

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

**Phase III of Act 129**

**Program Year 8**

**(June 1, 2016 – May 31, 2017)**

For Pennsylvania Act 129 of 2008

Energy Efficiency and Conservation Plan

Prepared by Cadmus

For

PPL Electric Utilities

January 16, 2017

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## Acronyms

BDR	Behavioral Demand Response
C&I	Commercial and Industrial
CFL	Compact Fluorescent Lamp
CSP	Conservation Service Provider or Curtailment Service Provider
DLC	Direct Load Control
DR	Demand Response
EDC	Electric Distribution Company
EDT	Eastern Daylight Time
EE&C	Energy Efficiency and Conservation
EM&V	Evaluation, Measurement, and Verification
EEMIS	Energy Efficiency Management Information System
EUL	Effective Useful Life
GNE	Government, Non-Profit, Educational
HVAC	Heating, Ventilating, and Air Conditioning
ICSP	Implementation Conservation Service Provider
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light-Emitting Diode
LIURP	Low-Income Usage Reduction Program
M&V	Measurement and Verification
MW	Megawatt
MWh	Megawatt-hour
NTG	Net-to-Gross
P3TD	Phase III to Date
PA PUC	Pennsylvania Public Utility Commission
PSA	Phase III to Date Preliminary Savings Achieved; equal to VTD + PYTD
PSA+CO	PSA savings plus Carryover from Phase II
PY	Program Year: e.g. PY8, from June 1, 2016, to May 31, 2017
PYRTD	Program Year Reported to Date
PYVTD	Program Year Verified to Date
RTD	Phase III to Date Reported Gross Savings
SWE	Statewide Evaluator
TRC	Total Resource Cost
TRM	Technical Reference Manual
VTD	Phase III to Date Verified Gross Savings

## Types of Savings

**Gross Savings:** The change in energy consumption and/or peak demand that results directly from program-related actions taken by participants in an EE&C program, regardless of why they participated.

**Net Savings:** The total change in energy consumption and/or peak demand that is attributable to an EE&C program. Depending on the program delivery model and evaluation methodology, the net savings estimates may differ from the gross savings estimate due to adjustments for the effects of free riders, changes in codes and standards, market effects, participant and nonparticipant spillover, and other causes of changes in energy consumption or demand not directly attributable to the EE&C program.

**Reported Gross:** Also referred to as *ex ante* (Latin for “beforehand”) savings. The energy and peak demand savings values calculated by the EDC or its program Implementation Conservation Service Providers (ICSP), and stored in the program tracking system.

**Verified Gross:** Also referred to as *ex post* (Latin for “from something done afterward”) gross savings. The energy and peak demand savings estimates reported by the independent evaluation contractor after the gross impact evaluation and associated M&V efforts have been completed.

**Verified Net:** Also referred to as *ex post* net savings. The energy and peak demand savings estimates reported by the independent evaluation contractor after application of the results of the net impact evaluation. Typically calculated by multiplying the verified gross savings by a net-to-gross (NTG) ratio.

**Annual Savings:** Energy and demand savings expressed on an annual basis, or the amount of energy and/or peak demand an EE&C measure or program can be expected to save over the course of a typical year. Annualized savings are noted as MWh/year or MW/year. The Pennsylvania TRM provides algorithms and assumptions to calculate annual savings, and Act 129 compliance targets for consumption reduction are based on the sum of the annual savings estimates of installed measures.

**Lifetime Savings:** Energy and demand savings expressed in terms of the total expected savings over the useful life of the measure. Typically calculated by multiplying the annual savings of a measure by its effective useful life. The TRC Test uses savings from the full lifetime of a measure to calculate the cost-effectiveness of EE&C programs.

**Program Year Reported to Date (PYRTD):** The reported gross energy and peak demand savings achieved by an EE&C program or portfolio within the current program year. PYTD values for energy efficiency will always be reported gross savings in a semi-annual or preliminary annual report.

**Program Year Verified to Date (PYVTD):** The verified gross energy and peak demand savings achieved by an EE&C program or portfolio within the current program year.

**Phase III to Date (P3TD):** The energy and peak demand savings achieved by an EE&C program or portfolio within Phase III of Act 129. Reported in several permutations described below.

**Phase III to Date Reported (RTD):** The sum of the reported gross savings recorded to date in Phase III of Act 129 for an EE&C program or portfolio.

**Phase III to Date Verified (VTD):** The sum of the verified gross savings recorded to date in Phase III of Act 129 for an EE&C program or portfolio, as determined by the impact evaluation finding of the independent evaluation contractor.

**Phase III to Date Preliminary Savings Achieved (PSA):** The sum of the verified gross savings (VTD) from previous program years in Phase III where the impact evaluation is complete plus the reported gross savings from the current program year (PYTD). For PY8, the PSA savings will always equal the PYTD savings because PY8 is the first program year of the phase (no savings will be verified until the PY8 final annual report).

**Phase III to Date Preliminary Savings Achieved + Carryover (PSA+CO):** The sum of the verified gross savings from previous program years in Phase III plus the reported gross savings from the current program year plus any verified gross carryover savings from Phase II of Act 129. This is the best estimate of an EDC's progress toward the Phase III compliance targets.

Table 1 lists savings values for a hypothetical EDC as of the PY10 semi-annual report, when the first six months of PY10 reported savings are available. The calculations below are then used to illustrate the differences between various savings values.

**Table 1: P3TD Savings Calculation Example**

Program Period	Reported Gross (MWh/year)	Verified Gross (MWh/year)
Phase II (Carryover)	N/A	400
PY8	800	700
PY9	900	850
PY10 (Q1+Q2)	500	N/A

PYRTD (PY10) = 500 MWh/year

RTD = 800 + 900 + 500 = 2,200 MWh/year

VTD = 700 + 850 = 1,550 MWh / year

PSA = 1,550 + 500 = 2,050 MWh/year

PSA + CO = 2,050 + 400 = 2,450 MWh/year

## Section 1 Introduction

Pennsylvania Act 129 of 2008, signed on October 15, 2008, mandated energy savings and demand reduction goals for the largest electric distribution companies (EDCs) in Pennsylvania for Phase I (2008 through 2013). Phase II of Act 129 began in 2013 and concluded in 2016. In late 2015, each EDC filed a new energy efficiency and conservation (EE&C) plan with the PA PUC detailing the proposed design of its portfolio for Phase III. These plans were updated based on stakeholder input and subsequently approved by the PUC in 2016.

Implementation of Phase III of the Act 129 programs began on June 1, 2016. This report documents the progress and effectiveness of the Phase III EE&C accomplishments for PPL Electric Utilities in Program Year 8 (PY8), as well as the cumulative accomplishments of the Phase III programs since inception. This report additionally documents the energy savings carried over from Phase II. The Phase II carryover savings count towards EDC savings compliance targets for Phase III.

This report details the participation, spending, and reported gross impacts of the energy efficiency programs in PY8. Compliance with Act 129 savings goals are ultimately based on verified gross savings. PPL Electric Utilities has retained Cadmus as an independent evaluation contractor for Phase III of Act 129. Cadmus is responsible for the measurement and verification of the savings and calculation of verified gross savings. The verified gross savings for PY8 energy efficiency programs will be reported in the final annual report, to be filed on November 15, 2017.

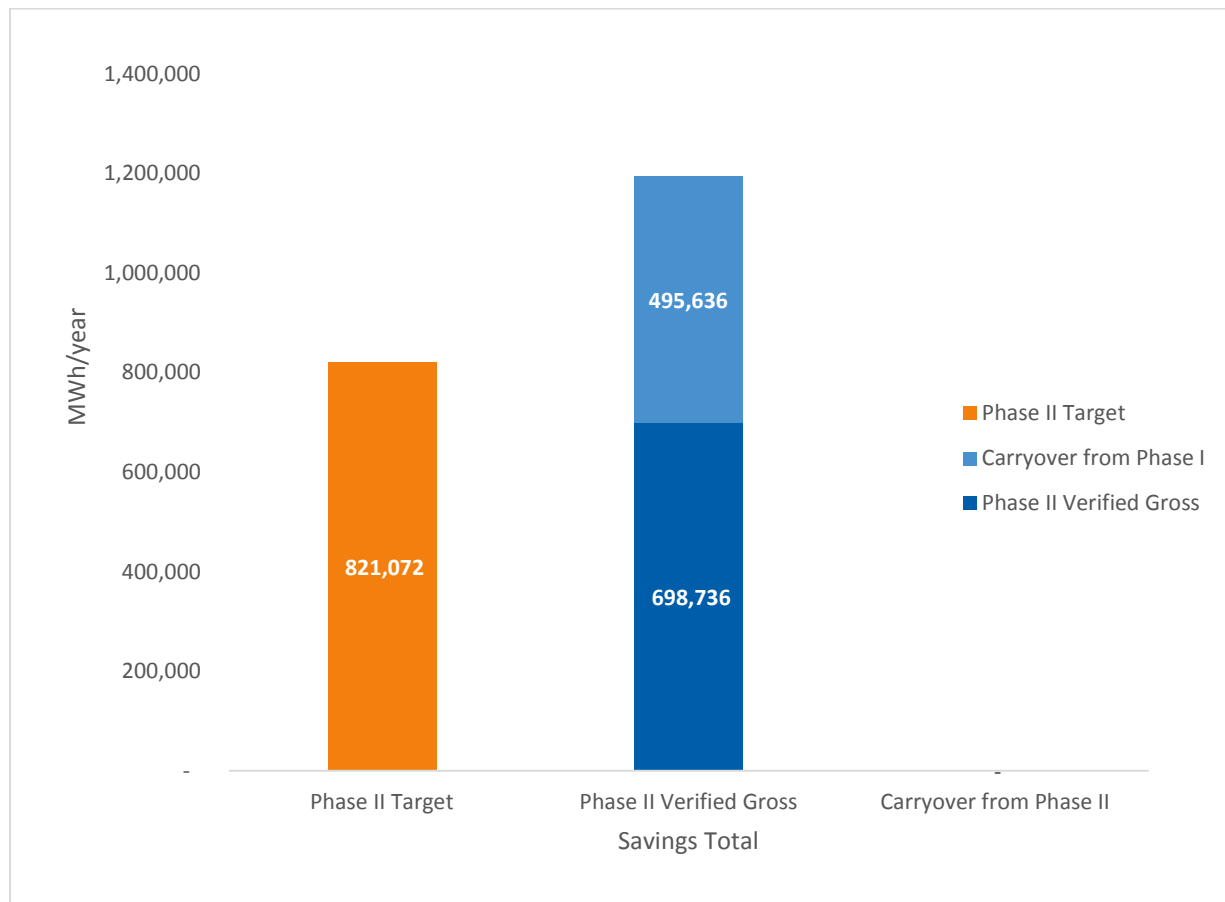
Phase III of Act 129 includes a demand response goal for PPL Electric Utilities. Demand response events are limited to the months of June through September, which are the first four months of the Act 129 program year. Because the demand response season is completed early in the program year, it is possible to complete the independent evaluation of verified gross savings for demand response sooner than is possible for energy efficiency programs. PPL Electric Utilities did not implement curtailment events in PY8. The program's implementation conservation services provider (ICSP) will enroll customers during PY8 (June 1, 2016 to May 31, 2017) and initiate events during the summers of PY9, PY10, PY11, and PY12. Section 6.2 of this report includes the verified gross demand response impacts for PY8 as well as the cumulative demand response performance of the EE&C program to date for Phase III of Act 129.

## Section 2 Summary of Achievements

### 2.1 CARRYOVER SAVINGS FROM PHASE II OF ACT 129

PPL Electric Utilities does not have portfolio-level carryover savings from Phase II. Figure 1 compares PPL Electric Utilities' Phase II verified gross savings total to the Phase II compliance target to illustrate the carryover calculation.

**Figure 1: Carryover Savings from Phase II of Act 129<sup>1</sup>**



The Commission's Phase III Implementation Order<sup>2</sup> also allowed EDCs to carry over savings in excess of the Phase II Government, Non-Profit, and Educational (GNE) savings goal and

<sup>1</sup> Phase I carryover into Phase II cannot contribute to the Phase II carryover into Phase III. Therefore, PPL Electric Utilities has no Phase II carryover into Phase III at the portfolio level.

<sup>2</sup> Pennsylvania Public Utility Commission, *Energy Efficiency and Conservation Program Implementation Order*, at Docket No. M-2014-2424864, (*Phase III Implementation Order*), entered June 11, 2015.



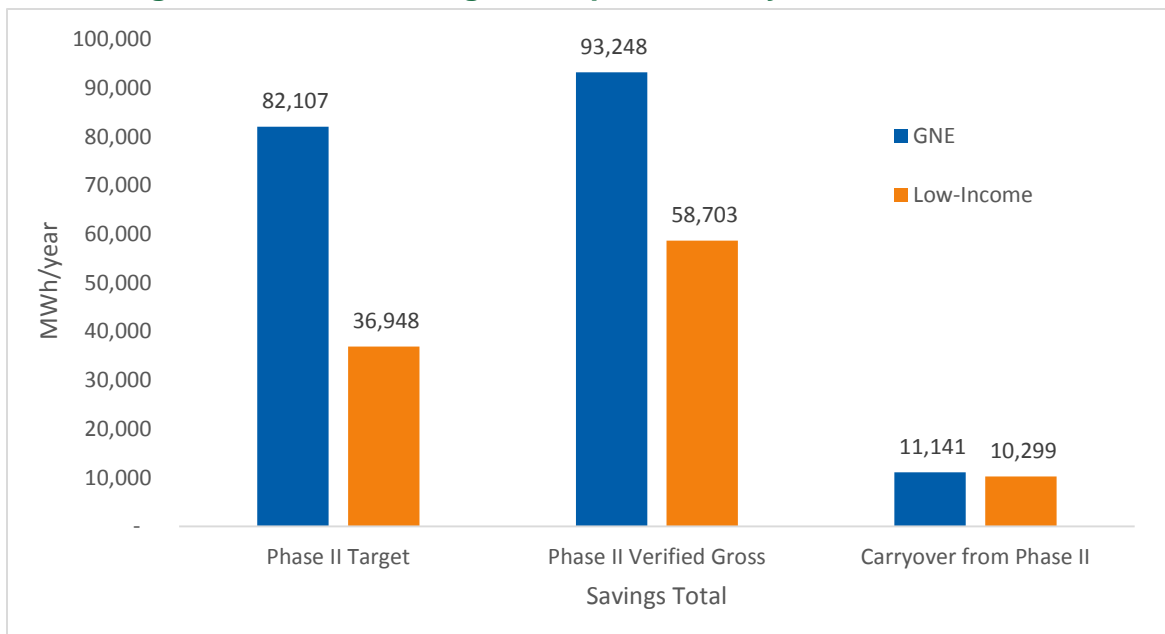
excess savings from the low-income customer segment.<sup>3</sup> Table 2 shows the calculation of carryover savings for the low-income and GNE targets and Figure 2 illustrates these savings.

**Table 2. Calculation of Sector-Level Carryover from Phase II**

Sector	Phase II Target	Phase II Verified Gross	Carryover from Phase II (Phase II Verified Gross - Phase II Target)
GNE	82,107	93,248	11,141
Low-Income <sup>1</sup>	36,948	58,703	10,299

<sup>1</sup>The Phase III Implementation Order allows low-income verified savings in excess of the compliance target to be carried into Phase III based on the proportion of low-income specific program savings to the total low-income verified savings.

**Figure 2: Customer Segment-Specific Carryover from Phase II**



## 2.2 PHASE III ENERGY EFFICIENCY ACHIEVEMENTS TO DATE

Since the beginning of Program Year 8 on June 1, 2016, PPL Electric Utilities has claimed:

- 72,187 MWh/yr of reported gross electric energy savings (PYRTD)

<sup>3</sup> Proportionate to those savings achieved by dedicated low-income programs in Phase III.

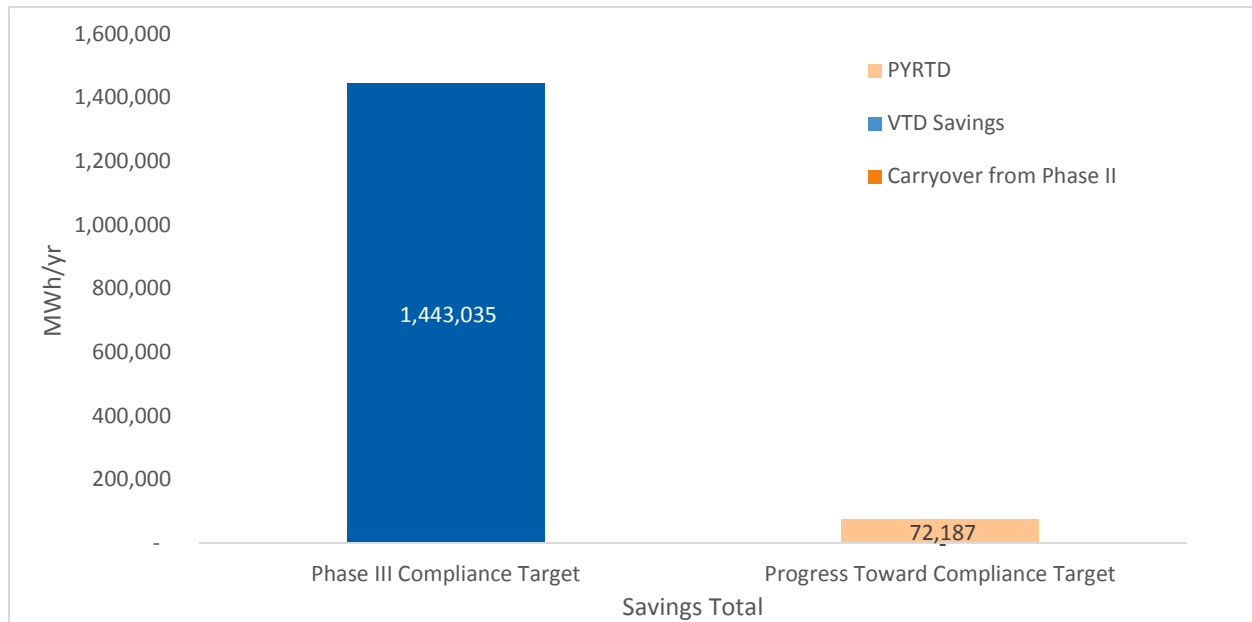
- 9.03 MW/yr of reported gross peak demand savings (PYRTD) from energy efficiency programs
- 0 MW/yr of reported gross peak demand savings (PYRTD) from demand response programs because the programs have not started yet

Since the beginning of Phase III of Act 129 on June 1, 2016, PPL Electric Utilities has achieved:

- 72,187 MWh/yr of reported gross electric energy savings (RTD)
- 9.03 MW/yr of reported gross peak demand savings (RTD) from energy efficiency programs
- 0 MW/yr of reported gross peak demand savings (RTD) from demand response programs because the programs have not started yet
  
- 72,187 MWh/yr of gross electric energy savings (PSA). This total includes verified gross savings from previous Phase III program years and the PYTD reported gross savings from PY8
- 9.03 MW/yr of gross peak demand savings (PSA) from energy efficiency programs
- 0 MW/yr of reported gross peak demand savings (PSA) from demand response programs because the programs have not started yet

Including carryover savings from Phase II, PPL Electric Utilities has achieved:

- 72,187 MWh/yr of PSA+CO energy savings recorded to date in Phase III
- This represents 5.0% percent of the May 31, 2021, energy savings compliance target of 1,443,035 MWh/yr
- Please note that none of the savings from the Home Energy Education program will be reported until the end of PY8

**Figure 3: EE&C Plan Performance Toward Phase III Portfolio Compliance Target<sup>4</sup>**

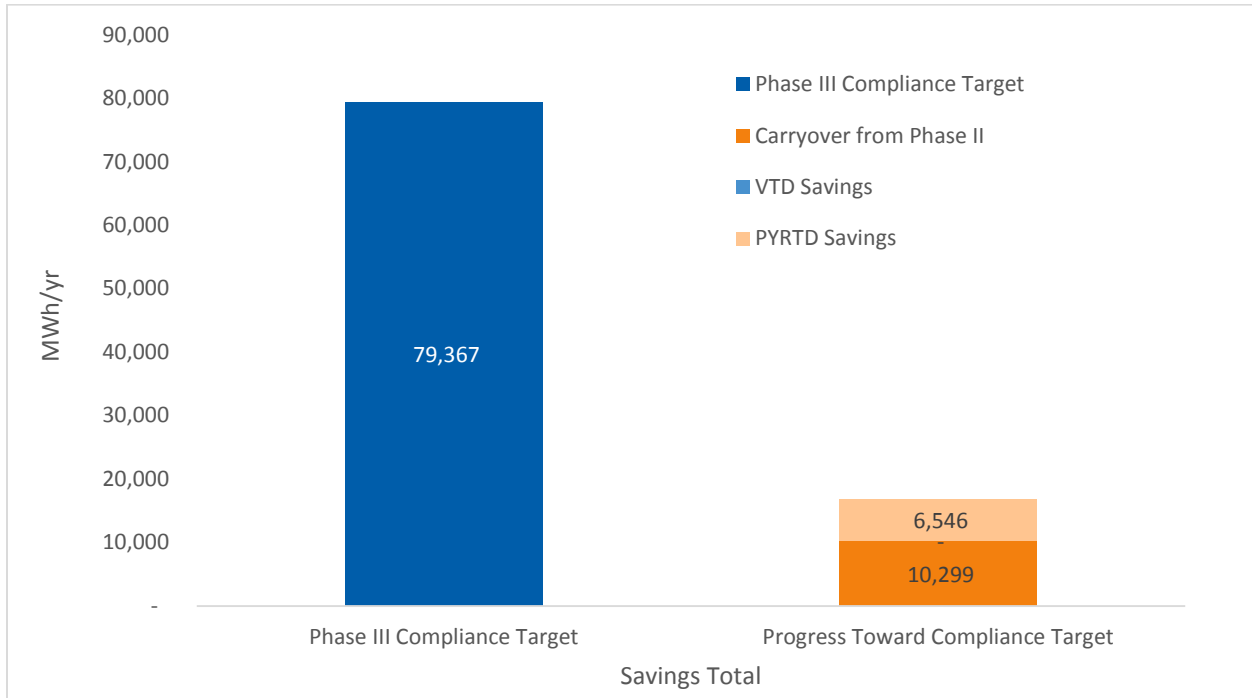
The Phase III Implementation Order directed EDCs to offer conservation measures to the low-income customer segment based on the proportion of electric sales attributable to low-income households. The proportionate number of measures target for PPL Electric Utilities is 9.95%. In the first half of PY8, PPL Electric launched some of the Phase III programs. Since not all launched programs reported savings in Q1 or Q2, the percentage of measures available to the low income sector was not computed. PPL Electric's EE&C Plan, filed with the Commission<sup>5</sup> shows that at least 35% of its total measures are offered to low-income customers at no cost. This exceeds the compliance requirement of 9.95%. PPL Electric will determine and report the percentage of measures offered specifically to the low income sector in the second semi-annual report.

The PA PUC also established a low-income energy savings target of 5.5% of the portfolio savings goal. The Phase III low-income savings target for PPL Electric Utilities is 79,367 MWh/yr and is based on verified gross savings. Figure 4 compares the PSA+CO performance to date for the low-income customer segment to the Phase III savings target. Based on the latest available information, PPL Electric Utilities has achieved 21% of the Phase III low-income energy savings target with carryover from Phase II.

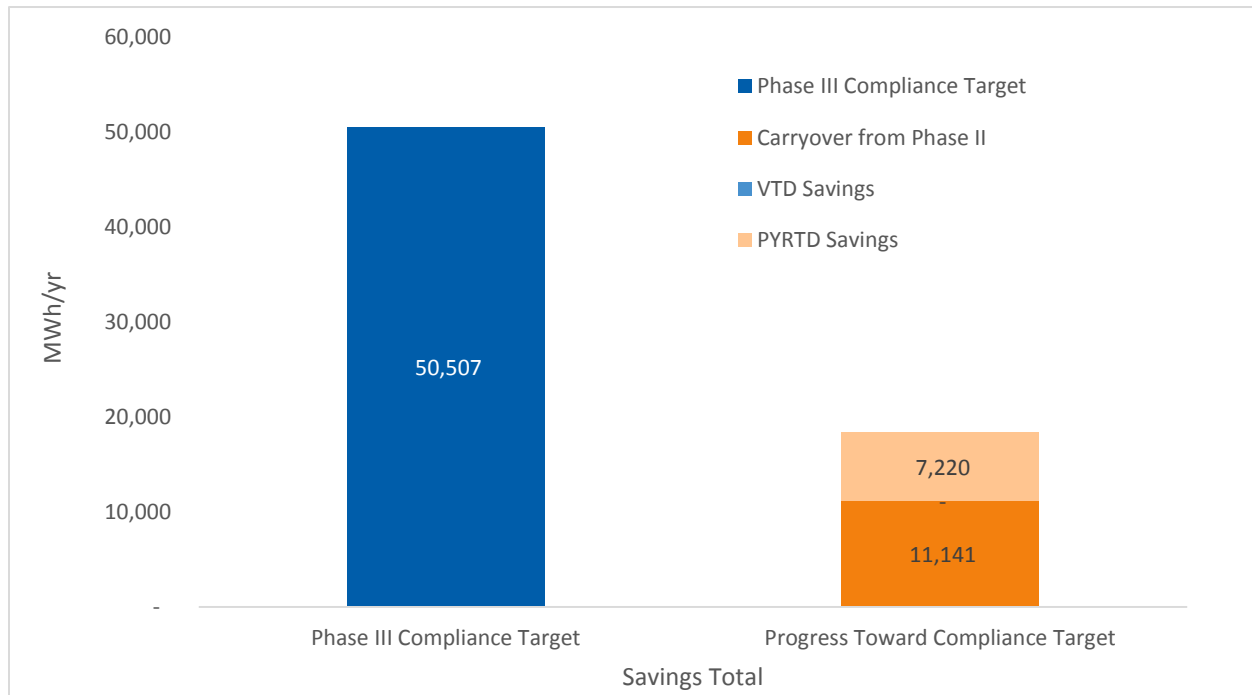
<sup>4</sup> Includes 6,546 MWh/yr for low-income programs that are not included in PPL Electric Utilities' EEMIS tracking system.

<sup>5</sup> PPL Electric Utilities. PPL Electric Utilities Energy Efficiency and Conservation Plan Act 129 Phase III. Before the Pennsylvania Public Utility Commission. Docket No. M-2015-2515642. Compliance Filing April 22, 2016. Available online: [https://www.pplelectric.com/~media/pplelectric/save%20energy%20and%20money/docs/act129\\_phase3/phase%203revised%20planfinalclean.pdf?la=en](https://www.pplelectric.com/~media/pplelectric/save%20energy%20and%20money/docs/act129_phase3/phase%203revised%20planfinalclean.pdf?la=en)

**Figure 4: EE&C Plan Performance Toward Phase III Low-Income Compliance Target**



The Phase III Implementation Order established a government, non-profit, and educational energy savings target of 3.5% of the portfolio savings goal. The GNE savings target for PPL Electric Utilities is 50,507 MWh/yr and is based on verified gross savings. Figure 5 compares the PSA+CO performance to date for the GNE customer segment to the Phase III savings target. Based on the latest available information, PPL Electric Utilities has achieved 36% of the Phase III GNE energy savings target with carryover from Phase II and reported savings in PY8.

**Figure 5: EE&C Plan Performance Against Phase III GNE Compliance Target**

### 2.3 PHASE III DEMAND RESPONSE ACHIEVEMENTS TO DATE

PPL Electric Utilities did not implement curtailment events in PY8. The program's ICSP will enroll customers during PY8 (June 1, 2016, to May 31, 2017) and initiate events during the summers of PY9, PY10, PY11, and PY12.

### 2.4 PHASE III PERFORMANCE BY CUSTOMER SEGMENT

Table 3 presents the reported participation, savings, and spending by customer sector for PY8. The residential, small C&I, large C&I sectors are defined by EDC tariff and the residential low-income and governmental/educational/non-profit sector were defined by statute (66 Pa. C.S. § 2806.1). The residential low-income segment is a subset of the residential customer class and the GNE segment will include customers who are part of the Small C&I or Large C&I rate classes. The reported savings, spending, and participation values for the LI and GNE segments have been removed from the parent sectors in Table 3.

**Table 3: PY8 Summary Statistics by Customer Segment**

Parameter	Residential (Non-Low Income)	Low Income	Small C&I	Large C&I	GNE	Portfolio Total <sup>1</sup>
Number of participants	125,643	7,306	10,392	26	54	143,421
PYRTD MWh/yr	36,264	6,546	15,508	6,649	7,220	72,187
PYRTD MW/yr (Energy Efficiency)	4.29	-	3.17	0.93	0.64	9.03
PYVTD MW (Demand Response)	-	-	-	-	-	-
Incentives (\$1000) <sup>2</sup>	\$4,095	-	\$1,922	\$1,068	\$718	\$7,802
<sup>1</sup> Portfolio total may not equal sum of columns due to rounding. <sup>2</sup> Costs associated with low income program measures provided to customers at no cost are categorized as administrative costs.						

Table 4 summarizes actual performance by sector since the beginning of Phase III.

**Table 4: Phase III Summary Statistics by Customer Segment**

Parameter	Residential (Non Low Income)	Low Income	Small C&I	Large C&I	GNE	Portfolio Total <sup>1</sup>
Number of participants	125,643	7,306	10,392	26	54	143,421
PSA MWh/yr	36,264	6,546	15,508	6,649	7,220	72,187
PSA MW (Energy Efficiency)	4.29	-	3.17	0.93	0.64	9.03
Phase III MW (Demand Response)	-	-	-	-	-	-
Incentives (\$1000) <sup>2</sup>	\$4,095	-	\$1,922	\$1,068	\$718	\$7,802
<sup>1</sup> Portfolio total may not equal sum of columns due to rounding. <sup>2</sup> Costs associated with low income program measures provided to customers at no cost are categorized as administrative costs.						

## Section 3 Updates and Findings

### 3.1 IMPLEMENTATION UPDATES AND FINDINGS

This section summarizes implementation updates and findings.

- **Appliance Recycling:** The program launched in early June 2016. Customers have provided PPL Electric with positive feedback about the return of this program. Over four thousand participants recycled refrigerators, freezers, and room air conditioners.
- **Custom:** The program launched June 1, 2016 with an entirely new customer facing website and online rebate application portal. A significant number of combined heat and power (CHP) projects have been submitted, especially from the GNE customer sector.
- **Demand Response:** The program's ICSP will enroll customers during PY8 (June 1, 2016, to May 31, 2017) and initiate events during the summer of PY9.
- **Efficient Equipment:** The program launched June 1, 2016 with an entirely new customer facing website and online rebate application portal. The new website provides both customers and trade allies the ability to securely upload all project documentation and track the status of application submissions in real time.
  - The Distributor Discount offering is a new component of the Efficient Equipment program, and launched in November 2016. This is a midstream offering, providing incentives to commercial lighting distributors.
  - The Direct Discount component of the program—where contractors work directly with small businesses to offer discounted products--will launch in January 2017.
- **Efficient Lighting:** The upstream lighting program launched June 1, 2016. PPL Electric has seen strong LED bulb sales over the first six months of the program with sales exceeding 1,000,000 bulbs.
- **Energy-Efficiency Kits and Education:** The Energy Efficiency Kits and Education program launched June 1, 2016, and targets income eligible customers. The program is well underway with over 6,500 kits delivered through direct mail or one of the 22 participating agencies. Over 50,000 LEDs have been distributed between all of the low-income programs. No major issues have affected implementation.
- **Energy Efficient Home:** All components of this residential program launched June 1, 2016 with the exception of the online assessment component. This component launched in late October. The program launched with an entirely new customer facing website and online rebate application portal.
- **Home Energy Education:** The program launched June 1, 2016. The program sends Home Energy Reports to customers; it is not a rebate program. Customers have provided positive feedback about the improvements made to the Home Energy Reports in Phase III.
- **Low-Income WRAP:** The program for income eligible customers launched June 1, 2016 with a seamless transition for customers from Phase II to Phase III. Customer interest



and satisfaction remains high. The program has completed over 700 jobs, including participants in the Manufactured Home initiative. Another 3,800 jobs have been acquired and are in the pipeline in various stages. Interest in WRAP for multifamily buildings has generated a lead list of over 30 buildings (combination of individual and master-metered) with over 2,200 individual low-income tenants.

- **Student Energy Efficient Education:** The program launched June 1, 2016. The program was fully subscribed for PY8 (fall 2016) reaching 24,038 children at 204 schools.

### 3.2 EVALUATION UPDATES AND FINDINGS

This section summarizes evaluation activities occurring within each program during PY8 quarters one and two:

- **Appliance Recycling:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus drafted and submitted the appliance recycling participant survey to SWE for review, with plans to launch the participant surveys in January 2017. Cadmus is drafting the stakeholder interview guide.
- **Custom:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus, the ICSP, and PPL Electric reviewed communication and site visit protocols and the measure savings calculator. Cadmus researched appropriate measure life for RCx projects to compare prior year cost effectiveness testing and TRMs. Advanced lighting controls projects will be submitted under the Custom program. The ICSP will meter the projects to develop a site-specific savings factor.
- **Demand Response:** Cadmus has drafted an EM&V plan and is working with PPL to finalize and submit it to the SWE for approval. In addition, Cadmus received interval consumption data for summer 2016 for PPL Electric's industrial, commercial, and GNE customers eligible for the program. Cadmus is using the data to test methods for estimating customer baselines.
- **Efficient Equipment:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus drafted and submitted the efficient equipment participant survey to the SWE for review, subsequently launching the participant survey in October. Cadmus submitted 2016 TRM errata to the SWE. Cadmus reviewed and provided comments to the ICSP on equipment savings protocols, online application portal, and TRM calculators and submitted a process map for site visit notifications to PPL and the ICSP.
  - **Distributor Discount:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus is planning a supplemental market effects study and engaged in discussions with PPL Electric and the ICSP regarding the availability of participating distributor sales data. Cadmus and PPL Electric prepared an interim measure protocol for this midstream commercial

lighting program. PPL Electric solicited input from other EDC's through online meetings and in written comments. Cadmus incorporated this input and submitted a draft version to SWE for comment. Following the SWE's review, additional input from EDCs, PPL Electric and Cadmus, the SWE issued a final IMP Jan. 5, 2017.

- **Efficient Lighting:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus completed the residential socket saturation field study and began analyzing the data collected. Cadmus began drafting both residential and commercial general population surveys. Cadmus also reviewed the initial EEMIS extracts received from PPL to ensure the data were sufficient for verification.
- **Energy-Efficiency Kits and Education:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus reviewed the surveys included in the energy-efficiency kits. Cadmus received Q1 survey data from the ICSP and confirmed that it contains the necessary data for Phase III evaluation activities. Cadmus reviewed a sample data upload from the ICSP and determined that given the absence of heating equipment type data from enrollment surveys, eligibility for furnace whistle heating savings will be determined by the presence or absence of electric heat.
- **Energy Efficient Home:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus drafted and submitted the equipment, weatherization, and in-home audit participant surveys to the SWE for review. Cadmus reviewed and provided comments to PPL and the ICSP on the database specifications for the equipment component of the program.
- **Home Energy Education:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus completed the randomization task of newly selected customers, assigning them to treatment and control groups. Cadmus met with the ICSP and program subcontractor to discuss details of program components (Home Energy Reports and web portal) and reviewed the program participant counts (treatment group counts across customer waves) for Phase III. The SWE provided comments to the EM&V plan. Cadmus finalized the EM&V Plan, with incorporated feedback from PPL Electric and the SWE.
- **Low-Income WRAP:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus drafted and submitted the participant survey to the SWE for review. Cadmus reviewed and provided comments to PPL on database specifications for the WRAP program. Cadmus is drafting stakeholder interview guides.
- **Student Energy Efficient Education:** Cadmus drafted the EM&V plan and submitted it to the SWE November 15, 2016 for its review. Cadmus reviewed home energy worksheets and provided feedback to PPL and the ICSP. Cadmus reviewed the ICSP's sample data upload and confirmed that the data file contains data necessary for Phase III evaluation activities.

## Section 4 Summary of Participation by Program

Participation is defined differently for certain programs depending on the program delivery channel and data tracking practices. The nuances of the participant definition vary by program and are summarized by program in the bullets below, and Table 5 provides the current participation totals for PY8 and Phase III.

**Table 5: EE&C Plan Participation by Program**

Program	Participant Definition	PYTD Participation	P3TD Participation
Appliance Recycling	Unique CSP job ID	4,866	4,866
Custom	Customer project that received an incentive payment between June 1, 2016, and May 31, 2017	18	18
Efficient Equipment	Unique CSP job ID	87	87
Efficient Lighting	Jobs are reported as weekly bulb sales by product. The number of participants is determined by dividing the total number of bulbs sold or distributed by a bulbs-per-participant estimate derived from Phase II general residential and small C&I population survey respondents who reported having purchased bulbs.	131,144	131,144
Energy-Efficiency Kits and Education	Unique CSP job ID	6,533	6,533
Low-Income WRAP	Unique CSP job ID	773	773
<b>Portfolio Total</b>		<b>143,421</b>	<b>143,421</b>

## Section 5 Summary of Energy Impacts by Program

Figure 6 presents a summary of the PYTD reported gross energy savings by program for Program Year 8. The energy impacts in this report are presented at the meter level and do not reflect adjustments for transmission and distribution losses.

**Figure 6: PYTD Reported Gross Energy Savings by Program**

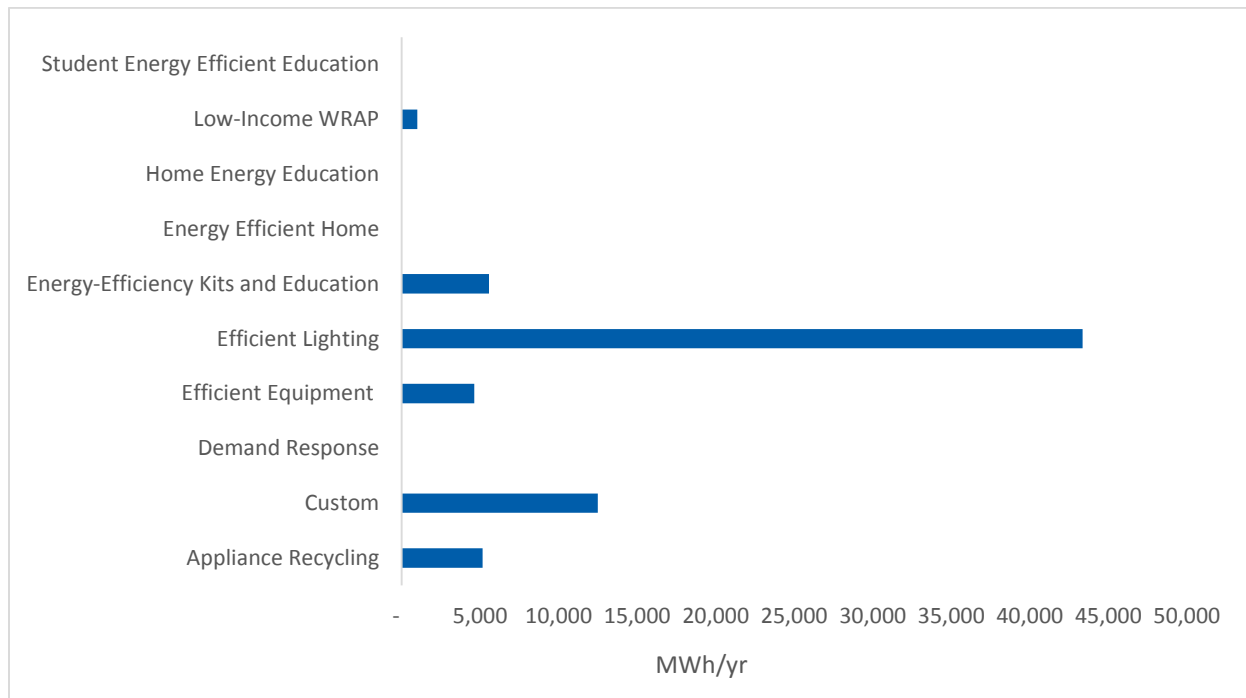
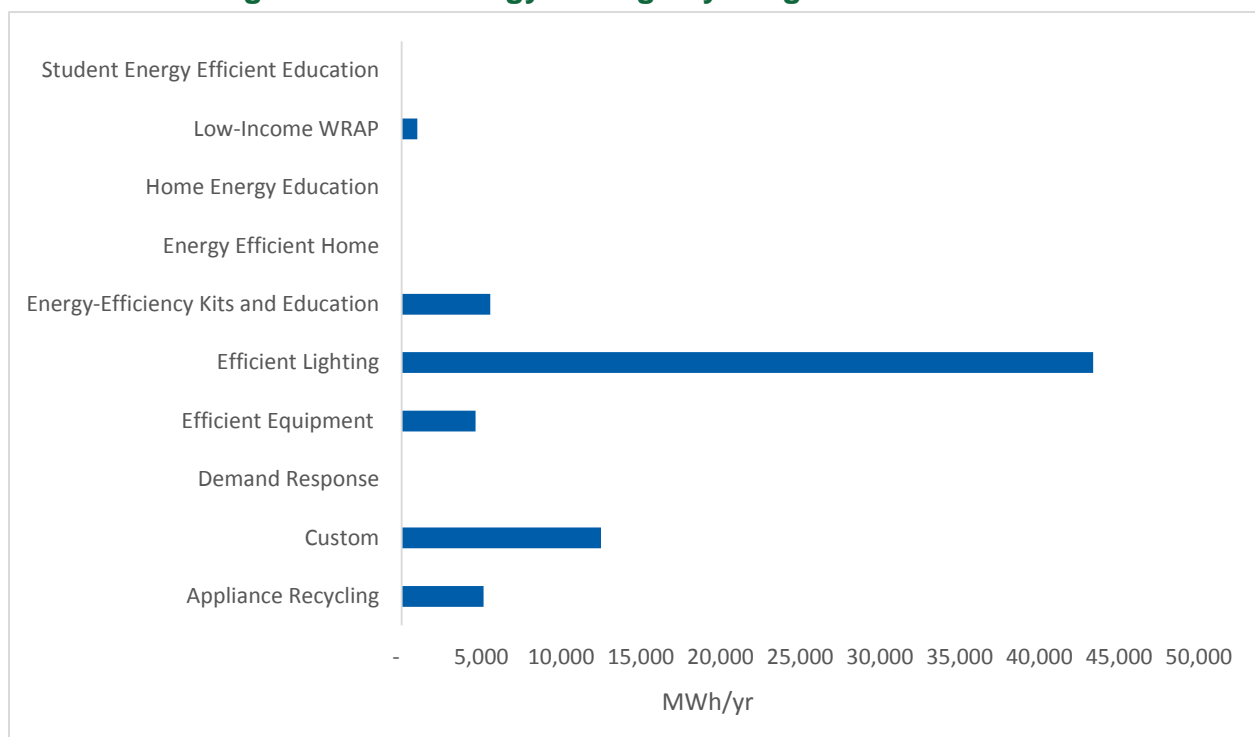


Figure 7 presents a summary of the PSA gross energy savings by program for Phase III of Act 129. PSA savings include verified gross savings from previous program years and the PYTD savings from the current program year.

**Figure 7: PSA Energy Savings by Program for Phase III**

A summary of energy impacts by program through the current reporting period is presented in Table 6.

**Table 6: Energy Savings by Program (MWh/Year)**

Program Name	PYTD MWh	RTD	VTD	PSA
Appliance Recycling	5,146	5,146	-	5,146
Custom	12,497	12,497	-	12,497
Demand Response	-	-	-	-
Efficient Equipment	4,633	4,633	-	4,633
Efficient Lighting	43,366	43,366	-	43,366
Energy-Efficiency Kits and Education	5,556	5,556	-	5,556
Energy Efficient Home	-	-	-	-
Home Energy Education	-	-	-	-
Low-Income WRAP	990	990	-	990
Student Energy Efficient Education	-	-	-	-
<b>Portfolio Total <sup>1</sup></b>	<b>72,187</b>	<b>72,187</b>	<b>-</b>	<b>72,187</b>

<sup>1</sup> Portfolio total does not equal total of column due to rounding.

## Section 6 Summary of Demand Impacts by Program

PPL Electric Utilities' Phase III EE&C programs achieve peak demand reductions in two primary ways. The first is through coincident reductions from energy efficiency measures and the second is through dedicated demand response offerings that exclusively target temporary demand reductions on peak days. Energy efficiency reductions coincident with system peak hours are reported and used in the calculation of benefits in the TRC Test, but do not contribute to Phase III peak demand reduction compliance goals. Phase III peak demand reduction targets are exclusive to demand response programs.

The two types of peak demand reduction savings are also treated differently for reporting purposes. Peak demand reductions from energy efficiency are generally additive across program years, meaning that the P3TD savings reflect the sum of the first-year savings in each program year. Conversely, demand response goals are based on average portfolio impacts across all events so cumulative DR performance is expressed as the *average* performance of each of the DR events called in Phase III to date. Because of these differences, demand impacts from energy efficiency and demand response are reported separately in the following sub-sections.

### 6.1 ENERGY EFFICIENCY

Act 129 defines peak demand savings from energy efficiency as the average expected reduction in electric demand from 2:00 p.m. to 6:00 p.m. EDT on non-holiday weekdays from June to August. The peak demand impacts from energy efficiency in this report are presented at the meter level and do not reflect adjustments for transmission and distribution losses. Figure 8 presents a summary of the PYRTD reported gross peak demand savings by energy efficiency program for Program Year 8.

**Figure 8: PYRTD Gross Demand Savings by Energy Efficiency Program<sup>6</sup>**

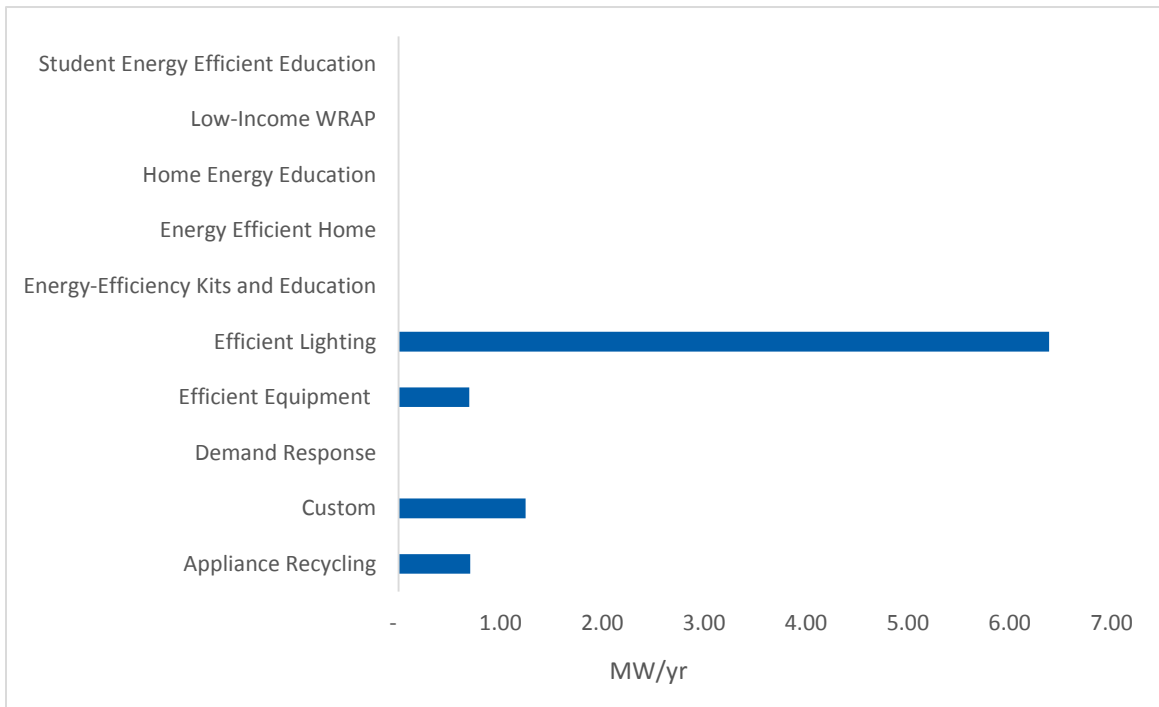
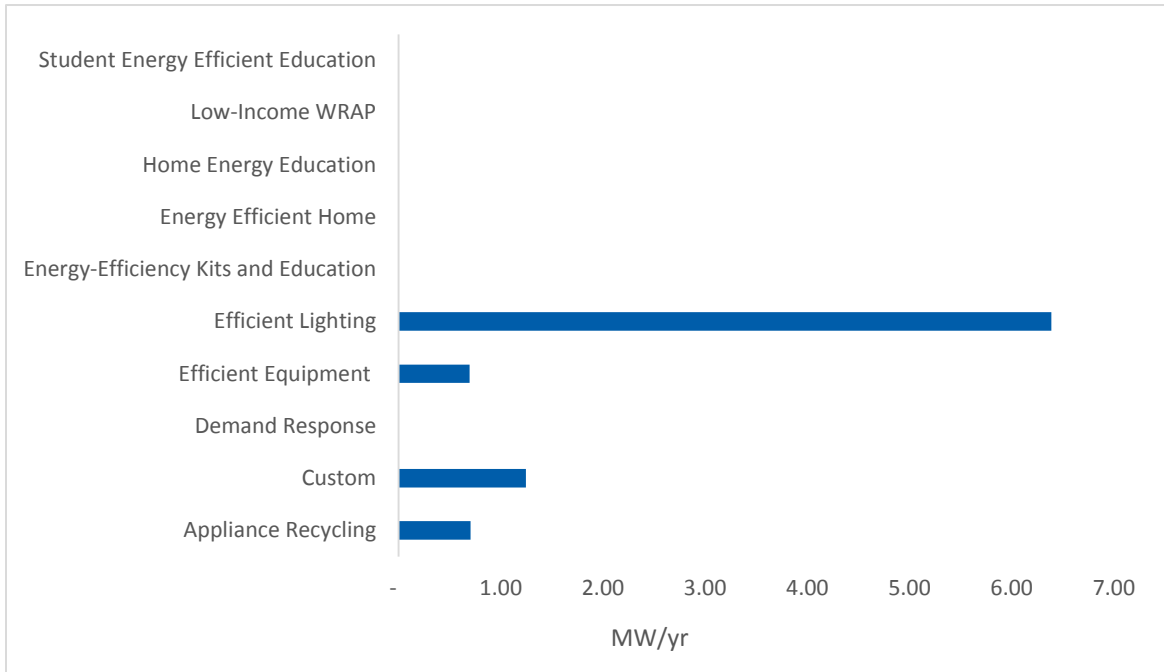


Figure 9 presents a summary of the PSA gross demand savings by energy efficiency program for Phase III of Act 129.

<sup>6</sup> Includes demand savings for energy efficiency programs with data in PPL Electric Utilities' EEMIS tracking database.

**Figure 9: PSA Demand Savings by Energy Efficiency Program for Phase III<sup>7</sup>**



A summary of the peak demand impacts by energy efficiency program through the current reporting period are presented in Table 7.

<sup>7</sup> Includes demand savings for energy efficiency programs with data in PPL Electric Utilities' EEMIS tracking database.



**Table 7: Peak Demand Savings From Energy Efficiency by Program (MW/Year)<sup>8</sup>**

Program Name	PYTD MW	RTD	VTD	PSA
Appliance Recycling	0.70	0.70	-	0.70
Custom	1.25	1.25	-	1.25
Demand Response	-	-	-	-
Efficient Equipment	0.70	0.70	-	0.70
Efficient Lighting	6.39	6.39	-	6.39
Energy-Efficiency Kits and Education	-	-	-	-
Energy Efficient Home	-	-	-	-
Home Energy Education	-	-	-	-
Low-Income WRAP	-	-	-	-
Student Energy Efficient Education	-	-	-	-
<b>Portfolio Total<sup>1</sup></b>	<b>9.03</b>	<b>9.03</b>	-	<b>9.03</b>

<sup>1</sup> Portfolio total does not equal total of column due to rounding.

## 6.2 DEMAND RESPONSE

PPL Electric Utilities did not implement curtailment events in PY8. The program's ICSP will enroll customers during PY8 (June 1, 2016, to May 31, 2017) and initiate events during the summers of PY9, PY10, PY11, and PY12.

## Section 7 Summary of Finances

Section 7 provides an overview of the expenditures associated with PPL Electric Utilities' portfolio and the recovery of those costs from ratepayers.

### 7.1 PROGRAM FINANCIALS

Program-specific and portfolio total finances for PY8 are shown in Table 8. The columns in Table 8 and Table 9 are adapted from the 'Direct Program Cost' categories in the Commission's EE&V Plan template<sup>9</sup> for Phase III. EDC Materials, Labor, and Administration includes costs associated with an EDC's own employees. ICSP Materials, Labor, and Administration includes both the program implementation contractor and the costs of any other outside vendors and EDCs employs to support program delivery.

<sup>8</sup> Includes demand savings for programs with data in PPL Electric Utilities' EEMIS tracking database.

<sup>9</sup> <http://www.puc.pa.gov/pcdocs/1372426.doc> Section 10

**Table 8: Program Year to Date Financials (\$1,000)**

Program	Incentives to Participants and Trade Allies	EDC Materials, Labor, and Administration	ICSP Materials, Labor, and Administration	EM&V	Total
Appliance Recycling Program	\$86	\$83	\$603	-	\$772
Custom Program	\$1,101	\$377	\$712	-	\$2,190
Demand Response Program	-	\$77	\$183	-	\$259
Efficient Equipment Program	\$2,124	\$358	\$925	-	\$3,408
Efficient Lighting Program	\$3,946	\$150	\$688	-	\$4,783
Energy Efficiency Kits & Education Program <sup>1</sup>	-	\$75	\$880	-	\$956
Energy Efficient Home Program	\$545	\$106	\$1,114	-	\$1,765
Home Energy Education Program	-	\$98	\$407	-	\$505
Low-Income WRAP Program <sup>1</sup>	-	\$324	\$1,102	-	\$1,426
Student Energy Efficiency Education Program	-	\$77	\$411	-	\$488
<b>Common Portfolio Costs <sup>2</sup></b>	-	\$1,814	\$934	\$951	\$3,699
<b>Portfolio Total <sup>3</sup></b>	<b>\$7,802</b>	<b>\$3,539</b>	<b>\$7,958</b>	<b>\$951</b>	<b>\$20,250</b>
<b>SWE Costs <sup>4</sup></b>	-	-	-	-	<b>\$500</b>
<b>Total <sup>5</sup></b>	<b>\$7,802</b>	<b>\$3,539</b>	<b>\$7,958</b>	<b>\$951</b>	<b>\$20,751</b>

<sup>1</sup> Costs associated with low income program measures provided to customers at no cost are categorized as administrative costs

<sup>2</sup> Common Portfolio Costs are costs applicable to more than one customer class, to more than one program, or those that provide portfolio-wide benefits. These include PPL Electric labor and materials, costs related to the EEMIS tracking system, EE&C plan development, etc.

<sup>3</sup> Portfolio Total and Total may not equal total of column due to rounding.

<sup>4</sup> Statewide Evaluation costs are outside of the 2% spending cap.

<sup>5</sup> Total may not equal sum of column due to rounding.

Program-specific and portfolio total finances since the inception of Phase III are shown in Table 9.

**Table 9: Phase III to Date Financials**

Program	Incentives to Participants and Trade Allies	EDC Materials, Labor, and Administration	ICSP Materials, Labor, and Administration	EM&V	Total
Appliance Recycling Program	\$86	\$83	\$603	-	\$772
Custom Program	\$1,101	\$377	\$712	-	\$2,190
Demand Response Program	-	\$77	\$183	-	\$259
Efficient Equipment Program	\$2,124	\$358	\$925	-	\$3,408
Efficient Lighting Program	\$3,946	\$150	\$688	-	\$4,783
Energy Efficiency Kits & Education Program <sup>1</sup>	-	\$75	\$880	-	\$956

Program	Incentives to Participants and Trade Allies	EDC Materials, Labor, and Administration	ICSP Materials, Labor, and Administration	EM&V	Total
Energy Efficient Home Program	\$545	\$106	\$1,114	-	\$1,765
Home Energy Education Program	-	\$98	\$407	-	\$505
Low-Income WRAP Program <sup>1</sup>		\$324	\$1,102	-	\$1,426
Student Energy Efficiency Education Program	-	\$77	\$411	-	\$488
<b>Common Portfolio Costs</b> <sup>2</sup>	-	\$1,814	\$934	\$951	\$3,699
<b>Portfolio Total</b> <sup>3</sup>	<b>\$7,802</b>	<b>\$3,539</b>	<b>\$7,958</b>	<b>\$951</b>	<b>\$20,250</b>
<b>SWE Costs</b> <sup>4</sup>	-	-	-	-	<b>\$500</b>
<b>Total</b> <sup>5</sup>	<b>\$7,802</b>	<b>\$3,539</b>	<b>\$7,958</b>	<b>\$951</b>	<b>\$20,751</b>

<sup>1</sup> Costs associated with low income program measures provided to customers at no cost are categorized as administrative costs

<sup>2</sup> Common Portfolio Costs are costs applicable to more than one customer class, to more than one program, or those that provide portfolio-wide benefits. These include PPL Electric labor and materials, costs related to the EEMIS tracking system, EE&C plan development, etc.

<sup>3</sup> Portfolio Total may not equal total of column due to rounding.

<sup>4</sup> Statewide Evaluation costs are outside of the 2% spending cap.

<sup>5</sup> Total may not equal sum of column due to rounding.

Cost-effectiveness testing for Act 129 EE&C programs is performed using the TRC Test. Benefit cost modeling is conducted annually using verified gross and verified net savings once the results of the independent impact evaluation are completed. TRC test results for PY8 will be presented in the final annual report to the PA PUC on November 15, 2017 along with a more granular breakdown of portfolio costs.

## 7.2 COST RECOVERY

Act 129 allows Pennsylvania EDCs to recover EE&C plan costs through a cost-recovery mechanism. PPL Electric Utilities' cost-recovery charges organized separately by 3 customer classes to ensure that the electric rate classes that finance the programs are the rate classes that receive the direct energy and conservation benefits. Cost-recovery is necessarily tied to the way customers are metered and charges for electric service. Readers should be mindful of the differences between Table 10 and Section 2.4. For example, the low-income customer segment is a subset of PPL Electric Utilities' residential tariff(s) and therefore not listed in Table 10.

**Table 10: EE&C Plan Expenditures by Cost-Recovery Category<sup>10</sup>**

Cost Recovery Customer Sector	Rate Schedules Included	PYTD Spending (\$1000)	P3TD Spending (\$1000)
Residential & Low Income	RS and RTS	\$10,790	\$10,790
Small Commercial and Industrial (Small C&I)	GS-1, GS-3, BL, SA, SM (R), SHS, TS (R), and GH-2 (R)	\$3,064	\$3,064
Large commercial and Industrial (Large C&I)	LP-4, LP-5, LPEP and L5S	\$2,290	\$2,290
GNE	All rate schedules above	\$1,307	\$1,307
Common <sup>1</sup>	N/A	\$3,299	\$3,299
<b>Portfolio Total<sup>2</sup></b>	-	<b>\$20,751</b>	<b>\$20,751</b>

<sup>1</sup> Common costs are assigned to each customer sector at the conclusion of Phase III.  
<sup>2</sup> Portfolio total may not equal sum of rows due to rounding.

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<sup>10</sup> Includes SWE costs.