.)

Table N3 lists eligible measures and incentives.

Table N3: Custom Incentive Program (Small C&I) Eligible Measures

Measure	Incentive
Equipment, project or process improvement incentive	Up to \$500,000 per customer site per year or \$1 million per parent company per year for customers with multiple sites. Caps are per program year. Incentive cannot exceed 50% of the incremental cost.
CHP projects	

Program Start Date with Key Scheduled Milestones

Strategic planning and execution action items for the Custom Incentive Program are listed in Table N4. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table N4: Custom Incentive Program (Small C&I) Schedule and Milestones

Schedule	Milestones
10/31/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/30/12	Renegotiate contract with CSP.
12/24/12	Execute program implementation contract with CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be similar to the Phase I Evaluation Plan for the Custom Program. Reported and verified savings will be determined using the method specified in the TRM (algorithm with open variables) to calculate the savings for measures that are in the TRM (but are defined as “custom” because PPL Electric does not have a prescriptive rebate.) For measures (custom projects) that are not in the TRM, the CSP will develop a site-specific M&V plan (SSMVP) that will be available to the SWE. The Evaluation Plan will define when SSMVPs are required (such as for large projects that meet a defined savings size) and when they are optional. The EM&V CSP will review the SSMVP, confirm the quantity of measures, and will confirm savings were determined in accordance with the TRM or the SSMVP.

Administrative Requirements

Strategic planning and execution action items are listed for the Custom Incentive Program (Small C&I) in **Table N5**. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table N5: Custom Incentive Program (Small C&I) Stakeholder Roles

Primary Conservation Service Provider (CSP)	<ul style="list-style-type: none"> • Recruiting potential customers. • Fielding customer calls and inquiries. • Reviewing applications submitted and verify eligibility for participation. • Calculating individual project TRC. • Providing application approval letter to customer. • Communicating effectively with customer, contractor and key account manager. • Conducting pre and post visit. • Writing SSMVPs. • Providing reservation letter to customer. • Assisting customers in the completion of all required documents. • Analyzing data and calculate reported savings. • Providing all required documents to PPL Electric. • Recording all updates to each project. • Preparing bi-weekly update on all projects and expected completion dates. • Producing and sending incentive checks and letters to customers.
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PPL Electric	<ul style="list-style-type: none"> Monitoring EEMIS to ensure accurate information. Overseeing CSP activities to ensure compliance with the PPL EE&C, Pennsylvania Public Utility Commission protocols and PPL Electric. Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. Providing updates and communicating effectively with key account managers.
EM&V CSP	<ul style="list-style-type: none"> Conducting evaluation, measurement and verification of energy savings. Coordinating protocols with the Statewide Evaluator.
Business Account Managers	<ul style="list-style-type: none"> Recruiting potential customers. Explaining program requirements to customers. Communicating effectively with CSP, PPL Electric and customer.
Customer	<ul style="list-style-type: none"> Completing required PPL Electric forms prior to starting a project. Agreeing and allowing for pre- and post-testing.

Estimated Participation

It is estimated that there will be up to 64 Small C&I custom incentive projects completed in Phase II.

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

Table N6: Custom Incentive Program (Small C&I) Summary of Project Benefits, Costs and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	1,862	1,397	1,250	4,508
Capacity Savings (MW)	0.27	0.20	0.18	0.66
Total Resource Cost	\$1,143,143	\$905,987	\$825,885	\$2,875,015
Direct Participant Costs	\$672,631	\$213,993	\$425,886	\$1,312,510
Direct Utility Costs	\$470,512	\$691,995	\$399,999	\$1,562,505
Customer Incentives	\$152,012	\$404,494	\$127,498	\$684,004
EDC Labor, Materials & Supplies	\$128,500	\$145,000	\$145,000	\$418,500
CSP Variable Costs	\$190,000	\$142,501	\$127,501	\$460,001
CSP Labor, Supplies & Marketing	\$0	\$0	\$0	\$0

	TRC Test
NPV Benefits	\$4,192,367
NPV Costs	\$2,687,165
Net Benefits (NPV)	\$1,505,202
Benefit-Cost Ratio	1.56

Large C&I
Section 3.4

Prescriptive Equipment Program (Large C&I)
(Large C&I Sector)

2013–2016

Summary

Prescriptive Equipment Program (Large C&I) provides rebates and incentives from a list of energy-efficiency measures and services. The program also offers a Direct Discount component. Direct Discount is designed to make it easier and more economical for businesses to install energy-efficient lighting and commercial refrigeration upgrades. Customers may choose to have a contractor evaluate and install energy-efficient lighting and refrigeration. The contractor completes and submits required paperwork providing ease of use. Starting in PY6, for all projects, customers will be required to obtain pre-approval from PPL Electric before ordering energy-efficiency equipment.

One CSP will be engaged to manage and coordinate the Prescriptive Equipment and Custom Incentive Program. The CSP will be responsible to provide a call center and rebate processing services. One CSP serving all non-residential sectors provides synergy saving and a “one stop” service for customers.

Objectives

The objectives of the Prescriptive Equipment Program (Large C&I) are to:

- Provide energy saving opportunities to qualified customers.
- Increase the market penetration of high-efficiency technologies and building systems for customers by incentivizing high-efficiency and ENERGY STAR®-rated appliances, lighting equipment and HVAC systems.
- Approve and train contractors to conduct on-site facility assessments and pass through financial incentives for energy efficient refrigeration measures, lighting upgrades, and lighting control upgrades through a direct discount delivery mechanism.
- Engage trade allies to provide high-efficiency technology options to customers.
- Promote other PPL Electric energy-efficiency programs.
- Obtain participation of approximately 300 customers through 2016, with a total reduction of approximately 53,600 MWh/yr.

Target Market

This program will be available to all Large C&I PPL Electric customers. The program will target customers in these sectors to replace older, inefficient equipment and to educate this customer segment on cost effective ways to reduce energy consumption. **Table O1** outlines the eligibility requirements for this program.

Table O1: Prescriptive Equipment Program (Large C&I) Customer Eligibility Parameters

Customer Segment	Large C&I
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Rate Class	LP4,LP5, LP6, LPEP, IST, ISP, ISA, PR1, PR2
Building Type	Large commercial, large industrial
Building Vintage	Existing and new construction
Building Ownership	Owner, tenant with owner approval

Program Description

The program promotes the purchase and installation of a wide range of high-efficiency equipment, including technologies such as customer owned LED area lighting appropriate to specific building types for Large C&I customers and provides these customers with financial incentives to offset the higher purchase costs of energy-efficient equipment and offers information on the features and benefits of energy-efficient equipment.

Implementation Strategy

The Prescriptive Equipment Program (Large C&I) relies on projects initiated by the customer, trade allies and the CSP.

The CSP will promote the various energy-efficiency options available to this varied customer segment through a host of different media. The CSP will leverage trade ally and manufacturer relationships to co-market energy efficient equipment. In addition, the CSP may hold webinars, seminars, participate in trade shows and individual outreach to trade ally and manufacturers to reinforce current program offerings. Marketing materials with case studies will be used to market the program.

Strategies for marketing incentives may include:

- Advertising in local newspaper and other mass media.
- Cross-promoting through other PPL Electric efficiency programs.
- Using limited time offers, special promotions and no customer cost measures to promote energy-efficiency.

Key steps in this program are:

- Directing customers to the program through PPL Electric’s marketing activities, the Company website, equipment dealers and equipment installation contractors/trade allies.
- Working with equipment/appliance retailers and installation contractors to fill out program applications ensuring customers have required documentation to submit for processing.
- Reviewing documentation to verify the applicant is a PPL Electric customer and the installed equipment meets eligibility criteria.
- Starting in PY6, for all projects customers will be required to obtain pre-approval from PPL Electric before ordering energy-efficiency equipment.
- Recruiting and developing a robust network of trade allies and responsibility to hold Direct Discount contractors accountable for completing work and adhering to the CSP requirements.
- Processing rebate checks for qualified equipment.
- Verifying equipment/appliance installation for a sample of participants, which will be a part of measurement and verification.

Program Issues, Risks and Risk Management Strategy

Table O2 presents key market risks to an effective Prescriptive Equipment Program (Large C&I) well as the strategies the program will use to mitigate each risk.

Table O2: Prescriptive Equipment Program (Large C&I) Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
Higher up-front costs for high-efficiency equipment.	<ul style="list-style-type: none"> • Decision makers chose cheaper, less efficient equipment. • Payback or IRR for projects is too long for customers. • Restricted amount of capital available, energy using equipment not a priority for business. 	<ul style="list-style-type: none"> • Make customer operations more attractive with higher efficiency equipment installed. • Offer incentives and programs to reduce payback and IRR for business owners. • Educate customers on long term benefits of energy-efficiency, available incentives and other programs that may help.
Equipment is typically replaced only upon failure.	<ul style="list-style-type: none"> • Customers see no need to replace functioning equipment. • Customers not informed on most efficient-equipment available when the need to replace it is immediate, and some more efficient-equipment may have longer delivery time that would affect customer operations. 	<ul style="list-style-type: none"> • Educate and encourage trade allies and owners to replace equipment in order to obtain rebates and start realizing energy savings sooner. • Educate trade allies and customers on energy efficient choices available before equipment fails and encourage equipment replacement planning for their business.
Energy-efficiency is not commonly prioritized by the customer or building owner.	<ul style="list-style-type: none"> • High-efficiency equipment is viewed as being too expensive and/or too complicated. • Owners not informed on how their facility uses energy. • Existing debt. • Need to attend to fluctuating commodity price. Servicing existing debt may limit funds to purchase new efficient equipment. 	<ul style="list-style-type: none"> • Provide information to customers on value of energy-efficiency. • Offer planning assistance and incentives to enhance energy savings.
Training is not a priority	<ul style="list-style-type: none"> • Customers nor trade allies understand importance nor have time to participate in training. 	<ul style="list-style-type: none"> • Promote the importance of value of training.

Anticipated Costs to Participating Customers

Incremental costs incurred by Large C&I customers participating in the Prescriptive Equipment Program (Large C&I) will be subject to their level of participation and the specific type of efficient equipment installed in the program.

Ramp-Up Strategy

During PY5, the Prescriptive Equipment Program (Large C&I) CSP will develop marketing material, including initial program offering information and case studies, to distribute to customers through both trade allies and various groups.

The Prescriptive Equipment Program (Large C&I) is being continued from Phase I to Phase II. During PY5, the Prescriptive Equipment Program (Large C&I) CSP will develop marketing material, including initial program offering information and case studies, to distribute to customers through both trade allies and various groups.

At the start of Phase II, the Large C&I sector may have “gone dark” due to funds from Phase I being fully allocated. If that is the case, communications will be sent to trade allies, Large C&I customers and interested parties by June 2013 indicating the program is again available and indicating changes from the program offered in Phase I.

Marketing Strategy

Prescriptive Equipment Program (Large C&I) relies on projects initiated by the customer, trade allies and the CSP.

The CSP will promote the various energy-efficiency options available to this varied customer segment through a variety of different media. Strategies for marketing may include:

- Leveraging trade ally and manufacturer relationships to co-market energy-efficient equipment.
- Hosting webinars.
- Participating in trade shows and other outreach.
- Publishing charts, brochures and case studies.
- Providing newsletters and coordinating with key market partners include trade associations and agencies.
- Advertising in local newspaper and other mass media.
- Using limited time offers, special promotions and no customer cost measures to promote energy-efficiency.
- Cross-promoting through other PPL Electric efficiency programs.

Eligible Measures and Incentive Strategy

Rebates and incentives will be paid to qualified customers who submit completed applications and documentation of the efficiency measures installed. Customers will have the option to assign rebate payments to a third party. Customers can work with a program-approved Direct Discount contractor and the contractor will conduct a free energy assessment to identify potential energy-saving equipment options and determine the amount of potential incentives paid by the Direct Discount service. Direct Discount rebates will be dependent on calculated energy savings upon installation. Direct Discount rebates will be paid directly to the contractor after review of required paper work and documentation of installed measures.

PPL Electric will perform periodic, at least annually, reviews of the Prescriptive Equipment Program (Large C&I) and may adjust incentive levels, performance standards and participation criteria as market conditions change in the future. PPL Electric will track customer installations and include such data within its annual report on the program.

Table O3 lists the proposed measures and incentive levels for the Prescriptive Equipment Program (Large C&I) to be offered by PPL Electric to eligible customers. The listing includes those measures deemed to be appropriate for Prescriptive Equipment Program (Large C&I) participants and may be changed with measures added or deleted based on customer need and technology improvements.

Table O3: Prescriptive Equipment Program (Large C&I) Eligible Measures

Measure	Eligibility Rating	Incentive
ASHP	SEER 15,16	\$50-\$200/unit
ASHP (>5.4 tons)	Qualifying EER or COP	\$15-\$25/ton
Evaporator fans for refrigeration	Determined by pre and post customer choice of fan motor type	\$10-\$120/fan
Steam Cookers	ENERGY STAR®	\$50-\$100/pan
Commercial refrigerators	ENERGY STAR®	\$70/unit
Ice makers	ENERGY STAR® or CEE tier 2	\$115
New construction lighting	A minimum 5% Energy-efficiency achieved above ASHRAE 90.1-2007 standard	\$0.10/annual kWh
LED exit signs	LED replacing incandescent	\$25/sign
Occupancy sensors	Wall, ceiling or fixture mounted	Up to \$45/sensor
T5	New T5 lamps and ballasts (Cee1.org list)	\$1 to \$6/lamp installed
T8 high performance fixtures	Retrofit fixture with new high performance T8 lamp and ballast (Cee1.org list)	\$2 to \$10/lamp installed
High performance T8 lamps	Retrofit T8 with qualified high performance (cee1.org list)	\$1/lamp installed
High bay T5	New T5 fixture (>100watts)	\$6-\$16/lamp installed
De-lamp and install reflectors	Replace existing fixture with T5,T8 high performance fixture with one or more lamps removed, must include electronic ballast and reflector (Cee1.org list)	\$5-\$30 depending on number and type of lamps
LED (bulk purchase outside of other programs)	Replace existing incandescent lamps with ENERGY STAR® LED	Up to 50% cost of bulb, up to \$5/LED
Rebate for non-ENERGY STAR® and Non-Design Lights Consortium LED	Require pre-approval limited to a total of 10 LED bulb types per customer	Up to 50% cost of bulb, up to \$2/LED

bulbs		
LED area lights	ENERGY STAR®, Design Lights Consortium Listed or LM 79/LM 80 tested and approved	\$0.10 per annual kWh calculated saved per PA lighting form
LED interior lighting	ENERGY STAR®, Design Lights Consortium Listed, or LM 79/LM 80 tested and approved	\$0.10 per annual kWh calculated saved per PA lighting form
Non-electric high efficiency central heat (gas, oil, propane. Max. of 100 units for all programs)	See Table M3 for details	

Eligible Direct Discount Measures (Large C&I)

Measure	Eligibility Rating	Incentive
LED lamps	ENERGY STAR®, Design Lights Consortium or must be LM-79 and LM-80 tested and approved	\$0.05/annual kWh saved
Other lighting fixtures	ENERGY STAR®	\$0.17/annual kWh saved
LED Interior Lighting	ENERGY STAR®, Design Lights Consortium or must be LM-79 and LM-80 tested and approved	\$0.17/annual kWh saved
LED Area Lighting	ENERGY STAR® or Design Lights Consortium listed. (exceptions will require LM-79/ LM-80 data and PPL Electric’s approval)	\$0.17/annual kWh saved
Lighting occupancy sensors	Wall, Fixture or Ceiling Mounted	\$0.17/annual kWh saved
T5, high performance T8	New/retrofit T5 or high performance T8 lamp and ballast (Cee1.org list)	\$0.17/annual kWh saved
High Bay: T5, high performance T8	New T5 or high performance T8 (>100 watts) (Cee1.org list)	\$0.17/annual kWh saved
Refrigeration measures	Includes measures such as anti-sweat heater controls, evaporator fans (ECM or PSC motor)	\$0.17/annual kWh saved

Program Start Date with Key Scheduled Milestones

Strategic planning and execution action items are listed for the Prescriptive Equipment Program (Large C&I) in **Table O4**. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table O4: Prescriptive Equipment (Large C&I) Program Schedule and Milestones

Schedule	Milestones
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10/31/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/30/12	Renegotiate contract with CSP.
12/24/12	Execute program implementation contract with CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

Reported and verified savings will be determined using the method specified in the TRM (algorithms with open variables for some measures; fully stipulated savings for some measures) to calculate the savings of each measure, and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of each measure and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Prescriptive Equipment (Large C&I) Program. **Table O5** lists the major anticipated participant roles for the program.

Table O5: Prescriptive Equipment Program (Large C&I) Stakeholder Roles

Primary Conservation Service Provider (CSP)	<ul style="list-style-type: none"> • Outreach to customers, trade allies and manufacturers. • Assistance to customers in completing applications. • Developing and distributing targeted energy-efficiency educational materials to agricultural customer. • Recruiting, managing and ensuring Direct Discount contractors perform in compliance with program rules. • Verifying contractor eligibility for Direct Discount participation. • Educating Direct Discount approved contractors about energy-efficiency measures and offers. • Conducting QA/QC on pre and post project installation as determined by PPL Electric staff. • Processing rebate payments to customers and contractors. • Managing and reporting savings data. • Fielding customer calls and inquiries. • Verifying Direct Discount installation conditions (pre and post), disburse incentives and provide program oversight. • Reporting and uploading data to PPL Electric’s EEMIS.
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PPL Electric	<ul style="list-style-type: none"> Guiding program strategy. Provide management oversight to CSP, direction for initiatives and comments on proposed changes as market changes. Providing administrative support. Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. Ensure all reporting and documentation is submitted in a timely manner and accurate.
EM&V CSP	<ul style="list-style-type: none"> Conducting evaluation, measurement and verification of energy savings. Coordinating protocols with the Statewide Evaluator.
Building Owner	<ul style="list-style-type: none"> Gain knowledge of products and services best suited for increased energy-efficiency. Allowing for pre and post audits. Purchasing energy efficient equipment to replace outdated or non-efficient equipment and completing PPL Electric Rebate Applications.
Direct Discount Program Approved Contractors	<ul style="list-style-type: none"> Conducting free energy assessments and installing energy-efficient measures. Providing customers with energy-efficiency options. Attending required training for program participation.

Estimated Participation

It is anticipated that a total of 300 customers will participate in the Prescriptive Equipment Program (Large C&I). It is difficult to calculate an exact number by measures because of uncertainty in the marketplace, changes in the TRM that may require reducing a rebate, and customers not having available resources to participate.

It is estimated that approximately 20 Large C&I customers will participate in the Direct Discount Program in Phase II. The average Direct Discount project is expected to be 160,000 kWh.

Note: Making Direct Discount available to Large C&I customers is a result of discussion from the lighting stakeholder meeting.

Table O6: Prescriptive Equipment Program (Large C&I) Summary of Project Benefits, Costs and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	12,319	20,648	20,648	53,615
Capacity Savings (MW)	2.22	3.74	3.74	9.70
Total Resource Cost	\$5,960,558	\$10,246,274	\$10,246,274	\$26,453,106
Direct Participant Costs	\$3,615,958	\$5,159,310	\$6,270,310	\$15,045,578
Direct Utility Costs	\$2,344,600	\$5,086,964	\$3,975,964	\$11,407,529
Customer Incentives	\$1,483,400	\$3,624,605	\$2,513,605	\$7,621,610
EDC Labor, Materials & Supplies	\$183,500	\$250,000	\$250,000	\$683,500
CSP Variable Costs	\$677,700	\$1,206,110	\$1,206,110	\$3,089,919
CSP Labor, Supplies & Marketing	\$0	\$6,250	\$6,250	\$12,500

Section 4: Program Management and Implementation Strategies

	TRC Test
NPV Benefits	\$34,947,473
NPV Costs	\$24,197,365
Net Benefits (NPV)	\$10,750,109
Benefit-Cost Ratio	1.44

**Custom Incentive Program (Large C&I)
(Large C&I Sector)**

2013–2016

Summary

The Custom Incentive Program (Large C&I) offers customers flexibility in their choice of energy-efficiency projects. Custom Incentive is intended for energy-efficient custom measures that are considered too complex, highly variable from site to site, or too unique to be included in the list of standard measures in the TRM. An incentive is based on annual kWh reduced or project cost. Projects vary in size and scope. Customers must agree to pre- and post-testing to verify savings. The same CSP responsible for implementing the Prescriptive Equipment Program will also implement the Custom Incentive Program. This will make communications with customers and trade allies more effective, convenient and efficient.

Objectives

The objectives of The Custom Incentive Program (Large C&I) are to:

- Encourage PPL Electric Large C&I customers to install high-efficiency custom measures or processes. In PY5, “custom” measures can include any measure not included in PPL Electric’s Prescriptive Equipment Program. Starting in PY6, “custom” measures are only those measures that are not included in the TRM.
- Encourage qualifying equipment repairs and optimization and operational or process changes that reduce electricity consumption.
- Encourage a “whole facility” approach to energy-efficiency.
- Increase customer awareness of the features and benefits of electric energy-efficient equipment.
- Increase the market penetration of high-efficiency equipment.
- Support emerging technologies and non-typical efficiency solutions in cost-effective applications.
- Encourage advanced energy-efficiency strategies required for certification by national market transformation programs such as Leadership in Energy and Environmental Design (LEED), Architecture 2030, ENERGY STAR® Buildings, or Energy Policy Act of 2005 (EPA) tax credits.
- Promote other PPL Electric energy-efficiency programs.
- Achieve approximately 62 completed projects through 2016, with a total reduction of approximately 54,000 MWh/yr.

Target Market

This program will be available to all Large C&I PPL Electric customers. The program will target customers in these sectors to replace older, inefficient equipment and to educate this customer segment on cost effective ways to reduce energy consumption. **Table P1** outlines the eligibility requirements for this program.

Table P1: Custom Incentive Program (Large C&I) Customer Eligibility Parameters

Customer Sector(s)	Large C&I
Rate Class	LP4,LP5, LP6, LPEP, IST, ISP, ISA, PR1, PR2
Building Type	Large commercial, large industrial
Building Vintage	Existing and new construction
Building Ownership	Owner or tenant with owner approval

Program Description

The Custom Incentive Program (Large C&I) provides financial incentives to customers installing measures that are not included in the TRM. These measures may include new or replacement energy-efficient equipment, retro-commissioning, repairs, equipment optimization, and operational and process improvements that result in cost-effective energy-efficiency savings. To qualify for financial incentives, eligible customers are required to provide documentation that their proposed efficiency upgrades pass the Program’s cost-effectiveness threshold and technical criteria.

PPL Electric provides reimbursement following successful implementation of a cost-effective project. Reimbursements may be reduced based on type or size. The program offers performance-based incentives based on avoided or reduced kilowatt hours (kWh) resulting from the project. Incentives are subject to an annual cap for each project and for each participating customer. Incentives cannot exceed 50% of total project cost. In PY5, pre-approval is required before a customer’s project goes into service. Starting in PY6, pre-approval is required before a customer purchases their measures.

Implementation Strategy

This program relies on both CSPs and trade allies for implementation. PPL Electric or the Custom Program CSP will handle customer intake and routing and processing of applications. The CSP works directly with trade allies and customers to: help identify and develop customer project ideas; and implement on behalf of the customer. The Custom CSP will perform scope analysis, cost, and potential energy savings of proposed projects; conduct field verification of completed projects; and help to determine the reported energy savings from installed projects. The EM&V CSP will conduct independent evaluations to determine verified savings, tracking monthly savings, providing reports and data uploads to PPL Electric.

Program Issues, Risks and Risk Management Strategy

Table P2 presents key market risks to an effective Custom Incentive Program (Large C&I) as well as the strategies the program will use to mitigate each risk.

Table P2: Custom Incentive Program (Large C&I) Issues, Risks and Risk Management Strategy

Market Risks	Implications	Management Strategy
Higher first cost of energy-efficient equipment.	<ul style="list-style-type: none"> Implementing a project can be expensive upfront. 	<ul style="list-style-type: none"> Offer customized incentives on equipment to offset higher cost.
Not a high priority; limited access to discretionary cash/credit.		
Lack of program awareness and “emergency replacement” scenario among target customers.	<ul style="list-style-type: none"> This diverse market may run into an emergency situation where they need to implement or replace a piece of equipment. Customers tend to be unaware of program and 	

	may implement measures that are not eligible.	
Tenant/landlord issues; reaching the decision maker or trade ally/contractor.	<ul style="list-style-type: none"> Decision-makers are unaware. Trade allies/contractors have significant influence on what the customer is buying and installing. 	<ul style="list-style-type: none"> Develop specific outreach activities and educational/promotional messages to target decision makers and facility operators to facilitate understanding of capital budget and operating concerns. Engage trade allies/contractors to promote the program to their customers.

Anticipated Costs to Participating Customers

The measure rebates are designed to cover approximately 50% of the customer incremental cost of the project, up to a cap of \$500,000 per customer site per year, or \$1 million per parent company per year for customers with multiple facilities, not to exceed 50% of project cost. These values were chosen to increase participation and provide equity within each sector.

Ramp-Up Strategy

The Custom Incentive Program (Large C&I) is being continued from Phase I to Phase II. During PY5, the Custom Incentive Program CSP will develop marketing material, including initial program offering information and case studies, to distribute to customers through both trade allies and various groups.

Marketing Strategy

The program relies on customer marketing and trade ally promotion. PPL Electric, the Advertising CSP, and the Custom C&I CSP will develop a marketing strategy, which may include:

- Communicating and providing access to program information on the Company’s web site.
- Promoting program in PPL Electric’s C&I customer web newsletter.
- Advertising using newspaper, radio, direct mail, bill inserts, cross-program advertisements, commercial ads, and other mass media.
- Coordinating advertising opportunities with trade allies.
- Developing, publishing and distributing program brochure and case studies.
- One-on-one marketing to C&I customers through Trade Allies, and targeted outreach.
- Targeting marketing to facility managers and building or process engineers, building owners and managers associations, HVAC contractors, energy services firms, architects and engineers, real estate developers, economic development organizations, customer advocacy groups, trade associations, and other trade allies to encourage installation of new energy-efficient technologies and adoption of best operating practices.
- Specific outreach to individual tenants as well as building owners and property managers in leased commercial buildings to encourage participation in the program.
- Targeted marketing to specific sectors identified as having a high level of unrealized energy-efficiency potential.
- Provide limited time offer initiatives.

Eligible Measures and Incentive Strategy

The per-customer-site cap is defined as one building with one or more meters. Multiple sites and parent company cap will apply to a campus setting or multiple buildings (on the same property or in different locations) with a common owner.

The measures, eligibility requirements, number of participants, and incentives are approximate and may change to reflect progress, changes in TRM, changes in market conditions, and other factors. For clarity, the measure description, eligibility rating, and incentive description may not include all details. Examples of custom projects include chiller replacements, air compressor improvements, equipment control projects, and experimental technologies.

Energy-efficiency projects must meet a TRC of greater than 1.1 to be eligible for incentives.

During meetings with stakeholders, questions were raised about including CHP as part of the Custom Incentive Program. CHP projects will be accepted with the caveat that they meet a TRC of 1.25 or greater. Experience in Phase I with CHP projects provided valuable insights about the high degree of uncertainties CHP that go into calculating savings, e.g., hours of operation, energy costs, and savings over the lifetime.

Table P3: Custom Incentive Program (Large C&I) Eligible Measures

Measure	Incentive	
Equipment, project or process improvement incentive	\$0.08-\$0.10/kWh saved	Up to \$500,000 per customer site per year or \$1 million per parent company per year for customers with multiple sites. Caps are per program year. Incentive cannot exceed 50% of the incremental cost.
CHP projects	\$0.05/kWh saved	

Program Start Date with Key Scheduled Milestones

Strategic planning and execution action items for the Custom Incentive Program are listed in **Table P4**. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table P4: Custom Incentive Program (Large C&I) Program Schedule and Milestones

Schedule	Milestones
10/31/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/30/12	Renegotiate contract with CSP.
12/24/12	Execute program implementation contract with CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be similar to the Phase I Evaluation Plan for the Custom Program. Reported and verified savings will be determined using the method specified in the TRM (algorithm with open variables) to calculate the savings for measures that are in the TRM (but are defined as “custom” because PPL Electric does not have a prescriptive rebate. For measures (custom projects) that are not in the TRM, the CSP will develop a site-specific M&V plan (SSMVP) that will be available to the SWE. The Evaluation Plan will define when SSMVPs are required (such as for large projects that meet a defined savings size) and when they are optional. The EM&V CSP will review the SSMVP, confirm the quantity of measures, and will confirm savings were determined in accordance with the TRM or the SSMVP.

Administrative Requirements

Strategic planning and execution action items are listed for the Custom Incentive Program (Large C&I) in **Table P5**. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table P5: Custom Incentive Program (Large C&I) Stakeholder Roles

Primary Conservation Service Provider (CSP)	<ul style="list-style-type: none"> • Recruiting potential customers. • Providing a call center, fielding customer calls and inquiries and tracking call center statistics. • Reviewing applications submitted and verify eligibility for participation. • Calculating individual project TRC. • Providing application approval letter to customer. • Communicating effectively with customer, contractor and key account manager. • Conducting pre and post visit. • Writing SSMVPs. • Providing reservation letter to customer. • Assisting customers in the completion of all required documents. • Analyzing data and calculate reported savings. • Providing all required documents to PPL Electric. • Recording all updates to each project. • Preparing bi-weekly update on all projects and expected completion dates. • Producing and sending incentive checks and letters to customers.
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PPL Electric	<ul style="list-style-type: none"> • Monitoring EEMIS to ensure accurate information. • Overseeing CSP activities to ensure compliance with the PPL EE&C, Pennsylvania Public Utility Commission protocols and PPL Electric. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. • Providing updates and communicating effectively with key account managers.
EM&V CSP	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the Statewide Evaluator.
Key Account Managers	<ul style="list-style-type: none"> • Recruiting potential customers. • Explaining program requirements to customers. • Communicating effectively with CSP, PPL Electric and customer.
Customer	<ul style="list-style-type: none"> • Completing required PPL Electric forms prior to starting a project. • Providing operational data as required. • Agreeing and allowing for pre- and post-testing.

Estimated Participation

It is estimated that there will be up to 62 Large C&I custom incentive projects completed in Phase II.

Custom Incentive Program (Large C&I) Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

Table P6: Custom Incentive Program (Large C&I) Summary of Project Benefits, Costs and Cost-Effectiveness Large C&I

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	18,620	19,502	15,680	53,802
Capacity Savings (MW)	2.61	2.74	2.20	7.55
Total Resource Cost	\$8,929,948	\$9,364,069	\$7,554,373	\$25,848,391
Direct Participant Costs	\$6,726,447	\$4,959,059	\$5,344,390	\$17,029,896
Direct Utility Costs	\$2,203,502	\$4,405,010	\$2,209,984	\$8,818,495
Customer Incentives	\$1,520,002	\$3,678,010	\$1,599,984	\$6,797,996
EDC Labor, Materials & Supplies	\$113,500	\$130,000	\$130,000	\$373,500
CSP Variable Costs	\$570,000	\$597,000	\$480,000	\$1,646,999
CSP Labor, Supplies & Marketing	\$0	\$0	\$0	\$0

	TRC Test
NPV Benefits	\$34,345,582
NPV Costs	\$24,049,057
Net Benefits (NPV)	\$10,296,525
Benefit-Cost Ratio	1.43

Government/Educational/Non-Profit (GNI)

Section 3.5

Prescriptive Equipment Program (GNI) (GNI Sector)

2013–2016

Summary

The Prescriptive Equipment Program (GNI) provides rebates and incentives from a list of energy-efficiency measures and services. The program also offers a Direct Discount component. Direct Discount is designed to make it easier and more economical for small businesses and institutions to install energy-efficient lighting and commercial refrigeration upgrades. Customers may choose to have a contractor evaluate and install energy-efficient lighting and refrigeration. The contractor completes and submits required paperwork providing ease of use. Starting in PY6, for all projects, customers will be required to obtain pre-approval from PPL Electric before ordering energy-efficiency equipment.

Stakeholders asked that PPL Electric consider offering Direct Discount to schools, noting schools might be interested in upgrading lighting and refrigeration. Direct Discount will, in Phase II, be marketed to schools.

One CSP will be engaged to manage and coordinate the Prescriptive Equipment and Custom Incentive Program. The CSP will be responsible to provide a call center and rebate processing services. One CSP serving all non-residential sectors provides synergy saving and a “one stop” service for customers.

Objectives

The objectives of the Prescriptive Equipment Program (GNI) are to:

- Provide energy saving opportunities to qualified customers.
- Increase the market penetration of high-efficiency technologies and building systems for customers by incentivizing high-efficiency and ENERGY STAR®-rated appliances, lighting equipment and HVAC systems.
- Approve and train contractors to conduct on-site facility assessments and pass through financial incentives for energy efficient refrigeration measures, lighting upgrades, and lighting control upgrades through a direct discount delivery mechanism.
- Engage trade allies to provide high-efficiency technology options to customers.
- Promote other PPL Electric energy-efficiency programs.
- Obtain participation of approximately 4,000 customers through 2016, with a total reduction of approximately 71,000 MWh/yr.

Target Market

The program will target customers to replace older, inefficient equipment and to educate this customer segment on cost effective ways to reduce energy consumption. This program will be available to schools, government operations, non-profits, and institutions of any rate class.

Table Q1 outlines the eligibility requirements for this program.

Table Q1: Prescriptive Equipment Program (GNI) Customer Eligibility Parameters

Customer Segment	GNI
Rate Class	All
Building Type	Institutional, government, non-profit
Building Vintage	Existing and new construction
Building Ownership	Owner, tenant with owner approval

Program Description

The program promotes the purchase and installation of a wide range of high-efficiency equipment, including technologies appropriate to specific building types for GNI customers and provides these customers with financial incentives to offset the higher purchase costs of energy-efficient equipment and offers information on the features and benefits of energy-efficient equipment.

Implementation Strategy

PPL Electric staff will manage the Prescriptive Equipment Program CSP. The CSP will undertake a broad spectrum of responsibilities. The CSP will perform customer, trade ally, and manufacturer outreach, and program marketing. The Prescriptive Equipment Program CSP will develop, update and process rebate applications and payments. The Advertising and Marketing CSP will provide marketing services for the Program engaging customers, trade allies and appropriate media source for targeted audiences.

Key steps in this program are:

- Directing customers to the program through PPL Electric’s marketing activities, the Company website, equipment dealers and equipment installation contractors/trade allies.
- Working with equipment/appliance retailers and installation contractors to fill out program applications ensuring customers have required documentation to submit for processing.
- Reviewing documentation to verify the applicant is a PPL Electric customer and the installed equipment meets eligibility criteria.
- Starting in PY6, for all projects customers will be required to obtain pre-approval from PPL Electric before ordering energy-efficiency equipment.
- Recruiting and developing a robust network of trade allies and responsible to hold Direct Discount contractors accountable for completing work and adhering to the CSP requirements.
- Processing rebate checks for qualified equipment.
- Verifying equipment/appliance installation for a sample of participants, which will be a part of measurement and verification.

Program Issues, Risks and Risk Management Strategy

Table Q2 presents key market risks to an effective Prescriptive Equipment Program (GNI) well as the strategies the program will use to mitigate each risk.

Table Q2: Prescriptive Equipment Program (GNI) Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
Higher up-front costs for high-efficiency equipment.	<ul style="list-style-type: none"> • Decision makers chose cheaper, less efficient equipment • Payback or IRR for projects is too long for customers • Restricted amount of capital available, energy using equipment not a priority for business 	<ul style="list-style-type: none"> • Make customer operations more attractive with higher efficiency equipment installed. • Offer incentives and programs to reduce payback and IRR for business owners. • Educate customers on long term benefits of energy-efficiency, available incentives and other programs that may help.
Equipment is typically replaced only upon failure.	<ul style="list-style-type: none"> • Customers see no need to replace functioning equipment. • Customers not informed on most efficient-equipment available when the need to replace it is immediate, and some more efficient-equipment may have longer delivery time that would affect customer operations. 	<ul style="list-style-type: none"> • Educate and encourage trade allies and owners to replace equipment in order to obtain rebates and start realizing energy savings sooner. • Educate trade allies and customers on energy efficient choices available before equipment fails and encourage equipment replacement planning for their business.
Energy-efficiency is not commonly prioritized by the customer or building owner.	<ul style="list-style-type: none"> • High-efficiency equipment is viewed as being too expensive and/or too complicated. • Owners not informed on how their facility uses energy. • Existing debt. • Need to attend to fluctuating commodity prices. Servicing existing debt may limit funds to purchase new efficient equipment. 	<ul style="list-style-type: none"> • Provide information to customers on value of energy-efficiency • Offer planning assistance and incentives to enhance energy savings.
Training is not a priority	<ul style="list-style-type: none"> • Customers nor trade allies understand importance nor have time to participate in training. 	<ul style="list-style-type: none"> • Promote the importance of value of training.

Anticipated Costs to Participating Customers

Incremental costs incurred by customers participating in the Prescriptive Equipment Program (GNI) will be subject to their level of participation and the specific type of efficient equipment installed in the program.

Ramp-Up Strategy

The Prescriptive Equipment Program (GNI) is being continued from Phase I to Phase II. During PY5, the Prescriptive Equipment Program CSP will develop marketing material, including initial program offering information and case studies, to distribute to customers through both trade allies and various groups.

Marketing Strategy

The Prescriptive Equipment Program (GNI) relies on projects initiated by the customer, trade allies and the CSP.

The CSP will promote the various energy-efficiency options available to this varied customer segment through a variety of different media. Strategies for marketing may include:

- Leveraging trade ally and manufacturer relationships to co-market energy-efficient equipment.
- Hosting webinars.
- Participating in trade shows and other outreach.
- Publishing charts, brochures and case studies.
- Providing newsletters and coordinating with key market partners include trade associations and agencies.
- Advertising in local newspaper and other mass media.
- Using limited time offers, special promotions and no customer cost measures to promote energy-efficiency.
- Cross-promoting through other PPL Electric efficiency programs.

Eligible Measures and Incentive Strategy

Rebates and incentives will be paid to qualified customers that submit completed applications and documentation of the efficiency measures installed. Customers will have the option to assign rebate payments to a third party. Customers can work with a program-approved Direct Discount contractor and the contractor will conduct a free energy assessment to identify potential energy-saving equipment options and determine the amount of potential incentives paid by the Direct Discount service. Direct Discount rebates will be dependent on calculated energy savings upon installation. Direct Discount rebates will be paid directly to the contractor after review of required paper work and documentation of installed measures. Prescriptive rebates and performance eligibility will be fixed for each measure. Measures not available in the Prescriptive Equipment Program (GNI) may be available for incentives in the Custom Incentive Program and will be dependent on calculated energy savings upon installation.

PPL Electric will perform periodic, at least annually, reviews of the Prescriptive Equipment Program and may adjust incentive levels, performance standards and participation criteria as market conditions change in the future. PPL Electric will track customer installations and include such data within its annual report on the program.

Table Q3 lists the proposed measures and incentive levels for the Prescriptive Equipment Program (GNI) to be offered by PPL Electric to eligible customers. The listing includes those measures deemed to be appropriate for Prescriptive Equipment Program participants and may be changed with measures added or deleted based on customer need and technology improvements.

Table Q3: Eligible Prescriptive Equipment Measures (GNI)

Measure	Eligibility Rating	Incentive
ASHP	SEER 15,16	\$50-\$200/unit
ASHP (>5.4 tons)	Qualifying EER or COP	\$15-\$25/ton
GSHP	Geothermal Ground Source Heat Pump	\$50-\$400/ton
Evaporator fans	Determined by pre and post customer choice of fan motor type	\$10 to \$120/fan
Steam Cookers	ENERGY STAR®	\$50-\$100/pan
Commercial refrigerators	ENERGY STAR®	\$70/unit
Ice makers	ENERGY STAR® or CEE tier 2	\$115
New construction lighting	A minimum 5% Energy-efficiency achieved above ASHRAE 90.1-2007 standard	\$0.10/annual kWh
LED exit signs	LED replacing incandescent	\$25/sign
Occupancy sensors	Wall, ceiling or fixture mounted	Up to \$45/sensor
T5	New T5 lamps and ballasts (cee1.org list)	\$1-\$6/lamp installed
T8 high performance fixtures	Retrofit fixture with new high performance T8 lamp and ballast (cee1.org list)	\$2-\$10/lamp installed
High performance T8 lamps	Retrofit T8 with qualified high performance (cee1.org list)	\$1/lamp installed
High bay T5, high performance T8	New T5 high performance (>100 watts)	\$6-\$16/lamp installed
De-lamp and install reflectors	Replace existing fixture with T5, high performance T8 fixture with one or more lamps removed, must include electronic ballast and reflector (cee1.org list)	\$5-\$30 depending on number and type of lamps
LED (bulk purchase outside of other programs)	Replace existing incandescent lamps with ENERGY STAR® LED	Up to 50% cost of bulb, up to \$5/LED
Rebate for non-ENERGY STAR® and Non-Design Lights Consortium LED bulbs	Requires pre-approval limited to a total of ten LED bulb types per customer	Up to 50% of cost of bulb, up to \$2/LED
Customer owned LED street area lights	ENERGY STAR®, Design Lights Consortium Listed or LM 79/LM 80 tested	\$0.10 per annual kWh calculated saved per PA lighting form
LED interior lighting	ENERGY STAR®, Design Lights Consortium Listed, or LM 79/LM 80 tested and approved	\$0.10 per annual kWh calculated saved per PA lighting form
Customer owned LED street lights	New fixture	\$200-\$400/fixture
Non-electric high efficiency central heat (gas, oil,	See Table M3 for details	

propane). Max. of 100 units for all programs		
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Eligible Direct Discount Measures (GNI)

Measure	Eligibility Rating	Incentive
LED lamps	ENERGY STAR®, Design Lights Consortium or must be LM-79 and LM-80 tested and approved	\$0.05 /annual kWh saved
Other lighting fixtures	ENERGY STAR® fixtures/LED Exit signs	\$0.17 /annual kWh saved
Lighting occupancy sensors	Wall, Fixture or Ceiling Mounted	\$0.17 /annual kWh saved
LED Interior Lighting	ENERGY STAR®, Design Lights Consortium or must be LM-79 and LM-80 tested and approved	\$0.17 /annual kWh saved
LED exit signs	LED replacing incandescent exit signs	For schools participating in School Benchmarking, direct install exit signs in each school building
LED Street/Area Lighting	ENERGY STAR® or Design Lights Consortium listed. (exceptions will require LM79/ LM80 data and PPL Electric’s approval)	\$0.17 /annual kWh saved
Refrigeration measures	Includes measures such as anti-sweat heater controls, evaporator fans (ECM or PSC motor)	\$0.17 /annual kWh saved
T5, high performance T8	New, retrofit T5 or high performance T8 lamp and ballast (cee1.org list)	\$0.17/annual kWh saved
High bay T5, high performance T8	New T5, high performance T8 (>100 watts) (cee1.org list)	\$0.17/annual kWh saved
An enhanced school direct discount program	Public elementary, middle and secondary schools	\$0.23-\$0.33/annual kWh saved

Program Start Date with Key Scheduled Milestones

Strategic planning and execution action items are listed for the Prescriptive Equipment Program in **Table Q4**. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table Q4: Prescriptive Equipment Program (GNI) Schedule and Milestones

Schedule	Milestones
10/31/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/30/12	Renegotiate contract with CSP.
12/24/12	Execute program implementation contract with CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

Reported and verified savings will be determined using the method specified in the TRM (algorithms with open variables for some measures; fully stipulated savings for some measures) to calculate the savings of each measure, and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of each measure and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Prescriptive Equipment (GNI) Program. **Table Q5** lists the major anticipated participant roles for the program.

Table Q5: Prescriptive Equipment Program (GNI) Stakeholder Roles

Primary Conservation Service Provider (CSP)	<ul style="list-style-type: none"> • Outreach to customers, trade allies and manufacturers. • Providing a call center, fielding customer calls and inquiries and tracking call center statistics. • Assistance to customers in completing applications. • Verifying contractor eligibility for Direct Discount participation. • Educating Direct Discount approved contractors about energy-efficiency measures and offers. • Recruit, manage and ensure Direct Discount contractors perform in compliance with program rules. • Conducting QA/QC on pre and post project installation as determined by PPL Electric staff. • Processing rebate payments to customers and contractors. • Managing and reporting savings data. • Fielding customer calls and inquiries. • Verifying Direct Discount installation conditions (pre
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	<p>and post), disburse incentives and provide program oversight.</p> <ul style="list-style-type: none"> • Reporting and uploading data to PPL Electric’s EEMIS.
PPL Electric	<ul style="list-style-type: none"> • Guiding program strategy. • Provide management oversight to CSP, direction for initiatives and comments on proposed changes as market changes. • Providing administrative support. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. • Ensure all reporting and documentation is submitted in a timely manner and accurate.
EM&V CSP	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the Statewide Evaluator.
Building Owner	<ul style="list-style-type: none"> • Gain knowledge of products and services best suited for increased energy-efficiency. • Allowing for pre and post audits. • Purchasing energy efficient equipment to replace outdated or non-efficient equipment and completing PPL Electric rebate applications.
Direct Discount Program Approved Contractors	<ul style="list-style-type: none"> • Conducting free energy assessments and install energy efficient measures. • Providing customers with energy-efficiency options. • Attending required training for program participation.

Estimated Participation

It is anticipated that a total 4000 rebates and incentives will be distributed to customers as part of the Prescriptive Equipment Program (GNI). It is difficult to calculate an exact number by measures because of uncertainty in the marketplace, changes in the TRM that may require reducing a rebate, and customers not having available resources to participate.

It is estimated that approximately 3000 GNI customers will participate in the Direct Discount Program in Phase II. The average Direct Discount project is expected to be 30,000 kWh. Note: Direct Discount will now be promoted to schools. This is a direct result of discussion at a stakeholder meeting.

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

Table Q6: Prescriptive Equipment Program (GNI) Summary of Project Benefits, Costs and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr)	28,199	21,299	21,299	70,798
Capacity Savings (MW)	4.87	3.64	3.64	12.16
Total Resource Cost	\$12,197,888	\$12,637,642	\$12,637,642	\$37,473,172
Direct Participant Costs	\$4,297,438	\$2,258,018	\$4,871,018	\$11,426,473
Direct Utility Costs	\$7,900,450	\$10,379,624	\$7,766,624	\$26,046,698
Customer Incentives	\$5,994,165	\$8,754,753	\$6,141,753	\$20,890,671
EDC Labor, Materials & Supplies	\$98,500	\$115,000	\$115,000	\$328,500
CSP Variable Costs	\$1,807,785	\$1,503,621	\$1,503,621	\$4,815,028
CSP Labor, Supplies & Marketing	\$0	\$6,250	\$6,250	\$12,500

	TRC Test
NPV Benefits	\$56,084,797
NPV Costs	\$34,690,965
Net Benefits (NPV)	\$21,393,833
Benefit-Cost Ratio	1.62

Custom Incentive Program (GNI) (GNI Sector)

2013–2016

Summary

The Custom Incentive Program (GNI) offers customers flexibility in their choice of energy-efficiency projects. Custom Incentive is intended for energy-efficient custom measures that are considered too complex, highly variable from site to site, or too unique to be included in the list of standard measures provided in TRM. An incentive is based on annual kWh reduced or project cost. Projects vary in size and scope. Customers must agree to pre- and post-testing to verify savings. The same CSP responsible for implementing the Prescriptive Equipment Program will also implement the Custom Incentive Program. This will make communications with customers and trade allies more effective, convenient and efficient.

Objectives

The objectives of the Custom Incentive Program (GNI) are to:

- Encourage PPL Electric GNI customers to install high-efficiency custom measures or processes. In PY5, “custom” measures can include any measure not included in PPL Electric’s Prescriptive Equipment Program. Starting in PY6, “custom” measures are only those measures that are not included in the TRM.
- Encourage qualifying equipment repairs and optimization and operational or process changes that reduce electricity consumption.
- Encourage a “whole facility” approach to energy-efficiency.
- Increase customer awareness of the features and benefits of electric energy-efficient equipment.
- Increase the market penetration of high-efficiency equipment.
- Support emerging technologies and non-typical efficiency solutions in cost-effective applications.
- Encourage advanced energy-efficiency strategies required for certification by national market transformation programs such as Leadership in Energy and Environmental Design (LEED), Architecture 2030, ENERGY STAR® Buildings, or Energy Policy Act of 2005 (EPA Act) tax credits.
- Promote other PPL Electric energy-efficiency programs.
- Achieve approximately 30 completed projects through 2016, with a total reduction of approximately 7,400 MWh/yr.

Target Market

This program will be available to all GNI PPL Electric customers. The program will target customers to replace older, inefficient equipment and to educate this customer segment on cost effective ways to reduce energy consumption. **Table R1** outlines the eligibility requirements for this program.

Table R1: Custom Incentive Program (GNI) Customer Eligibility Parameters

Customer Segment	GNI
Rate Class	All
Building Type	Institutional, government, non-profit
Building Vintage	Existing and new construction
Building Ownership	Owner, tenant with owner approval

Program Description

The Custom Incentive Program (GNI) provides financial incentives to customers installing measures that are not included in the TRM. These measures may include new or replacement energy-efficient equipment, retro-commissioning, repairs, equipment optimization, and operational and process improvements that result in cost-effective energy-efficiency savings. To qualify for financial incentives, eligible customers are required to provide documentation that their proposed efficiency upgrades pass the Program’s cost-effectiveness threshold and technical criteria.

PPL Electric provides reimbursement following successful implementation of a cost-effective project. Reimbursements may be reduced based on type or size. The program offers performance-based incentives based on avoided or reduced kilowatt hours (kWh) resulting from the project. Incentives are subject to an annual cap for each project and for each participating customer. Incentives cannot exceed 50% of total project cost. In PY5, pre-approval is required before a customer’s project goes into service. Starting in PY6, pre-approval is required before a customer purchases their measures.

Implementation Strategy

This program relies on both CSPs and trade allies for implementation. PPL Electric or the Custom Incentive Program (GNI) CSP will handle customer intake and routing and processing of applications. The CSP works directly with trade allies and customers to: help identify and develop customer project ideas and implementation on behalf of the customer. The Custom Incentive (GNI) CSP will perform scope analysis, cost, and potential energy savings of proposed projects; conduct field verification of completed projects; and help to determine the reported energy savings from installed projects. The EM&V CSP will conduct independent evaluations to determine verified savings, tracking monthly savings, and providing reports to PPL Electric.

Program Issues, Risks and Risk Management Strategy

Table R2 presents key market risks to an effective Custom Incentive Program (GNI) as well as the strategies the program will use to mitigate each risk.

Table R2: Custom Incentive Program (GNI) Issues, Risks and Risk Management Strategy

Market Risks	Implications	Management Strategy
Higher first cost of energy-efficient equipment.	<ul style="list-style-type: none"> Implementing a project can be expensive upfront. 	<ul style="list-style-type: none"> Offer customized incentives on equipment to offset higher cost.
Not a high priority; limited access to discretionary cash/credit.		
Lack of program awareness and “emergency replacement” scenario among target customers.	<ul style="list-style-type: none"> This diverse market may run into a situation in which they need to add or replace a piece of equipment immediately. They may be unaware of 	<ul style="list-style-type: none"> Market directly to customers, decision makers, facility operators, equipment dealers, distributors and trade allies/contractors.

	program and may implement something that's ineligible.	
Tenant/landlord issues; reaching the decision maker or trade ally/contractor.	<ul style="list-style-type: none"> Decision-makers are unaware of the program. Trade allies/contractors have significant influence on what the customer is buying and installing. 	<ul style="list-style-type: none"> Develop specific outreach activities and educational/promotional messages to target decision makers and facility operators to facilitate understanding of capital budget and operating concerns. Engage trade allies/contractors to promote the program to their customers.

Anticipated Costs to Participating Customers

The measure rebates are designed to cover approximately 50% of the customer incremental cost of the project, up to a cap of \$500,000 per customer site per year, or \$1 million per parent company per year for customers with multiple facilities, not to exceed 50% of project cost. These values were chosen to increase participation and provide equity within each sector.

Ramp-Up Strategy

The Custom Incentive Program (GNI) is being continued from Phase I to Phase II. During PY5, the Custom Incentive Program CSP will develop marketing material, including initial program offering information and case studies, to distribute to customers through both trade allies and various groups.

Marketing Strategy

The program relies on customer marketing and trade ally promotion. PPL Electric, the Advertising CSP, and the Custom Incentive CSP will develop a marketing strategy, which may include:

- Communicating and providing access to program information on the Company's web site.
- Promoting program on PPL Electric's web newsletter.
- Advertising using newspaper, radio, direct mail, bill inserts, cross-program advertisements, commercial ads, and other mass media.
- Coordinating advertising opportunities with trade allies.
- Developing, publishing and distributing program brochure and case studies.
- One-on-one marketing to GNI customers through Key Account Managers, Business Accounts Specialists, and outreach.
- Targeting marketing to facility managers and building or process engineers, building owners and managers associations, HVAC contractors, energy services firms, architects and engineers, real estate developers, economic development organizations, customer advocacy groups, trade associations, and other trade allies to encourage installation of new energy-efficient technologies and adoption of best operating practices.
- Specific outreach to individual tenants as well as building owners and property managers in leased commercial buildings to encourage participation in the program.
- Targeted marketing to specific sectors identified as having a high level of unrealized energy-efficiency potential.

- Provide limited time offer initiatives.

Eligible Measures and Incentive Strategy

The per-customer-site cap is defined as one building with one or more meters. Multiple sites and parent company cap will apply to a campus setting or multiple buildings (on the same property or in different locations) with a common owner.

The measures, eligibility requirements, number of participants, and incentives are approximate and may change to reflect progress, changes in TRM, changes in market conditions, and other factors. For clarity, the measure description, eligibility rating, and incentive description may not include all details. Examples of custom projects include chiller replacements, air compressor improvements, equipment control projects, and experimental technologies.

Energy-efficiency projects must meet a TRC of greater than 1.1 to be eligible for incentives.

During meetings with stakeholders, questions were raised about including Combined Heat and Power as part of the Custom Incentive Program. CHP projects will be accepted with the caveat that they meet a TRC of 1.25 or greater. Experience in Phase I with CHP projects provided valuable insights about the high degree of uncertainties CHP projects that go into calculating savings. (e.g. hours of operation, energy costs, savings over the lifetime)

Table R3: Custom Incentive Program (GNI) Eligible Measures

Measure	Incentive	
Equipment, project or process improvement incentive	\$0.08-\$0.10/kWh saved	Up to \$500,000 per customer site per year or \$1 million per parent company per year for customers with multiple sites. Caps are per program year. Incentive cannot exceed 50% of the incremental cost
CHP projects	\$0.05/kWh saved	

Program Start Date with Key Scheduled Milestones

Strategic planning and execution action items for the Custom Incentive Program (GNI) are listed in **Table R4**. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table R4: Custom Incentive Program (GNI) Schedule and Milestones

Schedule	Milestones
10/31/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/30/12	Renegotiate contract with CSP.
12/24/12	Execute program implementation contract with CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control. Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be similar to the Phase I Evaluation Plan for the Custom Program. Reported and verified savings will be determined using the method specified in the TRM (algorithm with open variables) to calculate the savings for measures that are in the TRM (but are defined as “custom” because PPL Electric does not have a prescriptive rebate. For measures (custom projects) that are not in the TRM, the CSP will develop a site specific M&V plan (SSMVP) that will be available to the SWE. The Evaluation Plan will define when SSMVP are required (such as for large projects that meet a defined savings size) and when they are optional. The EM&V CSP will review the SSMVP, confirm the quantity of measures, and will confirm savings were determined in accordance with the TRM or the SSMVP.

Administrative Requirements

Strategic planning and execution action items are listed for the Custom Incentive Program (GNI) in **Table R5**. Some tasks will be performed by PPL Electric; others will be led by various CSPs with administrative support from PPL Electric.

Table R5: Custom Incentive Program (GNI) Stakeholder Roles

Primary Conservation Service Provider (CSP)	<ul style="list-style-type: none"> • Recruiting potential customers. • Fielding customer calls and inquiries. • Reviewing applications submitted and verify eligibility for participation. • Calculating individual project TRC. • Providing application approval letter to customer. • Communicating effectively with customer, contractor and key account manager • Conducting pre and post visit. • Writing SSMVPs. • Providing reservation letter to customer. • Assisting customers in the completion of all required documents. • Analyzing data and calculate reported savings. • Providing all required documents to PPL Electric. • Recording all updates to each project. • Preparing bi-weekly update on all projects and expected completion dates. • Producing and sending incentive checks and letters to customers.
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PPL Electric	<ul style="list-style-type: none"> Monitoring EEMIS to ensure accurate information. Overseeing CSP activities to ensure compliance with the PPL EE&C, Pennsylvania Public Utility Commission protocols and PPL Electric. Providing updates and communicating effectively with key account managers.
EM&V CSP	<ul style="list-style-type: none"> Conducting evaluation, measurement and verification of energy savings. Coordinating protocols with the Statewide Evaluator.
Key Account Managers	<ul style="list-style-type: none"> Recruiting potential customers. Explaining program requirements to customers. Communicating effectively with CSP, PPL Electric and customer.
Customer	<ul style="list-style-type: none"> Completing required PPL Electric forms prior to starting a project. Agreeing and allowing for pre and post-testing.

Estimated Participation

It is estimated that there will be up to 30 GNI custom incentive projects completed in Phase II.

Table R6: Custom Incentive Program (GNI) Estimated Program Budget, Savings Targets and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	4,469	1,960	921	7,350
Capacity Savings (MW)	0.64	0.28	0.13	1.05
Total Resource Cost	\$2,586,245	\$1,210,547	\$633,882	\$4,430,674
Direct Participant Costs	\$1,614,340	\$298,049	\$313,983	\$2,226,372
Direct Utility Costs	\$971,905	\$912,498	\$319,899	\$2,204,302
Customer Incentives	\$364,806	\$569,998	\$93,999	\$1,028,803
EDC Labor, Materials & Supplies	\$105,500	\$122,500	\$122,500	\$350,500
CSP Variable Costs	\$501,599	\$220,000	\$103,400	\$824,999
CSP Labor, Supplies & Marketing	\$0	\$0	\$0	\$0

TRC Test	
NPV Benefits	\$5,825,164
NPV Costs	\$4,247,716
Net Benefits (NPV)	\$1,577,449
Benefit-Cost Ratio	1.37

**Master Metered Low-Income Multifamily Housing Program
(GNI Sector)**

2013-2016

Summary

The Master Metered Low-Income Multifamily Housing Program provides eligible customers with an audit and rebates for installing energy-efficiency measures. A turnkey CSP will be engaged to manage the program including qualifying buildings, providing a walk-through audit and encouraging installation of energy-efficiency measures. Replacing and recycling inefficient refrigerators is a large component of the program. The chosen CSP will work with PPL Electric’s Appliance Recycling CSP to coordinate recycling. This is a new program offering for Phase II.

Objectives

The objectives of the Master Metered Low-Income Multifamily Housing Program include:

- Provide energy-saving opportunities to customers within the multifamily master-metered housing segment.
- Incentivize the adoption, within the multifamily housing segment, of high-efficiency and ENERGY STAR®-rated appliances, lighting equipment, and HVAC systems.
- Enhance the adoption of energy-saving measures among low-income populations within the PPL Electric service territory.
- Increase the market penetration of high-efficiency technologies.
- Promote other PPL Electric energy-efficiency programs.
- Target up to three all electric buildings for a comprehensive building approach.
- Achieve approximately 130,000 installed measures through 2016, with a total reduction of approximately 6,900 MWh/yr.

Target Market

PPL Electric’s Master Metered Low-Income Multifamily Housing Program will be made available within the GNI sector to master metered multifamily buildings identified as low-income, non-profit or government housing. Qualifying buildings will be existing structures owned by PPL Electric customers containing five or more residential units (efficiency apartments or larger with contained eating and bathing spaces).

The Master Metered Low-Income Multifamily Housing Program will be delivered using direct installation, financial incentives, and rebates to drive the adoption of qualifying measures that address electric efficiency in multifamily buildings. Given the demographic characteristics of the low-income customer segment, with comparatively frequent elderly, disabled, and otherwise disadvantaged occupancies, special care will be taken by PPL Electric and its CSP to be sensitive to multifamily building residents. **Table S1** identifies eligibility parameters.

Table S1: Master Metered Low-Income Multifamily Housing Program Customer Eligibility Parameters

Customer Sector(s)	GNI
Rate Class	GS1, GS3
Building Type	Multifamily
Building Vintage	Existing buildings

Building Ownership	Owner
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Program Description

The Master Metered Low-Income Multifamily Housing Program targets energy-efficiency improvements in non-profit master metered multifamily low-income housing buildings. In securing participation, the Master Metered Low-Income Multifamily Housing Program combines marketing with the active recruitment of qualified master metered multifamily buildings.

The Master Metered Low-Income Multifamily Housing Program will provide a free basic walkthrough audits for master metered multifamily buildings, followed by general analyses and reports of potential savings for building owners through direct installation and prescriptive efficiency measures.

Financial incentives are made available to qualified buildings. These incentives help to offset the incremental cost differences between high-efficiency and baseline measures. Incentives will be offered to enhance the adoption of high-efficiency measures that address system controls, lighting, appliances, and HVAC systems.

Implementation Strategy

PPL Electric will identify and select, through a competitive bid process, a turnkey CSP to manage the Master Metered Low-Income Multifamily Housing Program. The CSP will undertake a broad spectrum of responsibilities, including marketing to and recruiting potential buildings, conducting walkthrough audits, managing high-efficiency product installations, and educating building owners and tenants on energy-efficiency. PPL Electric will provide strategic direction, program support, evaluation, and EEMIS, the data management system used to collect program data. Participating multifamily building owners will be responsible for completing rebate applications, as necessary, with guidance from the CSP.

The CSP will act as the Master Metered Low-Income Multifamily Housing Program’s turnkey administrator and handle the initiation, planning, and completion of customers’ energy projects through the key steps listed below.

- The CSP will be the primary source of marketing for the Master Metered Low-Income Multifamily Housing Program, combining active recruitment of prospective buildings with advertisement through multifamily stakeholders (housing finance agencies, housing authorities, and property associations).
- Participating building owners will work with the CSP to verify their eligibilities, undergo walk-through audits, understand savings’ potentials, and act on incentive opportunities through prescriptive rebates and direct installation measures.
- CSPs will manage building auditing and the installation of high-efficiency measures, sourcing expertise internally or from their own affiliated contractors.
- CSPs will conclude projects with the completion and payment of rebates for building owners, accompanied by measurement, verification, and data management of eligible installed measures.
- Target up to three all electric buildings for comprehensive building approach.

Program Issues, Risks and Risk Management Strategy

Table S2 presents key market risks to an effective Master Metered Low-Income Multifamily Housing Program, as well as the strategies the program will use to mitigate each risk.

Table S2: Master Metered Low-Income Multifamily Housing Program Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
Higher up-front costs for high-efficiency equipment.	<ul style="list-style-type: none"> • Building owners may choose less expensive, less-efficient equipment as replacements. • The period of cost recovery through energy savings may be too high. • Building owners often face restrictions on the levels of capital they may keep in reserve. 	<ul style="list-style-type: none"> • Market energy-efficiency planning as a strategy for properties to become more attractive for grants through more stable energy bill outlooks for the future. • Offer rebates that help to reduce incremental costs. • Engage building owners in long-term energy planning for their properties.
Equipment is typically replaced only upon failure.	<ul style="list-style-type: none"> • There is little incentive to upgrade equipment that is still operational. • Equipment can be expected to fail in similar time frames since the equipment was likely to be installed concurrently. 	<ul style="list-style-type: none"> • Encourage full-building equipment replacements upon the initial failure of the first piece of eligible equipment. • Capitalize on high energy savings due to the scale of replacement of replacing lighting and appliances.
Efficiency is not commonly prioritized during retrofitting.	<ul style="list-style-type: none"> • High-efficiency equipment is viewed as too expensive. • Building owners may have an incomplete understanding of energy flows in their properties. 	<ul style="list-style-type: none"> • Conduct audits to display to owners the relationship between building systems, operating expenses and occupant comfort rates. • Offer planning assistance and incentives to enhance energy savings.
Audits are costly without guaranteed participation.	<ul style="list-style-type: none"> • Comprehensive audits could be paid for by PPL Electric but could result in few or no claimed kWh savings due to low participation, increasing the cost per kWh saved. 	<ul style="list-style-type: none"> • Conduct walkthrough audits to identify potential energy savings at low cost to PPL Electric. • Customize walkthrough audits to a focus on electric systems. • Offer, for a limited number of customers, a comprehensive audit.
Up to three whole building upgrades	<ul style="list-style-type: none"> • Cost may be too high for owners. • Payback period too long. 	<ul style="list-style-type: none"> • Offer larger rebates to help reduce the cost. • Educate building owners about benefits concerning upgrades.

Anticipated Costs to Participating Customers

The incremental costs incurred by building owners participating in the Master Metered Low-Income Multifamily Housing Program will be subject to their level of participation and the type of high-efficiency equipment installed under the program. Building owners whose buildings undergo walk-through audits will have access to both direct installation measures and rebates

that reduce incremental costs and enhance a customer's return on investment through energy savings.

Ramp-Up Strategy

The multifamily housing market is often difficult to penetrate with energy-efficiency incentives because of limited capital held in reserve. Marketing and relationships with housing associations will be critical to the successful implementation of the Master Metered Low-Income Multifamily Housing Program. The CSP will begin operations with a ramp-up strategy that focuses heavily on marketing, recruiting, and engaging building owners and related associations, followed by the execution of walkthrough audits. The CSP will be required to develop a campaign that both advertises to and recruits potential project participants. Walkthrough audits and the direct installation of many measures will allow the CSP to build a strong initial relationship with building owners and tenants. The Master Metered Low-Income Multifamily Housing Program's PY5 is likely to have a strong relationship-building and marketing focus, in addition to conducting walkthrough audits and high-efficiency installations. These will be steadily implemented over PY6 and PY7.

Marketing Strategy

The Master Metered Low-Income Multifamily Housing Program will rely on a combination of recruitment and advertising to secure participation in the program. The CSP will identify candidate building owners through collaboration with housing agencies and property associations, and present to them the opportunities of the Multifamily Housing Efficiency Program. Public advertising will serve as a secondary method to identify and attract customers that may not be affiliated with any housing organizations. Strategies for marketing multifamily incentives may include:

- Engaging housing organizations, public housing authorities, and key market partners (e.g., Keystone HELP and PHFA) within the PPL Electric service territory to promote energy-efficiency and the Master Metered Low-Income Multifamily Housing Program throughout their networks.
- Engaging building owners on energy-planning topics to explain how high-efficiency equipment makes a property better prepared for future energy price fluctuations and more attractive to investment from public housing support funds.
- Offering free walk-through audits and direct installation measures to enhance trust and increase owner awareness of efficiency opportunities.
- Advertising, as deemed necessary, in property management publications, local newspaper property sections, and other mass media.
- Branding marketing materials with the ENERGY STAR® insignia.
- Cross-promoting through other PPL Electric efficiency programs.
- Offering up to three comprehensive building upgrades to building owners.

Eligible Measures and Incentive Strategy

The Master Metered Low-Income Multifamily Housing Program offers free walkthrough audits, direct installation measures and financial incentives in the form of rebates. Prescriptive rebates and performance eligibilities will be fixed for certain measures. Other measures and their rebates will depend on calculated energy savings. Incentives/Rebates are credited against the customers invoice for the entire project.

Listed below in **Table S3** are the proposed measures and incentive levels for the Master Metered Low-Income Multifamily Housing Program to be offered by PPL Electric to eligible customers. The listing includes those measures deemed to be appropriate for master metered low-income multifamily buildings. Occupants of units in multifamily buildings that are individually metered remain eligible to participate in savings under the Residential Programs. Owners of master metered buildings with fewer than five units remain eligible to participate in PPL Electric programs under the Low-Income WRAP program.

PPL Electric will perform periodic reviews of the Multifamily Housing Efficiency Program at least annually and may adjust rebate and incentive levels, performance standards, and participation criteria as market conditions change in the future. PPL Electric will track customer installations and include such data within its annual report on the program.

Table S3: Master Metered Low-Income Multifamily Housing Program Eligible Measures

Measure	Eligibility Rating	Incentive
Walkthrough audit	Multifamily buildings serving low-income occupants	Free (~\$400 value)
Beverage machine controls	Added to Non-ENERGY STAR® machine	Direct Install
Screw-In CFLs (13W & 23W), phasing in LEDs	ENERGY STAR®	Direct Install, 12 per unit
Low-flow faucet aerator	Electric hot water	Direct Install, 1 per unit
Low-flow showerhead aerator	Electric hot water	Direct Install, 1 per unit
Water heater pipe insulation	Electric hot water, 10' section, 3/4" thick	Direct Install
LED exit sign replacing existing exit sign	20W replaced, single-sided	Direct Install, where applicable
	40W replaced, double-sided	
Refrigerator	Recycle (with replacement)	\$35
	New ENERGY STAR® replacement	\$100-\$300
Freezer	Recycle (with replacement)	\$35
	New ENERGY STAR® replacement	\$100-\$200
Dishwasher	ENERGY STAR®, electric hot water	\$25
Clothes washer	ENERGY STAR®, electric hot water, installed in a common space	\$50-\$125
Ice Machine	ENERGY STAR®	\$15
LED bulbs and fixtures	Various- per TRM	Varies depending on bulb/fixture \$20 - \$1,000
Room AC recycling	Retire (without replacement)	\$25
Room air conditioner	ENERGY STAR®	\$30
Ductless mini-split heat pump (< 5.4 tons)	ENERGY STAR®, ≥ SEER 15, ≥ HSPF 8.2	\$0.40 per annual kWh saved
Central air conditioner and ASHP	≥ SEER 16	\$0.40 per annual kWh saved

Packaged terminal air conditioner (PTAC)	Through-the-wall self-contained unit, 2 tons of cooling capacity or less	\$0.40 per annual kWh saved
DX packaged air conditioner system (> 5.4 tons)	≥ 11.5 EER	\$0.40 per annual kWh saved
Screw-In CFL (7W-26W)	ENERGY STAR®	up to \$2
High-performance T-8 fixture	Replacing T-12	up to \$4
	Replacing T-8	up to \$4
High Performance T-8 Relamp and Reballast (Replacing T-12) (Residential Usage)	Various – per TRM	\$1-\$12
High Performance T-8 Relamp and Reballast (Replacing T-12) (Commercial Usage)	Various – per TRM	\$12-\$95
High Performance T-8 Relamp and Reballast (Replacing T-8) (Commercial Usage)	Various – per TRM	\$1-\$25
LED Flood (Commercial Usage)	Various – per TRM	\$80-\$120
LED Wall Pack/Canopy (Commercial Usage)	Various – per TRM	\$130-\$225
LED Area/Parking Lot Light (Commercial Usage)	50W-90W	\$90-\$140
LED Area/Parking Lot Light (Commercial Usage)	137W-233W	\$170-\$490
Occupancy Sensor (Commercial Usage)	Various – per TRM	\$20-\$30

Program Start Date with Key Scheduled Milestones

Strategic planning and execution action items are listed below for the Multifamily Housing Efficiency Program.

Table S4: Master Metered Low-Income Multifamily Housing Program Schedule and Milestones

Schedule	Milestones
10/8/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
10/10/12	Issue RFP for CSP.
1/31/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control (QA/QC). Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

Reported and verified savings will be determined for each installed measure using the method specified in the TRM (algorithm with open variables for some measures; fully stipulated savings for other measures) to calculate the savings of each measure, and then sum the savings of all measures in this program. The EM&V CSP will confirm the quantity of measures and will confirm savings were determined in accordance with the TRM.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the Master Metered Low-Income Multifamily Housing Program. **Table S5** lists the major anticipated participant roles for the Master Metered Low-Income Multifamily Housing Program.

Table S5: Master Metered Low-Income Multifamily Housing Program Stakeholder Roles

<p>Primary Conservation Service Provider (CSP)</p>	<ul style="list-style-type: none"> • Marketing and advertising. • Recruiting potential projects. • Collaboration with housing agencies and associations to understand and penetrate the multifamily market. • Verifying eligibility for participation. • Conducting walkthrough audits. • Installing direct install measures. • Preparing savings potential reports for audited buildings. • Sourcing the installation of efficiency measures. • Educating participating building owners and their tenants with multilingual materials. • Assisting the completion of rebate applications. • Processing rebate payments to participants. • Managing and reporting customer data. • Fielding customer calls and inquiries. • Operating with sensitivity to unique tenant needs. • Coordinate with the appliance recycling CSP.
<p>PPL Electric</p>	<ul style="list-style-type: none"> • Guiding program strategy. • Providing administrative support. • Reviewing, verifying and processing CSP invoices and matching payment requests to kWh/savings/customers. • Overseeing CSP activities to ensure compliance with EE&C, PPL Electric and Pennsylvania Public Utility Commission protocols.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the Statewide Evaluator.

Building Owner	<ul style="list-style-type: none">• Hosting a walkthrough audit performed by the CSP.• Scheduling the installation of measures with the CSP and its affiliates.• Filing rebate applications for completed measures.
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Estimated Participation

Participation levels were estimated by evaluating the multifamily housing market in the service territory of PPL Electric in collaboration with the Pennsylvania Housing Finance Agency (PHFA) and local housing authorities, and by consulting utilities with already active multifamily efficiency programs. In order to best engage building owners with limited capital in reserve, incentives were adjusted to offer substantial rebates within the financial scope of the program.

It is estimated that a total of 88 walkthrough audits will be performed, up to three buildings will receive comprehensive building upgrades and, approximately 130,000 energy-efficiency measures will be installed (including refrigerators replaced and recycled.)

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

The Master Metered Low-Income Multifamily Housing Program is expected to achieve an estimated savings of 6,000-10,000 MWh/yr. Overall cost-effectiveness and projected savings levels are summarized in **Table S6**.

Table S6: Master Metered Low-Income Multifamily Housing Program Summary of Project

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	1,757	2,565	2,565	6,886
Capacity Savings (MW)	0.25141	0.36706	0.36706	0.99
Total Resource Cost	\$1,195,027	\$1,662,722	\$1,662,722	\$4,520,472
Direct Participant Costs	\$548,240	\$328,140	\$541,140	\$1,417,520
Direct Utility Costs	\$646,787	\$1,334,582	\$1,121,582	\$3,102,952
Customer Incentives	\$95,898	\$542,639	\$329,639	\$968,176
EDC Labor, Materials & Supplies	\$150,000	\$150,000	\$150,000	\$450,000
CSP Variable Costs	\$400,890	\$641,943	\$641,943	\$1,684,776
CSP Labor, Supplies & Marketing	\$0	\$0	\$0	\$0

	TRC Test
NPV Benefits	\$6,012,536
NPV Costs	\$4,154,420
Net Benefits (NPV)	\$1,858,117
Benefit-Cost Ratio	1.45

**School Benchmarking Program
(GNI Sector)**

2013-2016

Summary

The School Benchmarking Program will be offered to up to 25 schools per Program Year. A turnkey CSP will be engaged to manage this program. Using modeling tools, the CSP will work with school administrators to evaluate total building energy use. School administrators will be provided with information they can use to evaluate short and long term energy-efficiency goals and payback for energy-efficiency investment opportunities. The CSP will also provide school administrators with information about PPL Electric’s rebates and incentives.

PPL Electric has offered School Benchmarking outside of Act 129 in the past. Although there are no quantifiable savings associated with this program, responding to requests and discussion from Stakeholders during Stakeholder meetings, PPL Electric decided to include this program.

Objectives

The objectives of the School Benchmarking Program are to:

- Provide an opportunity for school districts within the PPL Electric’s territory to participate in benchmarking.
- Train schools on the U.S. Environmental Protection Agency’s (EPA) Portfolio Manager tool and encourage and assist schools in achieving the ENERGY STAR® label.
- Educate schools about their energy usage and provide recommendations on how to use energy more wisely and on PPL Electric rebates and incentives.
- Collaborate with the U.S. Department of Energy and the Pennsylvania Department of Environmental Protection on their benchmarking initiatives.
- Promote other PPL Electric Energy Efficiency and Conservation programs.
- Obtain participation of up to 75 schools through 2016. There are no MWh/yr. savings with this program.

Target Market

The School Benchmarking Program will be available to Institutional customers who operate a kindergarten through 12th-grade school within the PPL Electric’s service territory. This program is available to public, private and parochial school districts. **Table T1** identifies eligibility parameters.

Table T1: School Benchmarking Program Customer Eligibility Parameters

Customer Sector(s)	GNI
Rate Class	GS1, GS3, LP4, LP5, LP6, GH1, GH2
Building Type	School Classroom Buildings
Building Vintage	All
Building Ownership	Owner or tenant

Program Description

The School Benchmarking Program is designed to provide schools with the opportunity to benchmark their schools’ energy use and cost with those of similar schools. The benchmarking report received by schools provides constructive results and guidance in managing a facility’s energy usage. The report will detail specific characteristics and energy indicators for each of the district’s participating schools including total energy use per square foot, electric use per square foot, heating fuel use per square foot and per heating degree day, and energy cost per square foot and per student. Additionally, assistance will be provided to schools in developing action plans to reduce their consumption.

If a school performs exceptionally well (in the top 25 percent in the country), the school may also qualify for the ENERGY STAR® label. If this occurs, the School Benchmarking Program will assist schools in achieving the ENERGY STAR® label by providing technical assistance to complete the application process.

Implementation Strategy

PPL Electric will identify and select, through a CSP bid process, a turnkey CSP to manage the School Benchmarking Program. The CSP will undertake a broad spectrum of responsibilities, including:

- Marketing to and recruiting potential schools to participate in the program.
- Assisting schools in gathering and transferring their energy consumption and building data.
- Benchmarking each school using the CSP’s and EPA’s Portfolio Manager software.
- Uploading data into EPA’s Portfolio Manager to provide a whole building score.
- Providing schools with a detailed report that itemizes (at a minimum) energy indicators, graphics that highlight month-to-month energy-use trends, and no-cost and low-cost energy-efficiency recommendations.
- Assisting schools in developing an action plan based on the results of the data.

Program Issues, Risks and Risk Management Strategy

Table T2 presents key market risks to an effective School Benchmarking Program as well as the strategies the program will use to mitigate each risk.

Table T2: School Benchmarking Program Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
School not interested in being benchmarked.	<ul style="list-style-type: none"> • School does not want to be compared with other schools. 	<ul style="list-style-type: none"> • Promote to the customer the numerous benefits of the program, while emphasizing confidentiality and the potential for energy savings.
School does not have resources available to gather energy consumption and building data.	<ul style="list-style-type: none"> • School does not want to sign up for the program due to a lack of resources, or if it does sign up, does not provide the data necessary to complete the benchmarking. 	<ul style="list-style-type: none"> • Assist in alleviating some of the burden from administrators in acquiring the data by working with each school on transferring data, and accepting the information in a variety of formats including utility bill hard copies, PDFs, spreadsheets, or direct access from natural gas utilities.

Anticipated Costs to Participating Customers

There are no direct costs incurred by customers for this program.

Ramp-Up Strategy

The CSP will begin operations with a ramp-up strategy that focuses heavily on marketing and recruiting eligible schools. This will be followed by gathering energy consumption and building data, and entering the data into the CSP’s benchmarking software and EPA’s Portfolio Manager. The CSP will work with each school on transferring the data and will be able to accept the information in a variety of formats including utility bill hard copies, PDF files, spreadsheets, or direct access from natural gas utilities.

Marketing Strategy

The School Benchmarking program will rely on the recruitment of schools to participate in the Program. The CSP must secure a qualified list of schools within the PPL Electric service territory for recruiting purposes, and will identify candidates through phone solicitation, letters, and meetings at school associations. Strategies for marketing may include:

- Sending letters and emails about the program to school districts.
- Offering free webinars about the program for school administration and maintenance personnel.
- Cross-promoting through other PPL Electric Energy Efficiency and Conservation programs.

Eligible Measures and Incentive Strategy

None

Program Start Date with Key Schedule Milestones

Strategic planning and execution and schedule for the School Benchmarking Program are listed in **Table T3**. Some tasks will be led by PPL Electric; others will be led by various CSPs with oversight by PPL Electric.

Table T3: School Benchmarking Program Start Date with Key Schedule Milestones

Schedule	Milestones
11/13/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/14/12	Issue RFP for CSP.
3/1/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/13	Launch program.

Evaluation, Measurement and Verification (EM&V)

Since this program provides no savings, there likely will be no EM&V required.

Administrative Requirements

PPL Electric staff will oversee the operations and administration of the School Benchmarking Program. **Table T4** lists the major anticipated roles for the program.

Table T4: School Benchmarking Program Stakeholder Roles

<p>Primary Conservation Service Provider (CSP)</p>	<ul style="list-style-type: none"> • Marketing to and recruiting potential schools. • Verifying eligibility for participation. • Assisting schools in gathering and transferring their energy consumption and building data. • Benchmarking each school utilizing benchmarking software. • Uploading data into EPA’s Portfolio Manager to provide a whole building score. • Providing schools with detailed reports itemizing (at a minimum) energy indicators, graphics that highlight month-to-month energy-use trends, and no-cost and low-cost energy-efficiency recommendations. • Assisting schools in developing an action plan based on the results of the data. • Managing and reporting customer data. • Fielding customer calls and inquiries.
<p>PPL Electric</p>	<ul style="list-style-type: none"> • Guiding program strategy. • Providing administrative support. • Providing electricity usage data to the CSP. • Overseeing CSP activities to ensure compliance with EE&C, PPL Electric and Pennsylvania Public Utility Commission protocols. • Ensuring all reporting and documentation is submitted in a timely manner and is accurate.
<p>EM&V CSP</p>	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the SWE.
<p>Customer</p>	<ul style="list-style-type: none"> • Providing access to energy data.

Participation

Up to 25 schools per plan year are expected to participate in the School Benchmarking Program.

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

Over the duration of Phase II, the School Benchmarking Program is not expected to yield savings in electricity consumption. Costs for the program are summarized in **Table T5**.

Table T5: School Benchmarking Program Summary of Project Benefits, Costs and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh)	-	-	-	-
Capacity Savings (MW)	-	-	-	-
Total Resource Cost	\$100,000	\$100,000	\$100,000	\$300,000
Direct Participant Costs	\$ -	\$ -	\$ -	\$ -
Direct Utility Costs	\$100,000	\$100,000	\$100,000	\$300,000
Customer Incentives	\$ -	\$ -	\$ -	\$ -
EDC Labor, Materials & Supplies	\$10,000	\$10,000	\$10,000	\$30,000
CSP Variable Costs	\$ -	\$ -	\$ -	\$ -
CSP Labor, Supplies & Marketing	\$90,000	\$90,000	\$90,000	\$270,000

	TRC Test
NPV Benefits	\$0
NPV Costs	\$277,985
Net Benefits (NPV)	\$(277,985)
Benefit-Cost Ratio	0

**Continuous Energy Improvement Program
(GNI Sector)**

2013–2016

Summary

Ten school districts will be identified in PY5 to participate in the Continuous Energy Improvement Program. Each district will select a school or facility to participate and will then develop a Sustainable Energy Management Plan to implement throughout the entire district during PY7. Each district will identify a program lead which may range from a facility manager or energy expert to a teacher or an administrator. The districts will work together during the monthly meeting led by the CSP to share best practices. At the end of the program, each district will have an energy reduction goal, a methodology for measuring energy savings, and a plan to continually improve energy performance.

Objectives

The objectives of the Continuous Energy Improvement Program are to:

- Encourage customers to identify energy-saving opportunities by focusing on behavioral changes and fostering sustainability through individual engagement.
- Assist school districts in defining an energy vision, resources, and goals of their own energy-efficiency program.
- Demonstrate how the Program fits into the school districts’ structure and use a systematic approach to quantify the success of energy management.
- Raise employee and student engagement surrounding activities that directly influence the amount of energy consumed by systems and the schools.
- Promote other PPL Electric energy-efficiency programs.
- Provide partial funding to offset a portion of the salary for school energy champion personnel.
- Achieve participation with 10 schools/school districts through 2016, with a total reduction of approximately 3,150 MWh/yr.

Target Market

The Continuous Energy Improvement Program primarily targets school buildings, school districts, or school campuses. **Table U1** identifies eligibility parameters.

Table U1: Continuous Energy Improvement Program Customer Eligibility Parameters

Customer Sector(s)	Government, Non-profit, Institutional
Rate Class	GS1, GS3, LP4, LP5, LP6, GH1, GH2
Building Type	K-12 schools
Building Vintage	All
Building Ownership	Owner or tenant

Program Description

Individuals responsible for energy management have three primary goals: maintain comfort and safety in occupied facilities, eliminate energy waste, and save money. In order to be good

stewards of both their financial resources and the environment, schools should take a proactive approach to energy management by implementing an energy program.

The Continuous Energy Improvement Program focuses on three areas that drive energy savings: people, processes, and technology. By participating, districts will be able to see an increase in their energy-efficiency, resulting in dollars saved or cost avoidance. The Continuous Energy Improvement Program is centered on building a Strategic Energy Management Plan and includes the following focus areas:

- **Energy Policy Implementation:** Define the energy vision, resource, and goals of the energy-efficiency program.
- **Employee Energy Awareness:** Help proactively engage ideas from staff and/or students concerning reduction of energy waste and other measures of success. The main objective is to raise employee and student engagement surrounding the activities that directly influence the amount of energy consumed by systems and the schools.
- **Annual Goals and Objectives:** Include a baseline and performance indicators to measure progress.
- **Planned Actions:** Develop, review, and revise inputs, outputs, capital, O&M and behavioral actions. Continuously improve energy-efficiency by establishing and implementing effective energy management programs that support all student activities while providing a safe educational environment.
- **Sustainability Team:** Implement a cross-functional group of engaged employees that is sponsored by the district's school superintendents.

Implementation Strategy

A turnkey CSP will be engaged to manage the program. PPL Electric staff will provide overall strategic direction and program management.

PPL Electric will engage a turnkey CSP to provide the following:

- **Recruitment** – the CSP will work with PPL Electric to screen districts ready and willing to participate. The CSP will evaluate organizational readiness and assist with Non-disclosure Agreements (NDA).
- **Assessment** – the CSP will acquire and evaluate 36 months of consumption data to develop a baseline and a draft energy awareness plan.
- **Development** - Participating districts will identify an “energy champion” who will be tasked to develop an energy team and participate in development strategy.
- **Mentoring** – the CSP will meet individually with each participating district for a diagnostic assessment of energy management practices.
- **Reporting** – the CSP will facilitate monthly webinars and conference calls with all participating districts designed to share lessons learned, energy-saving techniques, and management strategies.

Appropriate changes in the implementation strategy, including possibly increasing or decreasing participation levels, may be needed in different program years in order to meet program targets.

Program Issues, Risks and Risk Management Strategy

Table U2 presents key market risks to an effective Continuous Energy Improvement Program, as well as the strategies the program will use to mitigate each risk.

Table U2: Continuous Energy Improvement Program Issues, Risks and Risk Management Strategy

Program Issues	Risks	Management Strategy
Lack of program awareness among customers.	<ul style="list-style-type: none"> Customer participation might be low. 	<ul style="list-style-type: none"> PPL Electric employs a Key Account Manager (KAM) assigned to work with schools. The KAM will assist in evaluating districts that are organizationally ready and willing to participate.
Customer may not see the benefit of participating due to falling energy prices.	<ul style="list-style-type: none"> As energy prices decrease, PPL Electric will have a more difficult time encouraging participation. 	<ul style="list-style-type: none"> Quantify savings using PPL Electric customer data.

Anticipated Costs to Participating Customers

There are no direct costs incurred by customers in this program. However, school districts must commit personnel to participate in the Continuous Energy Improvement Program activities.

Ramp-Up Strategy

Starting in PY5, PPL Electric staff, working with the chosen turnkey CSP, will prepare marketing materials and reach out to potential school district facilities staff.

Marketing Strategy

Marketing for this program will be the responsibility of the Continuous Energy Improvement Program CSP. The marketing strategy may include:

- Providing online access to the Program via the CSP’s website.
- Meeting directly with districts chosen by PPL Electric’s Major Accounts department.

Eligible Measures and Incentive Strategy

The Continuous Energy Improvement Program does not offer rebates for measures.

Program Start Date with Key Schedule Milestones

Strategic planning, execution, and schedule for the Continuous Energy Improvement Program are listed in **Table U3**. Some tasks will be led by PPL Electric; others will be led by various CSPs with oversight from PPL Electric.

Table U3: Continuous Energy Improvement Program Schedule and Milestones

Schedule	Milestones
11/13/12	Develop detailed work scopes, selection criteria, terms and conditions, and quality assurance protocols for CSP.
11/16/12	Issue RFP for CSP.
3/1/13	Execute program implementation contract with selected CSP.
TBD	Receive PUC response for approval/denial of contract.
6/1/14	Launch program.

Evaluation, Measurement and Verification (EM&V)

PPL Electric and the EM&V CSP will prepare an Evaluation Plan for the program that describes the scope, objectives, and methods for the impact evaluation, the process evaluation, the cost-effectiveness evaluation, the net-to-gross evaluation, and quality assurance/quality control (QA/QC). Evaluations and QA/QC will be in accordance with the SWE’s Audit Plan and will be submitted to the SWE for review/approval.

The Evaluation Plan for this program is expected to be a custom protocol to be written in PY6.

Administrative Requirements

PPL Electric will oversee the operations and administration of the Continuous Energy Improvement Program. The major anticipated roles for the program are listed in **Table U4**.

Table U4: Continuous Energy Improvement Program Stakeholder Roles

Primary Conservation Service Provider (CSP)	<ul style="list-style-type: none"> • Marketing and recruitment. • Verifying customer eligibility. • Organizing, mentoring, and developing energy teams at each district. • Fostering an environment that focuses on efficiency and shifts culture. • Developing and delivering individual regression models to track energy savings. • Assisting schools with uploading data to Portfolio Manager. • Tracking customer data and key performance indicators. • Submitting required monthly information to PPL Electric.
PPL Electric	<ul style="list-style-type: none"> • Guiding program strategy. • Overseeing CSP activities to ensure compliance with PPL Electric’s EE&C Plan and Pennsylvania Public Utility Commission protocols.
EM&V CSP	<ul style="list-style-type: none"> • Conducting evaluation, measurement and verification of energy savings. • Coordinating protocols with the SWE.
Customers	<ul style="list-style-type: none"> • Obtaining approval for participation from school board or district leadership when applicable. • Identifying an energy champion and energy team members. • Participating in monthly activities as designated by the CSP.

Estimated Participation

Estimated participation levels are shown in **Table U5** and are for general guidance only.

Table U5: Continuous Energy Improvement Program Projected Participation

	PY5	PY6	PY7	Total
Schools	0	10	10	10
Total	0	10	10	10

Estimated Program Budget, Estimated Percent of Sector Budget Attributed to Program, Savings Targets and Cost-Effectiveness

Continuous Energy Improvement Program is expected to achieve electricity consumption savings of approximately 3,150 MWh/yr. during the Plan. The budget allocation, MWh/yr. savings through 2016, and overall program cost-effectiveness are shown in **Table U6**.

Table U6: Continuous Energy Improvement Program Summary of Projected Benefits, Costs, and Cost-Effectiveness

Benefit/Cost Component	Plan Year			Total
	PY5	PY6	PY7	
Savings (MWh/yr.)	-	583	2,567	3,150
Capacity Savings (MW)	-	0.08	0.37	0.45
Total Resource Cost	\$250,883	\$575,120	\$367,069	\$1,193,072
Direct Participant Costs	\$0	\$125,000	\$125,000	\$250,000
Direct Utility Costs	\$250,883	\$450,120	\$242,069	\$943,072
Customer Incentives	\$0	\$0	\$0	\$0
EDC Labor, Materials & Supplies	\$0	\$30,000	\$30,000	\$60,000
CSP Variable Costs	\$0	\$233,000	\$125,000	\$358,000
CSP Labor, Supplies & Marketing	\$250,883	\$187,120	\$87,069	\$525,072

	TRC Test
NPV Benefits	\$589,200
NPV Costs	\$1,096,600
Net Benefits (NPV)	(\$507,400)
Benefit-Cost Ratio	0.54

4. Program Management and Implementation Strategies

4.1. Overview of EDC Management and Implementation Strategies

4.1.1. Services to be provided by PPL Electric, CSP's and Trade Allies

PPL Electric's implementation strategy relies on a broad range of Conservation Service Providers (CSPs), partners, trade allies, community-based organizations, and other entities engaged in energy-efficiency to promote, deliver, and support the effective deployment of programs. PPL Electric's Plan identifies approximately 13 CSPs to deliver services in support of PPL Electric's EE&C programs, with the majority of CSPs operating as turnkey program delivery contractors.

PPL Electric's programs depend on trade allies and other market partners to engage customers, promote programs, evaluate projects, furnish and install energy-efficient equipment, and provide energy-efficiency services. The Company's objective is to achieve a reasonable balance of cost, ratepayer value (portfolio benefit-to-cost ratio), customer choice, quality service, and accountability for results with energy savings. In addition, PPL Electric's Plan will utilize contractors and trade allies where appropriate in recognition of the expertise available from local labor and resources, as well as the importance of stimulating the local economy and providing more choices to customers.

As outlined in the Implementation Order, EDC's may "retain, along with justification for retaining, a CSP and the cost associated with that contract." Implementation Order at 94. PPL Electric is choosing to retain its Act 129 Phase I Appliance Recycling CSP and, as required, is submitting the re-negotiated contract and justification for retaining that CSP with this Plan. PPL Electric's process for evaluating and determining whether to retain a current CSP is found in **Appendix F**.

PPL Electric will be using the RFP template that was approved by the Commission in Phase I on April 17, 2009 at Docket No. M-2008-2069887. PPL Electric has established a schedule (**Figure 5**) for issuing RFPs for new programs and re-negotiating current programs. All CSP contracts most likely will be awarded by March 1, 2013, upon Commission approval of PPL Electric's Plan, to ensure a smooth transition and start of programs on June 1, 2013.

Figure 4. Implementation Schedule with Milestones.

The following implementation schedule identifies major tasks and milestones associated with delivery of specific programs and procurement of functional CSPs, including expected dates for accomplishing each element.

Program Milestones	Work scope, Standards & Final Processes	RFP Issued or renegotiate current contract	CSP Under Contract, pending Commission approval	Final marketing & educational & program applications	Trade Ally Outreach	Program Training	Ready to launch	Final EM&V methodology & procedures	EM&V	Program End
Appliance Recycling	10/1/12	10/31/12	11/15/12	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13	ongoing	5/31/16
Residential Retail	10/26/12	10/26/12	2/22/13	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Residential Home Comfort	11/19/12	11/21/12	3/20/13	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Residential Energy-Efficiency Behavior & Education	10/24/12	10/26/12	3/1/13	5/1/13	4/1/13	5/1/13	6/1/14	4/30/13		
Student and Parent Energy-Efficiency Education	11/7/12	11/9/12	3/1/13	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Prescriptive Equipment - Residential	10/31/12	11/30/12	3/1/13	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Low-Income WRAP	N/A	N/A	N/A	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Low-Income Energy-Efficiency Behavior & Education	10/24/12	10/26/12	3/1/13	5/1/13	4/1/13	5/1/13	6/1/14	4/30/13		
E-Power Wise Program	11/14/12	11/30/12	1/31/13	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Prescriptive Equipment - Small C&I, Large C&I, GNI	10/31/12	11/30/12	12/24/12	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Custom Incentive - Small C&I, Large C&I, GNI	10/31/12	11/30/12	12/24/12	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Master Metered Low-Income Multifamily Housing Program	10/8/12	10/10/12	1/31/13	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Continuous Energy Improvement	11/13/12	11/16/12	3/1/13	5/1/13	4/1/13	5/1/13	6/1/14	4/30/13		
School Benchmarking	11/13/12	11/14/12	3/1/13	5/1/13	4/1/13	5/1/13	6/1/13	4/30/13		
Functional CSP Milestones										
Advertising CSP	12/15/12	1/31/13	3/1/13	5/1/13	N/A	N/A	6/1/13		12/15/12	1/31/13
EEMIS	10/22/12	1/1/13	3/1/13						10/22/12	1/1/13
EM&V	1/15/13	2/4/13	3/1/13							

Figure 5: Program Implementation Strategy and Delivery Roles

	Appliance Recycling	Residential Retail Program	Home Comfort	Residential and Low-Income Energy-Efficiency Behavior & Education	Student and Parent Energy-Efficiency Education	E-Power Wise	Low Income WRAP	Prescriptive and Custom (Small C&I, Large C&I, GNI)	Master Metered Low-Income Multifamily Housing	School Benchmarking	Continuous Energy Improvement
Program Function	PPL Electric										
Portfolio Planning											
Research & Development											
Overarching Marketing & Advertising	PPL Electric & CSP -13										
Retailer Management	CSP- 1	CSP-2	CSP-3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Marketing & Advertising (Program specific)				CSP -13							
Customer Intake & Routing											
Technical Assessment											
Project Development											
Application Review and Approval											
Payment Processing											
Call Center Services											
Participation Relations Management											
QA											
Measurement & Verification				PPL Electric & CSP - 11							
PPL Program Tracking											
CSP Management and Coordination	PPL Electric										
Internal PPL Coordination											
Legal and Regulatory Affairs											
Customer Service											
Corporate Communications											
Rates											
Finance											
Purchasing											
Meter Operations											
IT											
Reporting and Analysis											
Internal											
External	PPL Electric and all CSPs										

The CSPs, trade allies, and market partners in the **Figure 5** above are described in **Table U** and **Table V** below.

Conservation Service Providers

CSPs are defined as individuals or firms under contract to PPL Electric to provide consultation, design, administration, management and/or implementation services related to the delivery of its EE&C programs. PPL Electric anticipates that CSPs will have a major role in delivering PPL Electric’s Phase II programs.

As described above and indicated in **Figure 5**, CSP roles may involve delivery of turnkey program services or functions within or across programs. All CSPs will be trained on PPL Electric’s reporting requirements, use of the Company’s data management and tracking system (described in **Section 5**), customer service requirements, quality assurance and control standards, and protocols for addressing quality issues should they arise (described in **Section 6**). All CSPs will be required to submit monthly or quarterly reports to PPL Electric that include customer data and detailed information on installed measures and incentive transactions to support EM&V, tracking against the Plan’s budgets and goals, and reporting to the Commission (see **Section 5**).

Table U: Potential Conservation Service Providers and Program Delivery Roles

CSP #	CSP Role
1	Appliance Recycling CSP: provides a turnkey refrigerator, freezer and room air conditioning recycling program.
2	Residential Retail Program CSP: develops and/or uses existing relationships with manufacturers and retailers to market and deliver residential lighting and energy-efficient consumer products through existing retail channels.
3	Residential Home Comfort Program CSP: provides turnkey services for the Whole House component; energy surveys for customers participating in walk-through surveys and assessments for the PPL Electric Residential Energy Assessment & Weatherization component, trade ally training, and delivery of home-related energy-efficiency measures.
4	Energy-Efficiency Behavior & Education Program CSP: provides turnkey contractor responsible to deliver Behavior & Education Program for both general residential customers and low-income customers.
5	Student and Parent Energy-Efficiency Education Program CSP: provides turnkey services for energy education for in-school component, teacher workshops, and low-income parent group workshops.
6	E-Power Wise Program CSP: provides energy-efficiency kits to Community-Based Organizations (CBOs), trains CBO personnel, or, in instances where CBO staff or other trainers are not available or interested, delivers workshops, distributes and analyzes feedback forms, and reports on results. Kits will also be mailed to qualified low-income customers.
7	Prescriptive and Custom Small C&I, Large C&I and GNI Program CSP: provides turnkey contractor responsible for managing Prescriptive Efficient Equipment, Direct Discount, Agriculture, trade ally training, and Custom programs for GNI, Small C&I, and Large C&I. Assists customers and trade allies in completing applications and determines

	incentives.
8	Master Metered Low-Income Multifamily Housing CSP: provides turnkey services responsible for recruiting qualified customers; providing audits and recommendations; coordinating the installation of measures; and assisting customers in determining incentives and completing applications.
9	School Benchmarking CSP: provides turnkey energy benchmarking for schools, encouraging schools to take action based on benchmarking results.
10	Continuous Energy Improvement CSP: provides turnkey services, through a series of seminars, workshops, and one-to-one meetings, to assist school districts in defining an energy vision, resources, and goals for their own energy-efficiency program.
11	EM&V CSP: provides independent evaluation, measurement, and verification.
12	Tracking CSP: hosts, and makes upgrades as necessary, a program activity tracking management system and reporting system.
13	Advertising, Marketing and PR CSP: provides advertising and marketing, working in collaboration with PPL Electric’s internal marketing and corporate communications department. The Advertising CSP’s work includes the creative function, production, and media buys for television, radio, print, outdoor, Internet and other advertising. For programs that are not designed as being turnkey programs, the Advertising CSP will provide direct service.

Trade allies (TA)

Trade allies provide products and services to customers in support of PPL Electric’s programs, but are not under contract to PPL Electric. Trade allies typically provide products and services under contract to and directly for customers.

Table V: Trade Allies Program Delivery Roles

TA #	TA Roles
1	Lighting and Other Dealers and Installers: provide sales, equipment diagnostics, maintenance, and installation services for energy-efficient equipment, such as lighting and appliances. These trade allies will inform customers about PPL Electric’s applicable programs and rebates; provide essential information for customers to understand the costs and benefits of equipment or services; and encourage customers to take advantage of PPL Electric’s programs. Some trade allies also will participate in the delivery of PPL Electric’s Direct Discount component providing direct installations.
2	Comprehensive Audit Contractors: a network of trained contractors in PPL Electric’s service territory that support delivery of the comprehensive audit component of the Residential Energy Assessment & Weatherization Program.
3	Survey Contractors: a network of contractors in PPL Electric’s service territory supporting delivery of the survey component of the Residential Energy Assessment & Weatherization Program, the Agriculture Program, and the Master Metered Low-Income Multifamily Housing Program.

TA #	TA Roles (con't)
4	Residential and Commercial Builders: are builders, developers, remodelers, contractors, architects, engineers, or other market participants that design, develop, and build residential and commercial buildings. These trade allies will provide support delivery for the Whole House Program.
5	Technical Engineering and Energy Services Firms: provides installation of energy-efficiency projects for Small C&I, Large C&I, and GNI customers.

Market Partners

Market Partners are independent market participants that may provide conservation products and services to PPL Electric customers and may be supported by funding from the Company, but are not under contract to PPL Electric. PPL Electric’s low-income programs will be supported by several market partners, collectively termed community-based organizations (CBOs), which provide energy-efficiency services directly to income-qualified customers. PPL Electric will leverage its existing relationship with CBOs to expand and enhance its programs as appropriate.

4.1.2. Risk categories of performance, technology, market, and evaluation can affect the programs and risk management strategies.

See **Section 1.2.5:** Managing Uncertainty. These issues are further described within each individual program.

4.1.3. Human resources and contractor resources needed to successfully implement Phase II.

PPL Electric expects to use internal staff, CSPs, trade allies, CBOs, and market partners to promote and deliver programs and has developed, over the last four years, a robust network to provide the proposed services. Training and ensuring contractors are up-to-date on the latest technology and the rebates being offered are the key to the success of the proposed programs. PPL Electric has included provisions and funding in its Plan for ongoing contractor recruitment, outreach, and training. Contractors and trade allies, especially those who meet face-to-face with customers, have provided us with valuable insights. PPL Electric will continue to solicit customer and contractor feedback and conduct market research as part of its process evaluation to determine where gaps in contractor resources may exist. That information will be used to develop a plan around retaining and recruitment. Combining contractor and customer feedback with market research will ensure that PPL Electric will be nimble in making specific program changes.

The Company will assign Customer Programs Specialists, supported by administrative and marketing staff, to oversee each of its CSPs and programs. A Customer Programs Specialist may be responsible for more than one program, with programs that have a natural fit grouped together. PPL Electric frequently evaluates workloads and staffing needs and makes adjustments if necessary. In all cases, one individual will be the lead for each program and will be directly accountable for program results.

A description of PPL Electric’s EE&C Plan management structure and an organizational chart (**Figure 6**) are provided in **Section 4.2.1.**

4.1.4. “Early Warning Systems” to indicate progress toward the goals. PPL Electric’s approach and process for shifting goals and funds, as needed, between programs and adding new measures/programs.

Ongoing monitoring of program activity, enabled by the EEMIS tracking system, management oversight, and the independent EM&V evaluator, provide the means for detecting early indications that programs are not meeting their performance targets. PPL Electric programs staff monitor programs at least monthly to review customer participation, savings and costs. The review includes identifying programs that are meeting goals, those that are exceeding goals, and those that are not meeting goals. That evaluation is the primary indicator of a program’s progress toward its targets. This information – along with feedback from CSPs, the results of the independent evaluations, and/or customer surveys – is analyzed by PPL Electric to evaluate any program that might be underperforming. Root causes are identified and appropriate actions are taken to correct any identified problems.

4.2. Executive Management Structure

4.2.1. PPL Electric's structure for addressing portfolio strategy.

The Company will use a combination of its existing staff to design, implement, and manage programs; oversee program CSPs; and support functional requirements of program delivery, such as marketing and advertising, customer education, program and portfolio evaluation, measurement, verification, tracking, and reporting.

PPL Electric's Plan is managed by the **Director of Customer Programs and Services**. The Director of Customer Programs and Services is responsible to provide leadership and oversight for the development and implementation of the Plan, including developing a portfolio strategy; planning and designing programs; tracking and analyzing performance; EM&V; reporting cost-effectiveness, savings and demand reduction impacts; internal and external communications; marketing; working with stakeholders; managing CSP procurement; and budgeting and financial management.

PPL Electric's **Manager, Energy-Efficiency and Conservation Programs** is responsible for managing and overseeing a staff of Customer Program Specialists who have primary responsibility to design, develop and deliver programs.

PPL Electric's **Manager, Energy Efficiency Evaluation and Performance** is responsible for EM&V, QA/QC of programs, the tracking system, formal reporting of energy-efficiency programs, interfacing with the Statewide Evaluator, and ensuring the energy-efficiency programs comply with the Commission's requirements.

PPL Electric's **Manager, Customer Communication & Education** is responsible for the overarching Act 129 marketing, advertising and public relations campaign, the PPL Electric website, and the E-Power Team.

PPL Electric's **Manager, Marketing Research** is responsible for conducting and evaluating market research using a variety of research methods including PPL's Online Power Panel, other online research, telephone research, and qualitative research techniques.

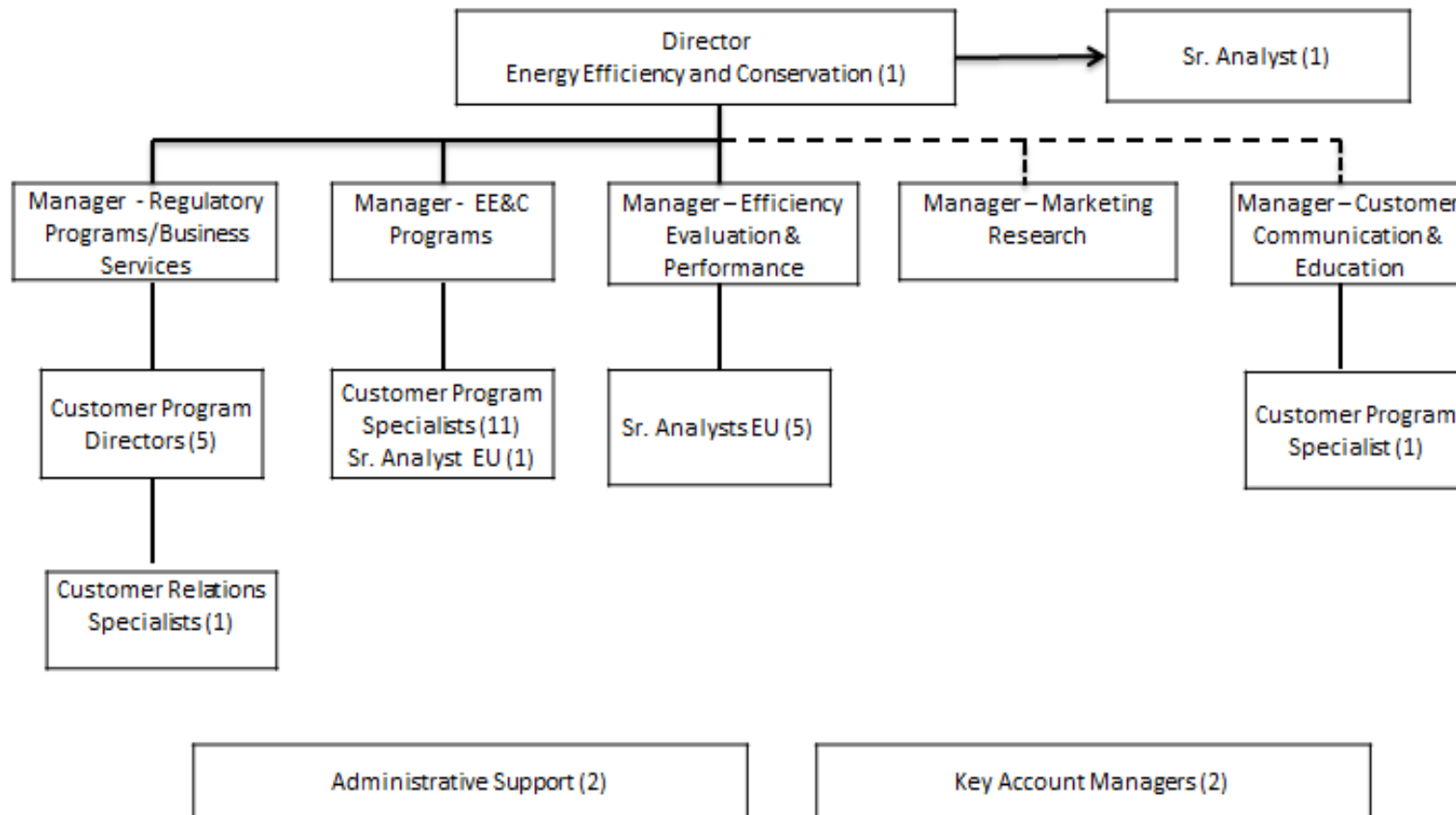
PPL Electric's **Manager, Regulatory and Business Services** responsibilities include in part, the overall strategy and implementation of PPL Electric's low-income Winter Relief Assistance Program, (WRAP), "On Track" program and the Low-Income Usage Reduction Program (LIURP.)

PPL Electric's **Customer Program Specialist** staff manages the day-to-day supervision of each program and CSPs. Low-Income WRAP staff manages the day-to-day supervision of the WRAP. PPL Electric's, Key Account Managers support and help promote non-residential programs.

PPL Electric uses internal specialists in advertising; evaluation, measurement, and verification; quality assurance and quality control; and data tracking systems to oversee these cross-program functional requirements, manage associated CSPs, and provide ongoing support to Customer Program Specialists and the Manager of EE&C Programs. Additional staff also supports low-income programs.

Figure 6 summarizes PPL Electric's EE&C management structure and staffing requirements. Staffing levels may change to match ongoing workload.

Figure 6: PPL Electric’s EE&C Plan Management Structure



PPL Electric recognizes that its EE&C Plan depends not only on well-designed programs and well-qualified CSPs, but also on a commitment to ongoing monitoring and improvement of energy-efficiency programs after they are launched. As part of that commitment, PPL Electric has implemented a plan to oversee its CSPs to ensure that they meet the requirements of their contracts and to monitor and modify, as needed, marketing and delivery procedures to meet defined savings targets and optimize customer satisfaction. PPL Electric's oversight plan includes the following elements:

- **Dedicated PPL Electric management staff assigned to each program.** PPL Electric's staff oversees each of the programs offered through the EE&C Plan. Program staff is responsible for overall program management; including the performance of relevant program CSP(s). PPL Electric staff measures progress of goals and compliance with milestones and performance standards for each program.
- **EM&V CSP.** PPL Electric's EM&V CSP provides independent evaluations of program impacts and additional evaluation services as needed. This CSP conducts process evaluations of programs to identify gaps between program design and operations and coordinates the Company's EM&V activities with the statewide EE&C Plan evaluator. Process evaluations consider all aspects of a program's design intent and allow the EM&V CSP to evaluate implementation performance against this standard.
- **Monitor and measure program performance.** PPL Electric has annual savings goals needed to meet Act 129 targets as well as performance criteria such as customer satisfaction and program participation. CSPs are required to measure the performance of their programs, compare performance with PPL Electric targets, and submit the results at least monthly, noting any variances, to PPL Electric. Near real-time reporting allows PPL Electric and its CSPs to identify deviations from expected results and to address the deviations.

4.2.3. Administrative budget.

PPL Electric has defined "administrative costs" as all utility costs to develop, implement, and manage the Plan except payments to customers/trade allies (rebates and incentives). Administrative costs consist of all PPL Electric labor and materials, CSP labor and material, marketing, QA/QC and EM&V, tracking systems, legal, and the statewide evaluator.¹⁹ The cost of goods and services provided to low-income and other customers at no cost is classified as "administrative", as directed by the Commission beginning in Program Year 3 for Phase I.

4.3. Conservation Service Providers (CSPs).

4.3.1. List of CSPs, qualifications and basis for selection.

PPL Electric renegotiated with the Act 129 Phase I Appliance Recycling Contractor, JACO Environmental Inc., and will continue to engage JACO Environmental Inc. as the Appliance Recycling CSP in Phase II. The Contract along with review documentation is found in **Appendix B**.

PPL will release RFPs and evaluate and select CSPs based on the template submitted and approved by the Commission for Phase I on April 17, 2009, Docket No. M-2008-2069887. As

¹⁹ PPL Electric's share of the Commission's Statewide evaluation contractor. Those costs, as well as EM&V costs for net-to-gross analysis, are not subject to the Act 129 cost cap.

noted in the Implementation Order, EDCs are allowed to choose to renegotiate contracts with Phase I CSPs. PPL Electric is in the process of identifying and renegotiating contracts with several CSPs. The process for evaluating current CSPs is outlined in **Appendix F**.

PPL Electric expects to retain the following CSPs in Phase II.

Table W: Phase I CSPs expected to be retained in Phase II

CSP	Program
Jaco Environmental, Inc.	Appliance Recycling Program
KEMA	Custom and Prescriptive Programs (Small C&I, Large C&I and GNI)
Resource Action Program	E-Power Wise
Opower	Energy-Efficiency Behavior & Education
UMarketing	Overarching Advertising and Marketing
CGI	EEMIS
Cadmus	EM&V and Plan development

4.3.2. Work and measures being performed by CSPs

See **Section 4.1.1** regarding Services to be provided by PPL Electric, CSP’s and Trade Allies. The role of the CSP is also found within each individual program description.

4.3.3. Pending RFPs to be issued for additional CSPs

The following programs are new to Phase II. RFPs either will be or have been released.

- Residential Retail Program
- School Benchmarking Program
- Residential Home Comfort Program
- Continuous Energy Improvement Program
- Low-Income Multifamily Master Metered Program
- Student and Parent Energy-Efficiency Education Program

All six new program CSPs are expected to provide turnkey services. Program details including the timeline for issuing each RFP are located in **Section 3** within each program description.

5. Reporting and Tracking Systems

5.1. Reporting

PPL Electric will provide quarterly, annual, and ad hoc reports to the Commission and the Statewide Evaluator (SWE) in accordance with the schedule, format, and content prescribed by the Commission/SWE for those reports. PPL Electric expects the schedule, format, and content to be comparable with existing Phase I reports.

5.2. Project Management Tracking Systems

PPL Electric will continue to use its Energy Efficiency Management Information System— (“EEMIS”) to record energy-efficiency transactions and calculate reported savings. PPL Electric uses its corporate accounting system to track all energy-efficiency program cost information. PPL Electric uses its corporate business intelligence system (MicroStrategy) for internal analysis and internal reporting of energy-efficiency programs. PPL Electric will modify EEMIS as necessary to incorporate Phase II changes to programs and the Commission/SWE’s reports, data extracts, etc.

EEMIS is based on a commercially available Oracle database platform and includes the following features and capabilities:

Database Structure

- Allows for multiple levels of data resolution (e.g., measure, project, premise, site customer, sector, program type, CSP, etc.).
- Allows users to easily navigate through layers of data (e.g., measures, project, program, etc.).
- Provides a database for storing electronic documents related to program participants and other functions.
- Provides a straightforward interface for adding programs and program components.

System Access

- Allows varying levels of security-controlled access by PPL Electric staff, program CSPs, and system administrators. Direct access (read-only) is not recommended for Commission personnel, the SWE, or PPL Electric’s evaluator because they would need significant training to understand the system. PPL Electric provides data extracts to those parties instead.
- Is accessible through the Internet or direct links, as appropriate, and will be traceable, i.e., maintaining a log of users’ access.
- Access controlled via security rights assigned to each user or groups of users.
- Allows for appropriate security (releases, encryption, etc.) on customer data.

Functionality

- Records energy-efficiency transaction information such as customer account number, unique record ID, installation date of the measure, description and parameters of the measure (quantity, size, efficiency rating, end use, etc.), program name, customer, sector, and data required to calculate savings, and other required information about each transaction.
- Allows CSPs to file program transactions via a secure web link or via the administrative CSP’s system.
- Calculates reported gross savings and allocates the savings to the program, customer sector, and reporting period.

- Allows data extracts to be securely exported to external parties such as PPL Electric's EM&V CSP and the SWE.
- Is linked to PPL Electric's customer information system so that PPL Electric can confirm the eligibility of participants and customer service staff knows which customers participate in programs.

Data Quality Control

- Has intelligent use of drop-down lists, menus and keyboard shortcuts.
- Allows data parameters (e.g., maximum/minimum) to be set for each data element to avoid erroneous entries.
- Checks for and alerts users to possible duplicate data entry before posting data.
- Provides an audit trail for all corrected data entry errors, deletions, etc.
- Tracks key transaction stages for program participants (application processing) and stages in workflow for CSP's and PPL Electric (project tracking).
- Generates standard and customized reports for PPL Electric's day-to-day analysis and management of the portfolio.

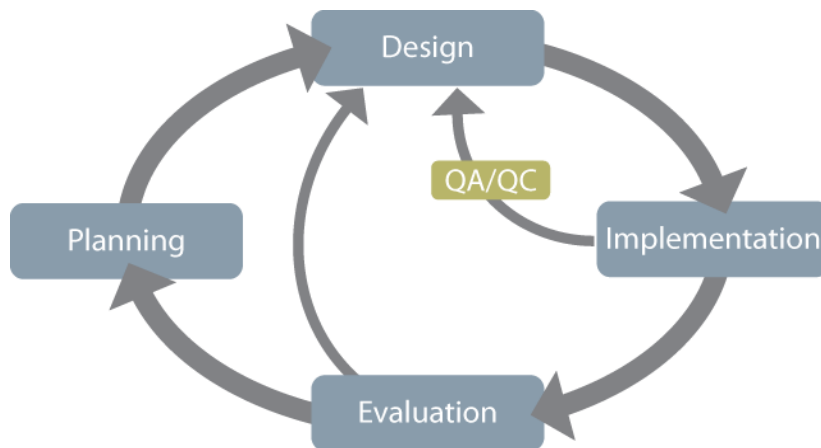
6. Quality Assurance and Evaluation, Measurement and Verification

6.1. Quality Assurance/Quality Control

6.1.1. Overall approach to quality assurance and quality control

A continuous improvement process (CIP) is the framework for PPL Electric’s management of its Plan portfolio. The basic principle in CIP, illustrated in **Figure 7**, is the establishment of effective quality assurance and quality control (QA) and evaluation, measurement and verification (EM&V) procedures to track program activities, monitor performance and progress toward targets, and take corrective measures when warranted. The CIP will consist of three essential elements: 1) activity tracking, 2) QA/QC, and 3) process and impact evaluations. Each of these activities is discussed below.

Figure 7. PPL Electric’s Continuous Improvement Process



QA/QC is integral to the design and delivery of all programs in PPL Electric’s EE&C Plan. Quality control measures are employed at various stages of program design and implementation to ensure high industry standards of operational efficiency, effectiveness, and customer satisfaction. These measures include, but are not necessarily limited to, the following:

- Ongoing tracking of program activities and costs.
- Applying quality assurance and quality control to ensure that the proper data are collected to document energy-efficiency transactions.
- Applying rigorous screening and qualifying protocols in engaging CSPs and field staff that interact directly with customers.
- Conducting follow-up calls to participants to ensure their satisfaction with the rendered services and to identify opportunities to improve the effectiveness of energy-efficiency programs.
- Conducting post-installation inspections of an appropriately-sized random sample of all participants to verify installation of measures and ensure proper installation.

6.1.2. Procedures for measure and project installation verification, quality assurance and control, and savings documentation.

PPL Electric's EEMIS documents and tracks all program and portfolio activity and calculates results (reported gross savings). The tracking system is designed with input interfaces customized to individual programs and coordinated with EM&V personnel and the Statewide Evaluator (SWE) to ensure that appropriate data are collected to feed into the evaluation process. Program CSPs are trained in the use of the tracking system and are expected to document every customer interaction, project and measure installation, complaints and remediation, project delivery timelines, and other metrics. In cases where a turnkey CSP delivers all aspects of a program, the CSPs will be expected to track all activity via secure Internet access or upload.

The Evaluation Plan for each program contains additional information about EM&V.

6.1.3. Process for collecting and addressing participating customer, contractor and trade ally feedback.

Customers may submit complaints by telephone, email, and in writing. Telephone numbers, addresses to mail complaints and an email link are all published on the PPL Electric website. Customer Program Specialists are responsible for following up, in a timely manner, on all complaints that are submitted directly to PPL Electric regarding Act 129 Programs and services.

Program CSPs are required to keep a log of complaints and resolutions. That information is provided to the PPL Electric Customer Program Specialist for review and necessary follow up.

PPL Electric in conjunction with the EM&V CSP has implemented an Evaluation Plan for each program. PPL Electric conducts ongoing customer satisfaction surveys. The EM&V CSP conducts customer and trade ally surveys as part of the impact evaluation and process evaluation.

6.2. Planned market and process evaluations.

Formal baseline studies and market potential studies are the responsibility of the Commission and SWE. PPL Electric's EM&V CSP conducts process evaluations. The process evaluations are a principal component of PPL Electric's continuous improvement process. The main objective in process evaluations is to monitor progress of individual programs and to provide timely feedback to program administrators. These evaluations also provide the necessary context for interpreting impact evaluation results. For each program in the Plan, the process evaluation will focus on improving program, operation, and delivery efficiency.

A primary objective in the process evaluations is to assess what program processes work well and which ones may be improved. Process evaluations begin with a logic model for each program, which describes the program's theory in terms of its goals, processes, outcomes, and a set of key indicators and metrics to assess the program's performance relative to its goals. The process evaluation also involves an "evaluability" assessment that includes a review of data collection and tracking procedures to determine whether data necessary for verification of the program's impacts are collected on time, in sufficient quantity, and in the proper format. Results of the process and impact evaluations also help to assess the effectiveness of programs in terms of market reach, measures adoption, and customer satisfaction. These evaluations help to identify opportunities to improve market reach and identify barriers that may impede program participation and adoption of efficiency measures.

Reviews of program documentation; interviews with internal program staff, CSPs and key market actors; and surveys of participants and non-participants will be the main sources of data for the process evaluation. Key market actors will vary from program to program and may include various trade allies such as equipment vendors, contractors, distributors, and retailers. Surveys of program participants and a comparable sample of non-participants also will be administered. Survey samples will be designed to meet a 90/10 criteria for statistical confidence and precision. For each program, samples may be stratified by customer sector, market segment, technology, geography, and project size (savings) to ensure the sample is representative of the population. It is anticipated that process evaluation will be implemented periodically (probably in PY5 and PY6) to ensure timely feedback to program planners and CSPs, and to allow enough time to implement any changes recommended by the process evaluation.

6.3. Strategy for coordinating with the Statewide EE&C Plan Evaluator

The SWE developed measurement and verification protocols, an Audit Plan, a standard format for quarterly and annual reports, and a standard format for data extracts that must be provided to the SWE. PPL Electric and its EM&V CSP will follow those requirements or request approval for exceptions.

Impact evaluations serve as the principal means of verifying the installation of EE&C measures and quantifying the resulting energy and demand impacts. Methods for measurement and verification of savings will vary by program and sector and are described in each program's Evaluation Plan.

7. Cost-Recovery Mechanism.

7.1 Amount of total annual revenues as of December 31, 2006, calculation of the total allowable EE&C costs based on 2% of that annual revenue amount.

Section 2806.1(g) of Act 129 requires that the total cost of any EE&C Plan cannot exceed 2% of the EDC's total annual revenues as of December 31, 2006. PPL Electric's total annual revenues for calendar year 2006 were approximately \$3 billion. Accordingly, the 2% cost cap established by Act 129 is approximately \$61.5 million. In its Phase II Implementation Order the Commission stated that the "total cost of any plan" should be interpreted as an annual amount, rather than an amount for the full term of the Plan.²⁰ In addition, the Commission has determined that certain implementation costs recoverable under Act 129 are not subject to the 2% cost cap. Those costs include PPL Electric's share of the Statewide Evaluator and net-to-gross evaluations.

7.2. Plan in accordance with 66 Pa. C.S. §§ 1307 and 2806.1 to fund the energy-efficiency and conservation measures, to include administrative costs.

PPL Electric will spend most of the \$184.5 million²¹ to implement its EE&C Phase II Plan, including administrative costs. This total cost also includes the costs that PPL Electric incurs to develop and modify its EE&C Plan. In the Implementation Order, the Commission found that EDCs should be permitted to recover the incremental cost incurred to design, create, and obtain Commission approval of a plan. Specifically, the Commission directed that recovery of Phase II costs allowed to be incurred in Phase I to be deferred until Phase II recover rates become effective. Implementation Order at 114. Accordingly, the Company proposes to amortize and recover those deferred costs ratably over the 36-month life of its Phase II EE&C Plan (i.e., June 1, 2013 through May 31, 2016). The amortization of those costs is included within the \$184.5 million spending cap.

7.3. Data tables (see Tables 6A, 6B, and 6C)

The tables on the following pages provide cost data for each program/sector broken out by direct program costs, administrative costs, and total costs (per PUC tables 6A, 6B, and 6C).

Cost effectiveness calculations by program are in **Section 7**.

²⁰ Phase II Implementation Order at 103.

²¹ \$184.5 million is PPL Electric's Act 129 cost cap. In addition, PPL Electric expects to incur approximately \$3 million for activities that the Commission determined is not subject to the cost cap. These activities include PPL Electric's share of the Statewide Evaluator's costs and PPL Electric's cost to conduct a net-to-gross evaluations each year.

Table 6A: Portfolio-Specific Assignment of EE&C Costs

Residential Portfolio (including Low-Income)						
EE&C Program	Estimated Cost Elements (\$)			Total EDC Costs ¹	Total Participant Costs ²	Total TRC Costs (EDC + Participant)
	Customer Incentives	EDC Labor, Materials & Supplies	CSP Labor, Materials & Supplies			
Appliance Recycling	\$ 1,567,950	\$ 315,000	\$ 3,306,321	\$ 5,189,271	\$ -	\$ 5,189,271
Residential Retail	\$ 25,229,400	\$ 675,000	\$ 4,223,389	\$ 30,127,789	\$ 21,623,725	\$ 51,751,514
Residential Home Comfort	\$ 5,111,225	\$ 450,000	\$ 4,289,574	\$ 9,850,799	\$ 15,070,410	\$ 24,921,209
Residential Energy-Efficiency Behavior & Education	\$ -	\$ 112,500	\$ 2,276,000	\$ 2,388,500	\$ -	\$ 2,388,500
Low-Income WRAP	\$ -	\$ 2,480,001	\$ 13,155,000	\$ 15,635,001	\$ -	\$ 15,635,001
Low-Income Energy-Efficiency Behavior & Education	\$ -	\$ 112,500	\$ 1,051,100	\$ 1,163,600	\$ -	\$ 1,163,600
E-Power Wise Program	\$ -	\$ 90,000	\$ 945,660	\$ 1,035,660	\$ -	\$ 1,035,660
Student and Parent Energy Efficiency Education	\$ -	\$ 180,000	\$ 5,915,867	\$ 6,095,867	\$ -	\$ 6,095,867
Prescriptive Efficient Equipment Incentive- Residential	\$ 183,777	\$ -	\$ 102,448	\$ 286,225	\$ 398,095	\$ 684,320
Totals	\$ 32,092,352	\$ 4,415,001	\$ 35,265,359	\$ 71,772,712	\$ 37,092,231	\$ 108,864,943

Notes:

¹ Common costs are not allocated to individual programs, thus are excluded from totals in this table.

² Participant costs are net of incentives.

Commercial/Industrial Small Portfolio						
EE&C Program	Estimated Cost Elements (\$)			Total EDC Costs ¹	Total Participant Costs ²	Total TRC Costs (EDC + Participant)
	Customer Incentives	EDC Labor, Materials & Supplies	CSP Labor, Materials & Supplies			
Prescriptive Efficient Equipment Incentive- Small C&I	\$ 16,280,461	\$ 570,500	\$ 4,343,190	\$ 21,194,151	\$ 10,656,671	\$ 31,850,822
Custom Incentive- Small C&I	\$ 684,004	\$ 418,500	\$ 460,001	\$ 1,562,505	\$ 1,312,510	\$ 2,875,015
Residential Retail - Small C&I	\$ 3,246,600	\$ -	\$ 259,514	\$ 3,506,114	\$ 2,626,613	\$ 6,132,727
Totals	\$ 20,211,065	\$ 989,000	\$ 5,062,705	\$ 26,262,770	\$ 14,595,793	\$ 40,858,563

Table 6A: Portfolio-Specific Assignment of EE&C Costs (Cont.)

Commercial/Industrial Large Portfolio						
EE&C Program	Estimated Cost Elements (\$)			Total EDC Costs ¹	Total Participant Costs ²	Total TRC Costs (EDC + Participant)
	Customer Incentives	EDC Labor, Materials & Supplies	CSP Labor, Materials & Supplies			
Prescriptive Efficient Equipment Incentive- Large C&I	\$ 7,621,610	\$ 683,500	\$ 3,102,419	\$ 11,407,529	\$ 15,045,578	\$ 26,453,106
Custom Incentive- Large C&I	\$ 6,797,996	\$ 373,500	\$ 1,646,999	\$ 8,818,495	\$ 17,029,896	\$ 25,848,391
Totals	\$ 14,419,606	\$ 1,057,000	\$ 4,749,418	\$ 20,226,024	\$ 32,075,474	\$ 52,301,497

Governmental/Educational/ Non-Profit Portfolio						
EE&C Program	Estimated Cost Elements (\$)			Total EDC Costs ¹	Total Participant Costs ²	Total TRC Costs (EDC + Participant)
	Customer Incentives	EDC Labor, Materials & Supplies	CSP Labor, Materials & Supplies			
Prescriptive Efficient Equipment Incentive- GNI	\$ 20,890,671	\$ 328,500	\$ 4,827,528	\$ 26,046,698	\$ 11,426,473	\$ 37,473,172
Custom Incentive- GNI	\$ 1,028,803	\$ 350,500	\$ 824,999	\$ 2,204,302	\$ 2,226,372	\$ 4,430,674
Master Metered Low-Income Multifamily Housing Program	\$ 968,176	\$ 450,000	\$ 1,684,776	\$ 3,102,952	\$ 1,417,520	\$ 4,520,472
Continuous Energy Improvement	\$ -	\$ 60,000	\$ 883,072	\$ 943,072	\$ 250,000	\$ 1,193,072
School Benchmarking	\$ -	\$ 30,000	\$ 270,000	\$ 300,000	\$ -	\$ 300,000
Totals	\$ 22,887,650	\$ 1,219,000	\$ 8,490,375	\$ 32,597,024	\$ 15,320,365	\$ 47,917,389

¹ Common costs are not allocated to individual programs, but are included in the total EDC Cost.

² Participant costs are net of incentives.

Total- All Sectors						
	Estimated Cost Elements (\$)			Total EDC Costs ¹	Total Participant Costs ²	Total TRC Costs (EDC + Participant)
	Customer Incentives	EDC Labor, Materials & Supplies	CSP Labor, Materials & Supplies			
Total	\$ 89,610,672	\$ 7,680,001	\$ 53,567,858	\$ 150,858,530	\$ 99,083,862	\$ 249,942,393
Common Costs				\$ 35,262,000		\$ 35,262,000
Total EDC Costs				\$ 186,120,530		\$ 285,204,393

¹ Common costs are not allocated to individual programs, thus are excluded from totals in this table.

² Participant costs are net of incentives.

*Includes \$3 million SWE costs that are not subject to the \$184.5 million cost cap.

Table 6B: Allocation of Common Costs to Applicable Customer Sector

Common Cost Element	Total Estimated Cost (\$)	Basis for Estimated Cost Allocation	Estimated Class Cost Allocation (\$)			
			Residential (Including Low-	Commercial/Industrial -- Small	Commercial/Industrial -- Large	Governmental/Non-profit
Plan Development	\$ 1,050,000	Common costs are allocated to sectors by each sector's proportion of total direct costs	\$ 499,550	\$ 182,793	\$ 140,776	\$ 226,881
EM&V ^{1,2}	\$ 14,560,000		\$ 6,927,090	\$ 2,534,732	\$ 1,952,100	\$ 3,146,078
Advertising & Marketing ¹	\$ 9,487,000		\$ 4,513,551	\$ 1,651,580	\$ 1,271,949	\$ 2,049,920
Tracking System	\$ 5,840,000		\$ 2,778,448	\$ 1,016,678	\$ 782,985	\$ 1,261,888
General Management/Plan management	\$ 2,475,000		\$ 1,177,510	\$ 430,870	\$ 331,830	\$ 534,790
Market Research ¹	\$ 950,000		\$ 451,974	\$ 165,384	\$ 127,369	\$ 205,273
Major Accounts ¹	\$ 900,000	Proportion of direct costs excluding Residential	\$ -	\$ 298,871	\$ 230,173	\$ 370,956
Totals	\$ 35,262,000		\$ 16,348,124	\$ 6,280,908	\$ 4,837,182	\$ 7,795,786

Notes:

¹ Actual costs will be charged to specific customer sectors where possible. General costs (applicable to all sectors) will be allocated based on each sector's proportion of total direct costs.

² Includes \$3MM SWE costs that are not subject to the \$184.5MM cost cap.

Table 6C. Summary of Estimated Portfolio EE&C Costs

Portfolio	Total Sector Portfolio-specific Estimated Costs (Direct Costs)	Total Estimated Common Costs ¹	Total of All Estimated EDC (Portfolio) Costs	Total Participant Costs ²	Total- All Costs (EDC + Participant)
Residential (Including Low-Income)	\$ 71,772,712	\$ 16,348,124	\$ 88,120,836	\$ 37,092,231	\$ 125,213,067
Commercial/Industrial -- Small	\$ 26,262,770	\$ 6,280,908	\$ 32,543,678	\$ 14,595,793	\$ 47,139,472
Commercial/Industrial -- Large	\$ 20,226,024	\$ 4,837,182	\$ 25,063,206	\$ 32,075,474	\$ 57,138,679
Governmental/Educational/Non-profit	\$ 32,597,024	\$ 7,795,786	\$ 40,392,810	\$ 15,320,365	\$ 55,713,175
Totals	\$ 150,858,530	\$ 35,262,000	\$ 186,120,530	\$ 99,083,862	\$ 285,204,393

Notes:

¹ Includes \$3MM SWE costs that are not subject to the \$184.5MM cost cap.

² Participant costs are net of incentives.

7.4. Tariffs and a Section 1307 cost recovery mechanism. Calculations and supporting cost documentation.

Section 2806.1(k) (1) of Act 129 authorizes EDCs to recover the costs of their EE&C Plan through a reconcilable adjustment clause under Section 1307 of the Public Utility Code. The Commission reiterated this requirement in its August 3, 2012 Implementation Order.²² In its EE&C Plan filing, PPL Electric has included tariff pages to implement such a cost recovery mechanism (**Appendix G**). The Implementation Order also directs that such cost recovery mechanisms must be non-bypassable, and not affect the EDC's price-to-compare, if the EE&C Plan benefits both shopping and non-shopping customers.²³ Because all of the programs included in PPL Electric's proposed EE&C Plan will benefit both shopping and non-shopping customers, the Company has designed its cost recovery mechanism to be non-bypassable. For residential customers, the cost recovery mechanism will be applied as a levelized cents per kWh component included in the distribution customer charge. For Small C&I customers, the cost recovery mechanism will be applied as a levelized cents per kWh charge that will be a separate line item on the customer's bill. For Large C&I customers, the cost recovery mechanism will be applied as a dollars per kW charge, as a separate line item on the customer's bill, where the demand (kW) is the customer's PJM Interconnection, LLC Peak Load Contribution (PLC) which may change yearly.

The Company proposes to calculate separately the applicable EE&C costs for each of the three major customer classes on its system: (1) residential, (2) small commercial and industrial, and (3) large commercial and industrial. These costs will vary in each program year of the EE&C Plan. In some program years, they may be greater than the annual 2% cost cap; in other program years, they may be less than the cap. However, over the three program years, the total costs of the EE&C Plan for all customer classes will not exceed \$187.5 million which includes \$3 million for SWE costs.

Although costs will vary year-to-year, PPL Electric proposes to recover those costs on a levelized basis. Annual budget amounts for each customer class will be developed on a levelized basis for the three years of the Company's proposed EE&C Plan. The budget amounts will be adjusted to include the annual costs that PPL Electric will incur to pay for the Act 129 Statewide Evaluator. Section 2806.1(h) of Act 129 provides that the Commission can recover such program implementation costs from EDCs, and logically it follows that EDCs can recover those costs from customers. However, the costs for the Act 129 Statewide Evaluator are not included under the Company's 2% cost cap. In establishing that cost cap, Section 2806.1(g) specifically characterizes the cap as a limitation on the "total costs of any plan required under this section."

The adjusted budget amounts will be included each year in the Company's cost recovery mechanism. These amounts will be recovered from customers in the residential and small commercial and industrial classes on a levelized cents per kWh basis. They will be recovered from customers in the large commercial and industrial class cost per kW basis where the kW demand is the customer's PJM Peak Load Contribution (PLC) which may change yearly. For each customer class, PPL Electric proposes to separately reconcile the revenues collected under the cost recovery mechanism with the adjusted budget amounts for that year. This reconciliation, which will be performed on an annual basis, primarily will reflect variations in

²² Phase II Implementation Order, at page 115

²³ Ibid, p. 118

actual sales from forecasted sales. The Company does not propose to reconcile the revenues collected under the cost recovery mechanism to its actual spending levels in each year. As discussed above, those spending levels can vary from year-to-year.

In addition to the annual reconciliation, to avoid a large reconciliation at the end of the Phase II EE&C Plan, PPL Electric may propose to make "mid-course" corrections in the cost recovery mechanism to reflect major changes to any of its EE&C programs. Any mid-course corrections will be provided to stakeholders and submitted to the Commission. At the end of the Phase II Plan, PPL Electric will complete a reconciliation to account for any differences between the total actual costs incurred for each customer class and the total actual revenues billed to each class over the period June 1, 2013 through May 31, 2016.

In its Implementation Order the Commission also directed that each EDC develop its Phase II reconcilable adjustment clause tariff mechanism to be separate from its Phase I cost recovery mechanism. Therefore, the Phase II cost will be accounted for and reconciled separately from Phase I funds. Implementation Order at 118. PPL Electric's Phase II cost recovery mechanism is set forth in the tariff included as Appendix G to the Phase II Plan.²⁴

PPL Electric will not collect or pay interest on under- or over-collections of Act 129 costs. Finally, PPL Electric is not proposing an expiration date for the cost recovery mechanism. The mechanism will be needed to refund any over-collection or recover any under-collection existing at the end of the three-year Plan and for the purpose of any ongoing program cost recovery. The cost recovery will not exceed the mandated 2% cost cap.

Appendix G includes PPL Electric's current Phase II cost recovery mechanism as set forth in tariff supplement 140 to Tariff-Electric PA PUC No. 201 as filed on October 22, 2013, approved on October 31, 2013 with an effective date of November 1, 2013.

7.5. Describe the cost recovery mechanism that will ensure measures approved are financed by the same customer class that will receive the direct energy and conservation benefits.

Section 2806.1(a)(11) of Act 129 requires that EE&C measures must be paid for by the same customer class that receives the energy and conservation benefits of those measures. Accordingly, in its Implementation Order, the Commission directed EDCs to first assign the costs relating to each measure to those classes that will receive the benefits.²⁵ PPL Electric will follow this direct assignment approach wherever possible. However, some costs ("common costs" or "portfolio-level costs") will relate to EE&C functions that are applicable to more than one customer class or that provide system-wide benefits. The Commission directed EDCs to allocate those costs, and general administrative costs, using reasonable and generally acceptable cost of

²⁴ PPL Electric's current Act 129 Compliance Rider ("ACR") provides the final reconciliation procedure for the Company's Phase I Plan. Specifically, at the conclusion of the Phase I Plan, and all subsequent Plans, collections under the ACR for each customer class will be reconciled to the total cost of that EE&C Plan allowed by the Commission for that customer class. Over collections or under collections will be reflected in the E factor, and will be refunded or recovered through the ACR calculated for the first compliance year of the subsequent EE&C Plan. If the Company does not implement a subsequent EE&C Plan, the current ACR will be continued for at least an additional year to refund any over collections or recover any under collections. PPL Electric has not proposed to modify its reconciliation procedure.

²⁵ Ibid, p. 110

service principles as are commonly utilized in base rate proceedings.²⁶ Consistent with this provision of the Implementation Order, PPL Electric proposes to allocate such costs using an allocation factor equal to the percentage of the EE&C costs directly assigned to each customer class to the total EE&C costs directly assigned to all customer classes.

²⁶ *Ibid*, p. 111

8. Cost-effectiveness

8.1. Cost-effectiveness of proposed plan as defined by the Total Resource Cost Test (TRC) specified by the Commission.

Cost-effectiveness of the proposed portfolio was demonstrated in data presented in **Section 3**, Program Descriptions and **Tables 7- 7E**. For each program in the Plan, cost-effectiveness was determined in accordance with the procedures for the modified California test²⁷ described in the Commission’s Secretarial Letter concerning the implementation of Energy-efficiency and Conservation Program (Docket No. M-2008-2069887) and subsequent refinements introduced in the Commission’s August 30, 2012 Order concerning the Total Resource Cost for Phase II of Act 129. (Docket No M-2012-2300653).

Assessment of cost-effectiveness for each program in the Plan began with a valuation of each conservation measure’s net “total resource” benefits (B_{TRC}) over the life of the conservation measure, for a maximum of 15 years as directed in the TRC Order, as well as the measure’s total incremental installed costs (C_{TRC}). A measure (or program) was deemed cost-effective if its net “total resource” benefits were positive or the benefit-to-cost ratio was at least one, i.e.:

$$\text{Or} \quad B_{TRC} - C_{TRC} \geq 0$$

$$B_{TRC} / C_{TRC} \geq 1$$

The TRC data in this EE&C Plan are estimates based on the planning assumptions in this EE&C Plan. The Company will complete a cost-effectiveness evaluation using actual program results as part of its yearly evaluations.

Calculation of Avoided Costs of Supplying Electricity

The avoided costs of delivered electricity were calculated for a 15-year planning horizon in three segments, in accordance with the procedure prescribed in Section H of the Commission’s August 30, 2012 TRC Order, as follows:

Years 1-4 (June 2013-May 2017): PJM NYMEX PPL Zone Off-Peak and On-Peak LMP Swap futures as of 8/30/12 are used through December 2015. PJM Western Hub Off-Peak and On-Peak LMP Swap futures are used from January 2016 through May 2017. These Western Hub values are adjusted, as described by, by looking at the 2015 ratio between PJM PPL Zone LMP Swap futures and Western Hub futures, and applying this ratio to the Western Hub values for 2016 and the first five months of 2017.

Years 5-10 (June 2017-May 2023): NYMEX Henry Hub Natural Gas Futures are used, as of 8/30/13 and converted to electric prices through an on-peak and off-peak heat rate. Basis adjustments are included. On-peak and off-peak spark price spreads are included.

Years 11-15 (June 2023-May 2028): Middle Atlantic Natural Gas Prices for Electric Power from the EIA AEO Energy Prices by Sector and Source are used, converted to electric prices through the on-peak and off-peak heat rate. On-peak and off-peak spark price spreads are included.

Avoided capacity costs were estimated using PJM base residual auction results through 2015 and 2016. After 2016, prices were escalated using the consumer price index from the Bureau of Labor Statistics

²⁷ See *California Standard Practice Manual for Economic Analysis of Demand-Side Management Programs and Projects*, California Energy Commission, October 2001.

(BLS). Avoided costs for each sector were calculated by adjusting the 15-year avoided costs by PPL Electric’s transmission and distribution costs. The assumptions used in calculation of avoided costs are summarized, by sector in **Table Y**.

Table Y: Main Assumptions Used in Avoided Costs and TRC Calculations

Discount Rates:	Utility Discount Rate	8.14%
	Participant Discount Rate	10.00%
	Societal Discount Rate	8.14%
	TRC Discount Rate	8.14%
Line Losses:	Energy	
	Residential	8.33%
	Commercial	8.33%
	Industrial	4.1205%
	GNI ²⁸	6.22525%
	Demand	
	Residential	8.33%
	Commercial	8.33%
	Industrial	4.1205%
	GNI	6.22525%
	Base Rate (2010)	0.132
	Average Residential Rate Escalator	-1.188%
T&D Prices	Average Non-Residential Escalator	-1.128%
	Last year of data	2033
	Transmission (\$/kWh)	
	Residential	0.00687
	Small C&I	0.01294
	Large C&I	0.00420
	GNI	0.00857
	Overall	\$ 0.0078
	Distribution (\$/kWh)	\$ 0.0200
	Residential	0.033590

²⁸ GNI sector is modeled as 50% Small C&I and 50% Large C&I. The line loss and T&D prices are an average of the Small C&I and Large C&I values.

Table Z: Overall Avoided Costs (Weighted Average, All Sectors)

Year	Electric Energy Avoided Costs (\$ Nominal)				Capacity Avoided Cost
	Winter On- Peak	Winter Off- Peak	Summer On-Peak	Summer Off-Peak	Summer \$/kW-Yr
	\$/ kWh	\$/ kWh	\$/ kWh	\$/ kWh	
2014	\$0.0708	\$0.0589	\$0.0763	\$0.0565	\$10.12
2015	\$0.0745	\$0.0609	\$0.0787	\$0.0597	\$45.99
2016	\$0.0773	\$0.0630	\$0.0764	\$0.0616	\$49.64
2017	\$0.0796	\$0.0654	\$0.0785	\$0.0640	\$50.31
2018	\$0.0880	\$0.0720	\$0.0839	\$0.0686	\$50.95
2019	\$0.0913	\$0.0747	\$0.0869	\$0.0711	\$51.72
2020	\$0.0950	\$0.0777	\$0.0904	\$0.0739	\$52.46
2021	\$0.0988	\$0.0808	\$0.0941	\$0.0770	\$53.19
2022	\$0.1026	\$0.0839	\$0.0979	\$0.0801	\$53.94
2023	\$0.1065	\$0.0870	\$0.1016	\$0.0831	\$54.69
2024	\$0.1104	\$0.0902	\$0.1054	\$0.0861	\$55.47
2025	\$0.1108	\$0.0892	\$0.1085	\$0.0873	\$56.26
2026	\$0.1146	\$0.0921	\$0.1123	\$0.0903	\$57.05
2027	\$0.1182	\$0.0950	\$0.1160	\$0.0933	\$57.85
2028	\$0.1217	\$0.0978	\$0.1195	\$0.0961	\$58.67
2029	\$0.1252	\$0.1007	\$0.1230	\$0.0989	\$59.50
2030	\$0.1294	\$0.1040	\$0.1266	\$0.1018	\$60.33
2031	\$0.1344	\$0.1079	\$0.1311	\$0.1054	\$61.18
2032	\$0.1394	\$0.1119	\$0.1364	\$0.1095	\$62.05
2033	\$0.1438	\$0.1154	\$0.1412	\$0.1133	\$62.92

Measure Data

Estimates of savings, incremental cost, and information on measure life for this EE&C Plan revision were obtained primarily from the 2013 Pennsylvania Technical Resource Manual (TRM), the draft 2014 TRM, the PA Incremental Cost Database, and the May 2012 study Electric Energy Efficiency Potential in Pennsylvania, conducted by the Statewide Evaluator (SWE). Data for new measures not found in the TRM were compiled from secondary sources, including the California Database for Energy-Efficiency Resources (DEER).

Program Benefit Components

The benefits used in the TRC calculation include the full value of time and seasonally differentiated generation, transmission and distribution, and capacity costs. Benefits also take into account avoided line losses. To capture the full value of time and seasonal impacts of each program measure, hourly (8,760) system-avoided costs were adjusted by the hourly load shape of the end user affected by the measure. Non-energy benefits such as water savings were not factored into the calculation because these benefits are typically difficult to quantify and too small to alter the outcomes of the analyses.

Program Cost Components

The cost component of the TRC analysis included the incremental measure costs and direct utility costs. Incremental measure costs are the expenses associated with the installation of energy-efficiency measures and ongoing operation and maintenance costs, where applicable. The incremental measure costs were obtained primarily from the Electric Energy Efficiency Potential in Pennsylvania. Incremental measure costs not included in this study were obtained from a variety of sources, including DEER and RSMMeans, PPL Electric's actual experience from Phase I (such as the actual project cost for an average C&I lighting retrofit project), among other sources.

EDC costs consist of expenses associated with program development, delivery and ongoing operation, and fall into the following categories:

- 1) EDC Labor, Material, and Supplies
 - Costs to administer energy-efficiency programs include (but are not limited to) PPL Electric's fully-loaded incremental personnel costs.
 - Includes but are not limited to non-payroll costs for office supplies, computer and communication equipment, certain staff training, certain industry-related sponsorships and memberships, employee travel expenses, outside legal expenses.
- 2) Customer Incentives
 - Rebates or other incentives paid to customers (by PPL Electric or by CSPs) for implementing measures.
 - Upstream incentives such as payments from PPL Electric to CFL manufacturers and retailers who, in turn, discount those products at the point of sale.
- 3) CSP Labor, Materials and Supplies
 - Costs associated with performing program implementation tasks, including (but not limited to) lead intake, customer service, application processing, rebate application problem resolution, equipment installation inspections, rebate processing, and individual program reporting. Includes marketing by turnkey program CSPs.
- 4) Marketing (excludes marketing by turnkey program CSPs)
 - Promotion of energy-efficiency programs includes (but is not limited to) the production of energy-efficiency program literature, advertising, promotion, displays, events, promotional items, bill inserts, and internal and external communications. Advertising encompasses all forms of media such as direct mail, print, radio and Internet.
 - PPL Electric's costs associated with training and education of the trade ally community, including training associated with the delivery and promotion of its programs, best practices training and marketing programs to trade allies. Trade allies include, but are not limited to, HVAC contractors, weatherization contractors, equipment and product dealers, installers and C&I auditors. Trade allies may also include community groups and trade associations. This also includes vendor recruitment, training, and coordination costs (e.g., quality installation training).

PPL Electric also categorizes costs as follows:

- **Direct Costs:** These are costs that are directly related and charged to a specific program. PPL Electric will assign costs directly to programs where possible.
- **Common Costs (also known as Portfolio-level Costs):** These are costs that are applicable to more than one customer class, more than one program, or that provide portfolio-wide benefits.

- **EDC Costs:** These are costs incurred by PPL Electric and include all direct costs and common costs. These are the costs that are in the Plan budget and subject to the funding cap (plus SWE costs that are not subject to the funding cap).
- **Participant Costs:** These are costs incurred by the customer such as their material and installation of efficient measures. Often, participant cost is determined by subtracting Act 129 EE&C incentives from the incremental cost of the measure. Participant costs are used in the TRC evaluation only.

8.2 Data Tables 7-7E

Table 7: TRC Benefits Table

Portfolio	TRC Benefits By Program Per Year (\$000)													
	Program	Program Year	TRC ³	TRC Nominal ¹ Costs (\$000)	Program Benefits (\$000)		Capacity		Energy		Load Reductions in kW		MWh Saved	
					Annual (Nominal)	Lifetime ² (Discounted)	Annual		Annual		Annual	Lifetime	Annual	Lifetime
							Generation	Trans/Dist	Peak	Off Peak				
Residential ⁴	PY5			\$20,993	\$7,296	\$56,742	\$135	\$3,757	\$2,543	\$860	13,361	116,451	83,686	739,098
	PY6			\$40,000	\$8,376	\$75,192	\$616	\$3,991	\$2,783	\$986	13,388	162,143	87,423	1,015,914
	PY7			\$30,038	\$9,362	\$67,816	\$693	\$4,426	\$3,094	\$1,149	13,956	138,770	95,694	879,538
Program Total		2.20	\$91,031	\$25,034	\$199,750	\$1,444	\$12,175	\$8,420	\$2,995	39,063	417,364	253,485	2,634,550	
Low Income ⁴	PY5			\$5,597	\$467	\$4,687	\$7	\$242	\$153	\$65	668	8,231	5,411	66,615
	PY6			\$6,291	\$694	\$4,384	\$42	\$336	\$222	\$95	912	7,397	7,386	59,842
	PY7			\$5,947	\$1,213	\$5,038	\$77	\$580	\$390	\$166	1,552	8,047	12,576	65,122
Program Total		0.79	\$17,834	\$2,375	\$14,108	\$126	\$1,157	\$766	\$326	2,744	23,675	22,223	191,580	
Small C&I	PY5			\$20,230	\$5,657	\$59,719	\$130	\$2,639	\$2,295	\$594	12,796	159,583	70,072	885,557
	PY6			\$10,908	\$3,553	\$39,809	\$331	\$1,504	\$1,369	\$348	7,201	106,253	39,225	578,893
	PY7			\$9,720	\$3,256	\$36,790	\$317	\$1,361	\$1,251	\$327	6,393	94,327	35,090	517,871
Program Total		3.31	\$40,859	\$12,466	\$136,318	\$778	\$5,504	\$4,916	\$1,269	26,390	360,162	144,386	1,982,321	
Large C&I	PY5			\$14,891	\$1,555	\$20,546	\$49	\$267	\$911	\$328	4,830	71,979	30,939	461,439
	PY6			\$19,610	\$2,360	\$28,144	\$298	\$353	\$1,284	\$425	6,477	96,380	40,150	597,959
	PY7			\$17,801	\$2,204	\$26,571	\$295	\$323	\$1,203	\$384	5,941	88,337	36,328	540,629
Program Total		1.44	\$52,301	\$6,119	\$75,261	\$642	\$943	\$3,398	\$1,136	17,248	256,695	107,417	1,600,027	
GNI	PY5			\$16,330	\$2,281	\$28,277	\$58	\$802	\$1,077	\$344	5,758	84,968	34,425	507,409
	PY6			\$16,186	\$2,008	\$22,436	\$201	\$634	\$882	\$290	4,376	63,355	26,407	380,617
	PY7			\$15,401	\$2,132	\$22,789	\$224	\$663	\$934	\$311	4,511	61,976	27,352	370,986
Program Total		1.54	\$47,917	\$6,420	\$73,502	\$483	\$2,100	\$2,892	\$945	14,645	210,299	88,184	1,259,011	
Total			\$249,942	\$52,414	\$498,939	\$3,473	\$21,879	\$20,392	\$6,671	100,090	1,268,195	615,695	7,667,489	

¹ TRC costs reported in this table are different from those reported in Table 1. The TRC costs in this table are nominal annual values and do not include common, portfolio-level costs.

² TRC benefits reported in this table are different from those reported in Table 1. Benefits from PY6 and PY7 in this table are discounted back to years PY6 & PY7, rather than back to PY5, as is done in Table 1.

³ TRC Benefit-Cost ratio is based on discounted benefits & costs consistent with Table 1.

⁴ PY6 Low-Income Energy-Efficiency Behavior & Education and Residential Energy-Efficiency Behavior & Education savings are not counted toward total annual program savings (kW and MWh).

Table 7A: TRC Benefits Table - Residential Sector

TRC Benefits By Program Per Year (\$000)													
Program	Program Year	TRC ³	TRC Nominal ¹ Costs (\$000)	Program Benefits (\$000)		Capacity		Energy		Load Reductions in kW		MWh Saved	
				Annual (Nominal)	Lifetime ² (Discounted)	Annual		Annual		Annual	Lifetime	Annual	Lifetime
						Generation	Trans/Dist	Peak	Off Peak				
Appliance Recycling	PY5		\$1,734	\$790	\$5,297	\$13	\$408	\$262	\$107	1,302	8,910	9,121	66,504
	PY6		\$2,033	\$810	\$5,233	\$53	\$389	\$260	\$108	1,144	8,116	8,561	62,949
	PY7		\$1,422	\$831	\$5,433	\$57	\$395	\$268	\$111	1,144	8,116	8,561	62,949
Program Total		3.06	\$5,189	\$2,430	\$15,963	\$123	\$1,192	\$790	\$326	3,591	25,143	26,243	192,401
Residential Retail - Residential	PY5		\$11,613	\$5,771	\$44,629	\$111	\$2,970	\$2,045	\$645	10,939	95,453	66,055	579,569
	PY6		\$23,822	\$5,449	\$60,303	\$431	\$2,581	\$1,855	\$583	9,368	137,488	56,363	826,802
	PY7		\$16,316	\$4,607	\$51,342	\$383	\$2,157	\$1,572	\$496	7,711	113,127	46,485	681,590
Program Total		3.03	\$51,752	\$15,827	\$156,274	\$924	\$7,708	\$5,472	\$1,723	28,017	346,069	168,903	2,087,961
Residential Home Comfort	PY5		\$6,251	\$306	\$3,046	\$5	\$158	\$95	\$48	505	5,867	3,541	42,805
	PY6		\$10,241	\$462	\$4,798	\$31	\$221	\$137	\$72	679	8,722	4,901	66,018
	PY7		\$8,429	\$416	\$4,364	\$30	\$197	\$125	\$64	598	7,743	4,298	58,124
Program Total		0.49	\$24,921	\$1,184	\$12,208	\$66	\$576	\$357	\$184	1,782	22,332	12,739	166,946
Residential Energy-Efficiency Behavior & Education	PY5		\$0	\$0	\$0	\$0	\$0	\$0	\$0	-	-	-	-
	PY6		\$1,022	\$1,252	\$1,252	\$76	\$605	\$401	\$170	1,642	1,642	13,318	13,318
	PY7		\$1,366	\$3,107	\$3,107	\$197	\$1,486	\$1,000	\$424	3,970	3,970	32,205	32,205
Program Total		1.80	\$2,389	\$4,359	\$4,359	\$273	\$2,091	\$1,401	\$595	3,970	5,612	32,205	45,523
Prescriptive Efficient Equipment Incentive - Residential	PY5		\$70	\$6	\$68	\$0	\$3	\$2	\$1	11	152	69	991
	PY6		\$335	\$61	\$675	\$5	\$29	\$20	\$7	105	1,546	631	9,290
	PY7		\$280	\$49	\$536	\$4	\$23	\$16	\$6	83	1,185	496	7,132
Program Total		1.86	\$684	\$116	\$1,280	\$9	\$55	\$38	\$14	198	2,883	1,196	17,413
Student and Parent Energy Efficiency Education Program	PY5		\$1,325	\$423	\$3,701	\$6	\$219	\$139	\$59	604	6,069	4,900	49,230
	PY6		\$2,546	\$343	\$2,930	\$21	\$166	\$110	\$47	450	4,628	3,649	37,538
	PY7		\$2,224	\$352	\$3,034	\$22	\$168	\$113	\$48	450	4,628	3,649	37,538
Program Total		1.61	\$6,096	\$1,118	\$9,666	\$49	\$553	\$362	\$154	1,504	15,325	12,199	124,307
Total			\$91,031	\$25,034	\$199,750	\$1,444	\$12,175	\$8,420	\$2,995	39,063	417,364	253,485	2,634,550

¹ TRC costs reported in this table are different from those reported in Table 1. The TRC costs in this table are nominal annual values and do not include common, portfolio-level costs.

² TRC benefits reported in this table are different from those reported in Table 1. Benefits from PY6 and PY7 in this table are discounted back to years PY6 & PY7, rather than back to PY5, as is done in Table 1.

³ TRC Benefit-Cost ratio is based on discounted benefits & costs consistent with Table 1.

Table 7B: TRC Benefits Table - Low Income Sector

Program	Program Year	TRC ³	TRC Benefits By Program Per Year (\$000)										
			TRC Nominal ¹ Costs (\$000)	Program Benefits (\$000)		Capacity		Energy		Load Reductions in kW		MWh Saved	
				Annual (Nominal)	Lifetime ² (Discounted)	Annual		Annual		Annual	Lifetime	Annual	Lifetime
						Generation	Trans/Dist	Peak	Off Peak				
Low-Income Weatherization Assistance	PY5	0.71	\$5,337	\$315	\$3,718	\$5	\$163	\$103	\$44	452	6,737	3,655	54,497
	PY6		\$5,312	\$323	\$3,624	\$20	\$156	\$103	\$44	425	6,325	3,432	51,148
	PY7		\$4,987	\$331	\$3,744	\$21	\$158	\$106	\$45	425	6,325	3,432	51,148
Program Total			\$15,635	\$969	\$11,085	\$45	\$477	\$313	\$134	1,301	19,386	10,519	156,794
Low-Income Energy-Efficiency Behavior & Education	PY5	0.93	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-	-	-	-
	PY6		\$537	\$296	\$296	\$18	\$143	\$95	\$40	388	388	3,150	3,150
	PY7		\$626	\$803	\$803	\$51	\$384	\$258	\$110	1,026	1,026	8,325	8,325
Program Total			\$1,164	\$1,099	\$1,099	\$69	\$527	\$353	\$150	1,026	1,415	8,325	11,475
E-Power Wise Program	PY5	1.90	\$260	\$152	\$968	\$2	\$78	\$50	\$21	217	1,494	1,756	12,118
	PY6		\$442	\$76	\$464	\$5	\$37	\$24	\$10	99	684	804	5,544
	PY7		\$334	\$79	\$491	\$5	\$38	\$25	\$11	101	696	819	5,649
Program Total			\$1,036	\$306	\$1,923	\$12	\$153	\$99	\$42	417	2,874	3,378	23,311
Total			\$17,834	\$2,375	\$14,108	\$126	\$1,157	\$766	\$326	2,744	23,675	22,223	191,580

¹ TRC costs reported in this table are different from those reported in Table 1. The TRC costs in this table are nominal annual values and do not include common, portfolio-level costs.

² TRC benefits reported in this table are different from those reported in Table 1. Benefits from PY6 and PY7 in this table are discounted back to years PY6 & PY7, rather than back to year PY5, as is done in Table 1.

³ TRC Benefit-Cost ratio is based on discounted benefits & costs consistent with Table 1.

Table 7C: TRC Benefits Table - Small C&I

TRC Benefits By Program Per Year (\$000)													
Program	Program Year	TRC ³	TRC Nominal ¹ Costs (\$000)	Program Benefits (\$000)		Capacity		Energy		Load Reductions in kW		MWh Saved	
				Annual (Nominal)	Lifetime ² (Discounted)	Annual		Annual		Annual	Lifetime	Annual	Lifetime
						Generation	Trans/Dist	Peak	Off Peak				
Prescriptive Efficient	PY5		\$17,967	\$3,563	\$42,937	\$79	\$1,663	\$1,414	\$407	7,803	115,339	44,211	653,452
Equipment Incentive - Small C&I	PY6		\$6,983	\$1,601	\$17,984	\$141	\$682	\$594	\$185	3,061	45,330	17,819	263,807
	PY7		\$6,900	\$1,609	\$18,224	\$148	\$676	\$596	\$188	2,991	44,270	17,477	258,588
Program Total		2.48	\$31,851	\$6,772	\$79,144	\$368	\$3,021	\$2,604	\$780	13,855	204,939	79,506	1,175,847
Custom Incentive Program - Small C&I	PY5		\$1,143	\$149	\$1,792	\$3	\$70	\$52	\$24	272	4,077	1,862	27,930
	PY6		\$906	\$123	\$1,399	\$9	\$53	\$42	\$19	204	3,058	1,397	20,948
	PY7		\$826	\$113	\$1,294	\$9	\$48	\$38	\$17	182	2,736	1,250	18,743
Program Total		1.56	\$2,875	\$385	\$4,485	\$21	\$171	\$132	\$60	658	9,870	4,508	67,620
Residential Retail - Small C&I	PY5		\$1,120	\$1,946	\$14,990	\$48	\$906	\$829	\$163	4,721	40,167	23,999	204,175
	PY6		\$3,018	\$1,829	\$20,427	\$181	\$769	\$734	\$145	3,936	57,865	20,009	294,139
	PY7		\$1,994	\$1,534	\$17,272	\$160	\$637	\$617	\$121	3,219	47,321	16,363	240,540
Program Total		8.66	\$6,133	\$5,310	\$52,689	\$389	\$2,312	\$2,180	\$429	11,877	145,353	60,372	738,854
Total			\$40,859	\$12,466	\$136,318	\$778	\$5,504	\$4,916	\$1,269	26,390	360,162	144,386	1,982,321

¹ TRC costs reported in this table are different from those reported in Table 1. The TRC costs in this table are nominal annual values and do not include common, portfolio-level costs.

² TRC benefits reported in this table are different from those reported in Table 1. Benefits from PY6 and PY7 in this table are discounted back to years PY6 & PY7, rather than back to year PY5, as is done in Table 1.

³ TRC Benefit-Cost ratio is based on discounted benefits & costs consistent with Table 1.

Table 7D: TRC Benefits Table – Large C&I

TRC Benefits By Program Per Year (\$000)													
Program	Program Year	TRC ³	TRC Nominal ¹ Costs (\$000)	Program Benefits (\$000)		Capacity		Energy		Load Reductions in kW		MWh Saved	
				Annual (Nominal)	Lifetime ² (Discounted)	Annual		Annual		Annual	Lifetime	Annual	Lifetime
						Generation	Trans/Dist	Peak	Off Peak				
Prescriptive Efficient Equipment Incentive - Large C&I	PY5		\$5,961	\$626	\$8,308	\$22	\$107	\$401	\$95	2,218	32,795	12,319	182,139
	PY6		\$10,246	\$1,239	\$14,674	\$172	\$183	\$718	\$167	3,741	55,340	20,648	305,429
	PY7		\$10,246	\$1,277	\$15,284	\$186	\$184	\$736	\$171	3,741	55,340	20,648	305,429
Program Total		1.44	\$26,453	\$3,143	\$38,266	\$380	\$474	\$1,855	\$433	9,700	143,476	53,615	792,998
Custom Incentive Program - Large C&I	PY5		\$8,930	\$929	\$12,238	\$26	\$160	\$510	\$232	2,612	39,183	18,620	279,300
	PY6		\$9,364	\$1,121	\$13,470	\$126	\$170	\$566	\$258	2,736	41,040	19,502	292,530
	PY7		\$7,554	\$927	\$11,287	\$109	\$138	\$467	\$213	2,200	32,997	15,680	235,200
Program Total		1.43	\$25,848	\$2,976	\$36,995	\$261	\$469	\$1,543	\$703	7,548	113,220	53,802	807,030
Total			\$52,301	\$6,119	\$75,261	\$642	\$943	\$3,398	\$1,136	17,248	256,695	107,417	1,600,027

¹TRC costs reported in this table are different from those reported in Table 1. The TRC costs in this table are nominal annual values and do not include common, portfolio-level costs.

²TRC benefits reported in this table are different from those reported in Table 1. Benefits from PY6 and PY7 in this table are discounted back to years PY6 & PY7, rather than back to year PY5, as is done in Table 1.

³TRC Benefit-Cost ratio is based on discounted benefits & costs consistent with Table 1.

Table 7E: TRC Benefits Table – GNI

TRC Benefits By Program Per Year (\$000)													
Program	Program Year	TRC ³	TRC Nominal ¹ Costs (\$000)	Program Benefits (\$000)		Capacity		Energy		Load Reductions in kW		MWh Saved	
				Annual (Nominal)	Lifetime ² (Discounted)	Annual		Annual		Annual	Lifetime	Annual	Lifetime
						Generation	Trans/Dist	Peak	Off Peak				
Prescriptive Efficient Equipment Incentive Program - GNI	PY5		\$12,198	\$1,842	\$23,069	\$49	\$647	\$888	\$258	4,867	72,146	28,199	417,826
	PY6		\$12,638	\$1,581	\$18,223	\$168	\$497	\$707	\$210	3,645	54,155	21,299	316,341
	PY7		\$12,638	\$1,625	\$18,903	\$181	\$502	\$726	\$216	3,645	54,155	21,299	316,341
Program Total		1.62	\$37,473	\$5,048	\$60,195	\$398	\$1,645	\$2,321	\$684	12,157	180,457	70,798	1,050,507
Custom Incentive Program - Govt/Non-Profit	PY5		\$2,586	\$289	\$3,607	\$6	\$102	\$124	\$56	640	9,594	4,469	67,032
	PY6		\$1,211	\$142	\$1,653	\$13	\$45	\$58	\$26	281	4,208	1,960	29,400
	PY7		\$634	\$69	\$806	\$7	\$22	\$28	\$13	132	1,978	921	13,818
Program Total		1.37	\$4,431	\$499	\$6,066	\$26	\$169	\$209	\$95	1,052	15,780	7,350	110,250
Master Metered Low-Income Multifamily Housing Program	PY5		\$1,195	\$151	\$1,600	\$3	\$53	\$65	\$30	251	3,228	1,757	22,551
	PY6		\$1,663	\$241	\$2,440	\$17	\$79	\$100	\$46	367	4,741	2,565	33,126
	PY7		\$1,663	\$247	\$2,521	\$18	\$80	\$103	\$47	367	4,741	2,565	33,126
Program Total		1.45	\$4,520	\$639	\$6,561	\$38	\$212	\$268	\$122	986	12,710	6,886	88,804
School Benchmarking	PY5		\$100	\$0	\$0	\$0	\$0	\$0	\$0	-	-	-	-
	PY6		\$100	\$0	\$0	\$0	\$0	\$0	\$0	-	-	-	-
	PY7		\$100	\$0	\$0	\$0	\$0	\$0	\$0	-	-	-	-
Program Total		N/A	\$300	\$0	\$0	\$0	\$0	\$0	\$0	-	-	-	-
Continuous Energy Improvement - Govt/Non Profit	PY5		\$251	\$0	\$0	\$0	\$0	\$0	\$0	-	-	-	-
	PY6		\$575	\$42	\$121	\$4	\$14	\$17	\$8	83	250	583	1,750
	PY7		\$367	\$191	\$558	\$18	\$60	\$77	\$35	367	1,102	2,567	7,700
Program Total		0.54	\$1,193	\$233	\$679	\$22	\$74	\$95	\$43	451	1,353	3,150	9,450
Total			\$47,917	\$6,420	\$73,502	\$483	\$2,100	\$2,892	\$945	14,645	210,299	88,184	1,259,011

¹ TRC costs reported in this table are different from those reported in Table 1. The TRC costs in this table are nominal annual values and do not include common, portfolio-level costs.

² TRC benefits reported in this table are different from those reported in Table 1. Benefits from PY6 and PY7 in this table are discounted back to years PY6 & PY7, rather than back to year PY5, as is done in Table 1.

³ TRC Benefit-Cost ratio is based on discounted benefits & costs consistent with Table 1.

9. Plan Compliance Information and Other Key Issues

9.1.1. Variety of energy-efficiency and conservation measures with equitable distribution for all customer classes.

PPL Electric developed a Plan that would satisfy and balance the requirements of the Act. The Plan Development Process, which provides an overview of the considerations and steps taken to ensure compliance with the August 3, 2012 Implementation Order, is outlined in **Figure 1. Table C** shows that each customer class has an opportunity to choose among a broad range of energy-efficiency and conservation programs. Education, fundamental to understanding and subsequent educated choices about energy-efficiency, is woven into all programs.

Programs for residential customers comprise approximately 47% of the total cost and 45% of the total savings. Programs for non-residential customers comprise approximately 53% of the total cost and 55% of the total savings. These proportions demonstrate an equitable distribution of savings among customer sectors and are reasonably close to the percentages of market potential attributable to these sectors (residential and non-residential).

Shown in **Table 3**, the proportion of the Plan's budget for each customer sector is reasonably distributed and reasonably close to each sector's share of total PPL Electric revenue and reasonably close to the percentage of savings for each sector described above, given that the program acquisition cost for residential programs is less than non-residential programs.

9.1.2. Statement delineating the manner in which the Plan will achieve the requirements under 66 Pa. C.S. § 2806.1(c),

By its implementation order, the Commission requires PPL Electric to achieve 2.1% energy savings by May 31, 2016. In PPL Electric's case, that target equates to approximately 821,072 MWh/yr. The Company's Plan, as described herein, is designed to achieve approximately 615,697 MWh/yr. by May 2016. The Plan's approximately excess is intended to comply with the Commission's and most stakeholders' expectations that EDCs expend their full Phase II funding and EDCs strive to exceed the Phase II compliance targets, as described in **Section 1.1** of this Plan. The excess also provides the flexibility for PPL Electric to mitigate risks such as a realization rate that is lower than expected, changes in future TRMs that reduce the allowable savings for measures, lower market penetration rates than expected, the need to increase incentives to achieve desired participation levels, and other factors. PPL Electric's Phase II Plan is projected to exceed the compliance target by approximately 42%, including an estimated carryover of 551,704 MWh/yr. from Phase I. The over-compliance and carryover will provide the flexibility to accommodate lower per-measure savings, higher than expected program acquisition costs and newer technology since the Plan was filed

9.1.3. Statement delineating the manner in which the Plan will achieve the low-income requirement.

There are two compliance requirements for the low-income sector:

- Achieve a minimum of 4.5% (36,948 MWh/yr.) of the total required reductions from the low-income customer sector (\leq 150% of Federal Poverty Income Guidelines) by May 31, 2016. This includes savings from low-income programs and low-income participation in general residential programs.
- The proportion of measures available to the low-income sector is at least 9.95% of the total measures available to all customer sectors. A list of measures is included in **Appendix E**.

As shown in Table 5a, PPL Electric has designed its Plan to achieve 22,223 MWh/yr. from the low-income sector from low-income programs. In addition, PPL Electric estimates it will achieve 32,953MWh/yr. from low-income participation in general residential programs. Therefore, the total savings expected from the low-income sector is 55,176 MWh/yr. which is 6.72% of the total required reductions (821,072 MWh/yr. compliance target) which exceeds the 36,948 MWh/yr. compliance requirement for the low-income sector. The actual savings from low-income participation in general residential programs will be determined by PPL Electric's independent evaluator during the yearly impact evaluation in accordance with the method approved by the Statewide Evaluator. The estimate included in the EE&C Plan is based on actual data from Phase I.

PPL Electric will determine the savings for low-income customers who participated in general low-income residential programs via a survey method developed during the annual impact evaluation or directed by the PUC Phase II TRC Order. PPL Electric will refer all customers who participated in those surveys and who self-certified they are low-income to the Company's Low-Income programs. .

As shown in **Appendix E**, PPL Electric's Plan has at least 44% of its total measures available to the low-income sector. That exceeds the compliance requirement of 9.95%.

9.1.4. Delineate the manner in which the Plan will achieve the GNI requirement.

Act 129 requires 10% of the required energy reduction compliance target to come from the GNI customers. For PPL Electric, that target is 82,107 MWh/yr. PPL Electric's EE&C Plan is designed to achieve 88,184 MWh/yr. in Phase II savings from the GNI sector plus approximately 91,000 MWh/yr. in GNI carryover from Phase I for a total of approximately 179,000 MWh/yr. (see **Table 5a**), which will exceed the compliance target.

PPL Electric is offering a mix of programs providing GNI customers with an extensive selection of program opportunities. Savings from the Low-Income Multifamily Master Metered Program will make up portion of the GNI reduction target. The Continuous Energy Improvement Program, working with schools, will also contribute to the GNI compliance target. The remainder of compliance target for GNI will be achieved from the Prescriptive Incentive Program, including incentives for customer-owned area and LED street lighting, direct installation of lighting and refrigeration (including promoting this component to schools) and a wide array of other energy-efficiency measures, and from the Custom Incentive Program. See **Section 3.5** for a complete listing of GNI programs.

Act 129 Phase I provided PPL Electric staff and CSPs the opportunity to work directly and develop solid relationships with school facility managers, staff from municipalities and government offices, and from non-profit agencies. PPL Electric plans to capitalize on these relationships when marketing and implementing the programs designed for this sector.

9.1.5. Ensure that no more than 2% of funds available shall be allocated for experimental equipment or devices.

All measures included in this Plan are proven technologies that are commercially available, technically sound, and most, if not all, are in the TRM, will be added to the TRM, or will be treated as custom measures. The Company or customers may choose to explore emerging technologies and energy-efficient practices if such measures can be shown to be cost-effective. Certain projects, in particular within the Custom Program, may include experimental or emerging technologies. In such cases, the Company will track those measures separately and will limit expenditures on measures deemed "experimental" to comply with this requirement of Act 129 of using no more than 2% of funds available

for this purpose. Before making decisions about “experimental equipment or devices,” the Company will evaluate impact on the applicable program’s TRM and the overall portfolio’s TRC.

9.1.6. Plan shall be competitively neutral.

As described in Section 9.1.1, each customer class has an opportunity to choose among a range of programs and measures. All of the programs are available to customers regardless of whether they receive default generation service from PPL Electric or obtain competitive supply from an Electric Generation Supplier (EGS). Default and competitive-supply customers alike will be able to participate in these programs and obtain the benefits available to participants. Monthly bill savings may be different for a competitive-supply customer to the extent that the customer may have purchased generation supply at a rate that is different from PPL Electric's rate for default generation service.

9.2. Other Key Issues

9.2.1. Plan shall lead to long-term sustainable energy efficiency savings.

The proposed Plan describes a three-year undertaking, designed to satisfy the performance requirements set forth by the Act in a manner that is consistent with the Commission’s August 3, 2012 Implementation Order. Many of the measures installed under the proposed programs will continue to perform and produce savings well beyond the term of the Plan. Programs offered by PPL Electric will stimulate demand for energy-efficient products and encourage distributors and retailers to stock such equipment. A good example is the Heat Pump Water Heater, a measure that was fairly new to the market in Phase I. It is now available throughout the PPL Electric territory. It appears reasonable to expect that the program-induced increase in demand for and the wider availability of, energy-efficient equipment will have a role in transforming local and regional markets. Further, children participating in the Student and Teacher Education Program will have a longstanding impact on energy-efficiency because children are the customers of tomorrow.

9.2.2. Avoid possible overlaps between programs offered by other EDCs and in PA.

PPL Electric recognizes the importance of minimizing customer confusion (and maximizing customer participation and benefits) by coordinating program activities and incentives with neighboring EDCs. All of the Pennsylvania EDCs coordinated during the development of Phase I and continued to coordinate and share best practices throughout Phase I. That process has continued in Phase II development.

The focus of the coordination is to develop consistent programs and program design elements where that consistency is appropriate. All of the EDCs in Act 129 Phase I, for example, used the same CSPs for Appliance Recycling, enabling the sharing of CSP resources such as a new appliance recycling facility. This benefited customers from all of the EDCs and diminishes customer confusion. A customer in PA, calling any of the EDC’s appliance recycling telephone number, will be answered by JACO who in turn will process their recycling request.

PPL Electric expects to continue such coordination activities on an ongoing basis, look for potential overlaps with other programs or entities and work to resolve any issues that may weaken efficiency results or confuse customers.

9.2.3. Leveraging and utilizing other financial resources.

With respect to leveraging and utilizing other financial resources, PPL Electric encourages customers to use these resources to gain the maximum possible financial support available to install energy-efficiency projects during these challenging economic conditions. PPL Electric keeps apprised of current funding

offerings that might benefit customers and provides that information to CSPs, trade allies and in some instances, directly to customers. Customers are encouraged use financial incentives that are outside of Act 129 to help offset some of their capital outlay.

9.2.4. Customer Education.

Education is included, in one form or another, in all of the programs being offered in Phase II. In addition, PPL Electric has dedicated staff to manage its customer communication and education effort to ensure the message of energy-efficiency is in kept current and fresh with PPL Electric's customers. Within each Program description in **Section 3**, education is noted. Every opportunity, where programs are being delivered and rebates or incentives are being provided, is used as a conduit to provide customer education.

At a minimum, the Company provides the following consumer education:

- **Residential and Low-Income Energy Education & Behavior Programs.** These initiatives promote energy-efficiency through behavioral changes. A detailed description of these programs is provided in **Section 3.2**.
- **E-Power Wise Program.** PPL Electric's low-income program, E-Power Wise, focuses on providing energy-efficiency education and low-cost energy saving measures to low-income customers and promotes ongoing energy awareness and conservation behavior. A detailed description of this program is provided in **Section 3.2**.
- **Student and Teacher Education.** Working with children and teachers, the program provides education on energy-efficiency. Curriculum is developed to meet PA Education Learning Standards. Take-home kits not only include measures to be installed but also include educational materials and family activities supporting energy-efficiency. A detailed description of this program is provided in **Section 3.2**
- **Educational Material.** PPL Electric developed and provides consumer educational materials during customer interactions in specific programs. These materials may include customer or sector-specific energy use information, energy benchmarking, ENERGY STAR® information, fact sheets on energy-efficient equipment and behaviors, and general energy-efficiency educational materials. The Company continually seeks opportunities to reach customers with educational messages.
- **PPL Electric's Website.** PPL Electric's popular consumer website was updated in October 2012. It contains information and tools to support customer energy-efficiency strategies and easy access to for customers to locate rebates, incentives and educational materials. Thermography will be added to the website.
- **General energy-efficiency awareness.** PPL Electric works with its Advertising, Marketing and Public Relations CSP to develop broad customer awareness and specific messaging delivered through a variety of tactics, such as mass media advertising, targeted direct mail campaigns, presentations at community events, and bill inserts.

9.2.5. Providing customers with a list of all eligible and state funded programs.

PPL Electric provides information to participants in specific programs on corresponding state and federal funding available. Funding, including tax credits, has significantly diminished since the start of Act 129.

9.2.6. Making program results public.

PPL Electric is committed to keeping customers, stakeholders, and the general public informed about the results of the energy-efficiency programs and progress toward Plan goals. There is a dedicated

section on www.ppelectric.com that provides Act 129 information. PPL Electric periodically schedules and meets with stakeholders to review results and provides its quarterly and annual reports to stakeholders via the website. PPL Electric shares customer success stories with customers, trade allies, and the public by publishing and distributing case studies.

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Glossary

Glossary of Terms and Abbreviations

The Act	Act 129 (Act of October 15, 2008, P.L. 1592, No. 129)
AEO	Annual Energy Outlook
ASHP	Air Source Heat Pump
BLS	Bureau of Labor Statistics
CBO	Community-based Organization
CEE	Consortium for Energy-efficiency
CFL	Compact Fluorescent Lamp
CHP	Combined Heat and Power
CIP	Continuous Improvement Process
C&I	Commercial and Industrial
CSP	Conservation Service Provider
COP	Coefficient of Performance
“Connect”	PPL Electric’s customer bill insert newsletter
DCED	Department of Community and Economic Development
DEER	Database for Energy-efficiency Resources
DEP	Department of Environmental Protection
EDC	Electric Distribution Company
EE&C	Energy-efficiency and Conservation
EER	Energy-efficiency Ratio
EEMIS	Energy-efficiency Management Information System
EERS	Energy-efficiency Resource Standards
EFMR	EFMR Monitoring Group, a PA non-profit agency
EGS	Electric Generation Supplier
EIA	Energy Information Agency
EM&V	Evaluation, Measurement and Verification
EPAct	Energy Policy Act of 2005
ESIA	Energy Security Information Act
FPIG	Federal Poverty Income Guideline
HP	Horse Power
HPWH	Heat Pump Water Heater
HVAC	Heating, ventilation, and air conditioning
IRR	Internal Rate of Return
kWh	Kilowatt hour
kW	Kilowatt
LEED	Leadership in Energy and Environmental Design – a national building certification program
LIURP	Low-Income Usage Reduction Program
LIWG	PA PUC’s Low-Income Working Group
LMP	Location Marginal Pricing
M&V	Measurement and verification
MW	Megawatt
MWh/yr.	Megawatt-hour per year
NDA	Non-disclosure agreement
NPV	Net present value

Glossary

NYMEX	New York Mercantile Exchange
O&M	Operation and maintenance
Phase II Act 129, June 1, 2013 – May 31, 2016	
PHFA	Pennsylvania Housing Finance Agency
PJM	PJM Interconnection, a regional transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia
POP	Point of purchase
PPLICA	A coalition of Large C&I customers served by PPL Electric
PTAC	Packaged terminal air conditioner
PY5	Act 129, Phase II – May 3, 2013- June 1, 2014
PY6	Act 129, Phase II – May 3, 2014- June 1, 2015
PY7	Act 129, Phase II – May 3, 2015- June 1, 2016
QA/QC	Quality Assurance and Quality Control
RFP	Request for Proposal
RSMMeans	RSMMeans provides construction cost information
Smart Strip	Smart plug strips are a device that typically employ occupancy sensors, load sensors, remote controls, timers or USB interfaces to automatically power down plug loads when they are not in use.
SEDA-COG	SEDA council of Governments, a regional, multi-county development agency
SEER	Seasonal Energy-efficiency Rating
SWE	Act 129 Statewide Evaluator
TA	Trade Ally
TRC	Total Resource Cost
TRM	Technical Reference Manual
UL	Underwriters Laboratories
USP	Universal Service Provider
WRAP	Winter Relief Assistance Program, PPL Electric’s LIURP program that will be expanded for Act 129