

# Semiannual Report to the Pennsylvania Public Utility Commission

**Phase III of Act 129  
Program Year 12  
(June 1, 2020–May 31, 2021)  
For Pennsylvania Act 129 of 2008  
Energy Efficiency and Conservation Plan**

**Prepared for:**



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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
EUL	Effective Useful Life
GNI	Government, Non-Profit, Institutional
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 semiannual 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).

**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 PY12 preliminary annual report. 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	500	700
PY11	500	550
PY12 (Q1+Q2)	600	N/A

PYRTD (PY12) = 600 MWh/year

RTD = 800 + 900 + 500 + 500 + 600 = 3,300 MWh / year

VTD = 700 + 850 + 700 + 550 = 2,800 MWh / year

PSA = 2,800 + 600 = 3,400 MWh/year

PSA + CO = 3,400 + 400 = 3,800 MWh/year

Source: SWE Example

## 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 Duquesne Light in Program Year 12 (PY12), 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 PY12. Compliance with Act 129 savings goals is ultimately based on verified gross savings. Duquesne Light has retained Guidehouse Inc. (“Guidehouse”), as an independent evaluation contractor for Phase III of Act 129. Guidehouse is responsible for the measurement and verification of the savings and calculation of verified gross savings. The verified gross savings for PY12 energy efficiency programs will be reported in the final annual report, due to be filed on November 15, 2021.<sup>1</sup>

Phase III of Act 129 includes a demand response goal for Duquesne Light. 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. Section 6.2 of this report includes the verified gross demand response impacts for PY12 as well as the cumulative demand response performance of the EE&C program to date for Phase III of Act 129.

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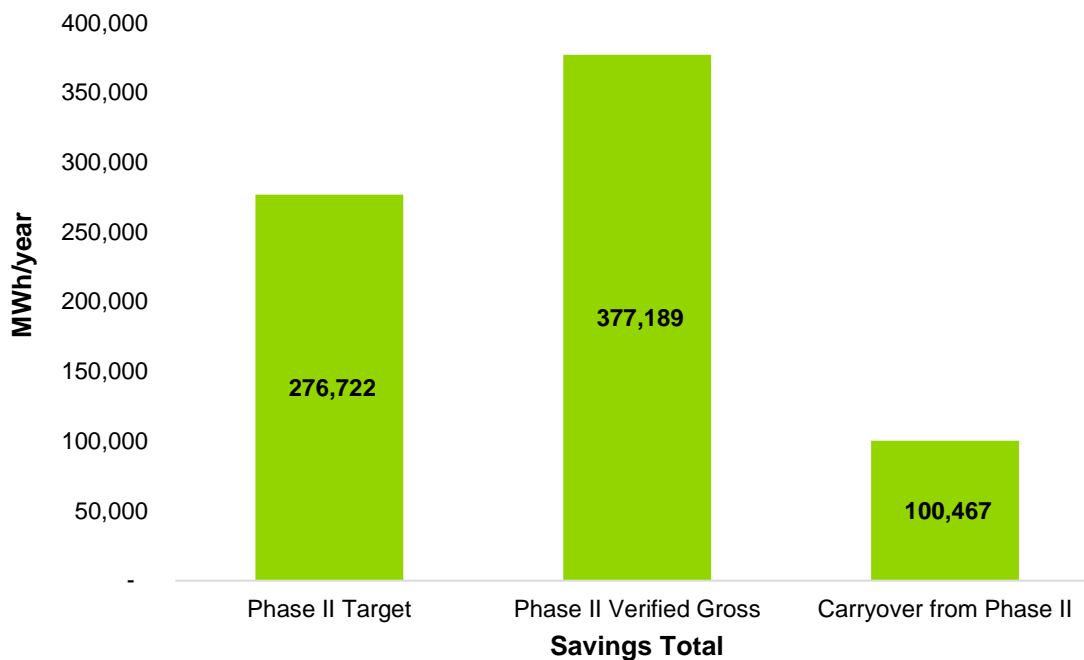
<sup>1</sup> See Docket No. M-2014-2424864, Secretarial Letter issued May 26, 2020.

## 2. Summary of Achievements

### 2.1 Carryover Savings from Phase II of Act 129

Duquesne Light has a total of 100,467 MWh/year of carryover savings from Phase II. Figure 1 compares Duquesne Light’s 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**



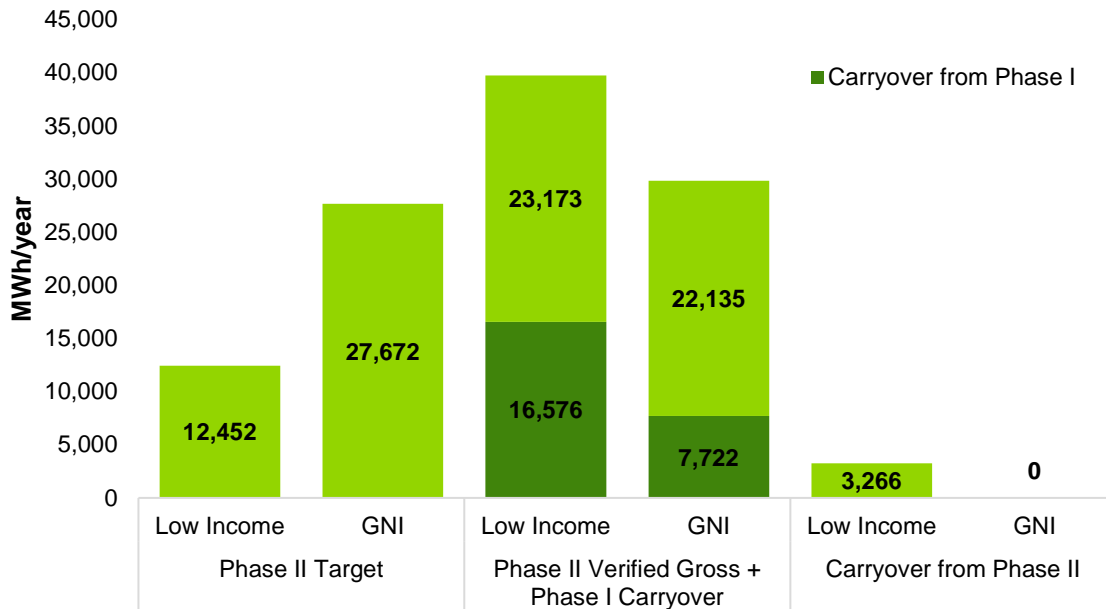
Source: Guidehouse

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 Institutional (GNI) savings goal and excess savings from the low-income customer segment.<sup>3</sup> Figure 2 shows the calculation of carryover savings for the low-income and GNI targets.

<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.

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



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


Source: Guidehouse

## 2.2 Phase III Energy Efficiency Achievements to Date

Since the beginning of Program Year 12 on June 1, 2020, Duquesne Light has claimed:

- 49,490 MWh/yr of reported gross electric energy savings (PYRTD)
- 6.64 MW/yr of reported gross peak demand savings (PYRTD) from energy efficiency programs
- 32.41 MW/yr of verified gross peak demand savings (PYVTD) from demand response programs (voluntary<sup>4</sup>)

Since the beginning of Phase III of Act 129 on June 1, 2016, Duquesne Light has achieved:

- 412,395 MWh/yr of reported gross electric energy savings (RTD)
- 51.09 MW/yr of reported gross peak demand savings (RTD) from energy efficiency programs

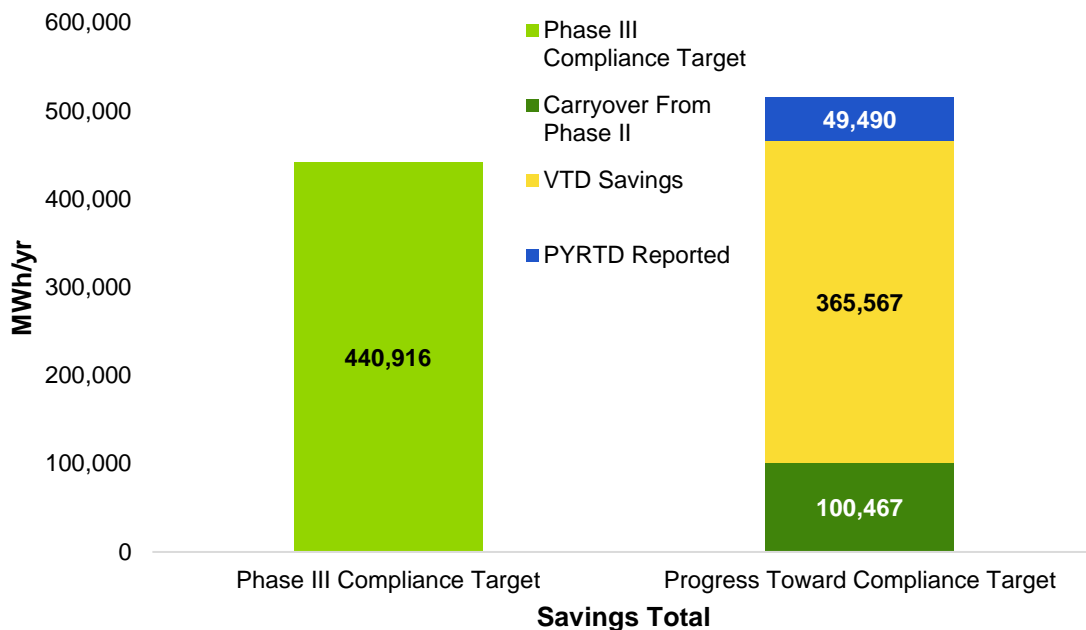
<sup>4</sup> PY12 Demand Response is voluntary. Docket No. M-2014-2424864, Petition to Amend the Commission's June 19, 2015 Implementation Order, Order entered June 3, 2020. <https://www.puc.pa.gov/pdocs/1665150.docx>

- 415,057 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 PY12
- 51.60 MW/yr of gross peak demand savings (PSA) from energy efficiency programs.

Including carryover savings from Phase II, Duquesne Light has achieved:

- 515,524 MWh/yr of PSA+CO energy savings recorded to date in Phase III
  - This represents 117% percent of the May 31, 2021, energy savings compliance target of 440,916 MWh/yr

**Figure 3: EE&C Plan Performance Toward Phase III Portfolio Compliance Target**



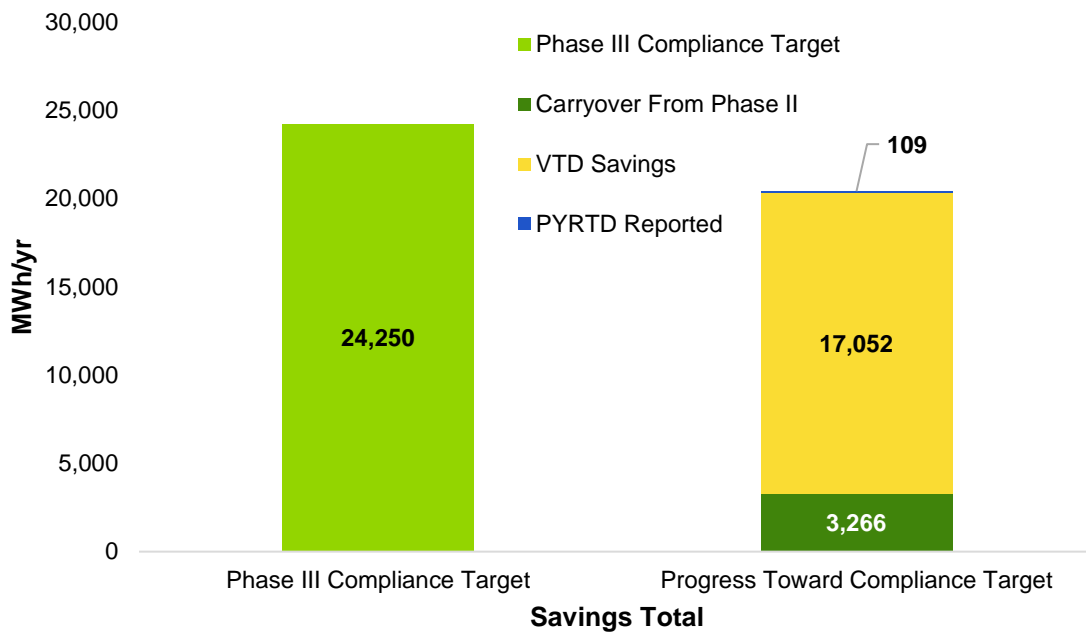
Source: Guidehouse

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 Duquesne Light is 8.4%. Duquesne Light offers a total of 102 EE&C measures to its residential and non-residential customer classes. There are 20 measures available to the low-income customer segment at no cost to the customer. This represents 19.6% of the total measures offered in the EE&C plan and exceeds the proportionate number of measures target.

The PA PUC also established a low-income energy savings target of 5.5% of the portfolio savings goal. The low-income savings target for Duquesne Light is 24,250 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, Duquesne Light has achieved 84% of the Phase III low-income energy savings target.

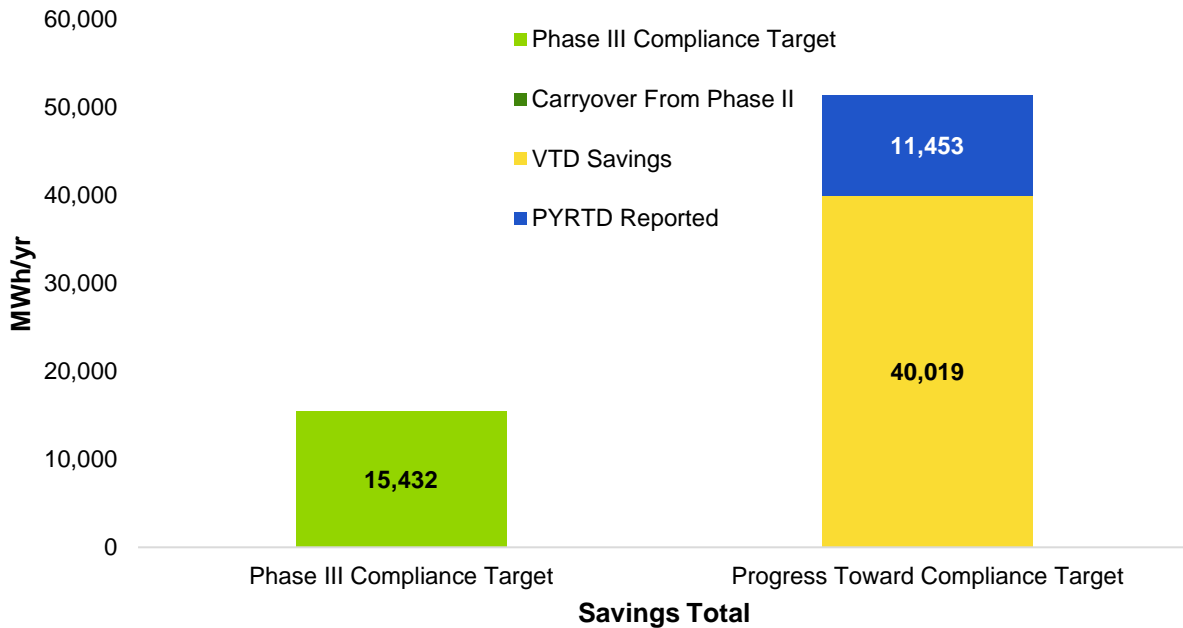
**Figure 4: EE&C Plan Performance Toward Phase III Low-Income Compliance Target<sup>5</sup>**



Source: Guidehouse

The Phase III Implementation Order established a government, non-profit, and institutional energy savings target of 3.5% of the portfolio savings goal. The GNI savings target for Duquesne Light is 15,432 MWh/yr and is based on verified gross savings. Figure 5 compares the PSA+CO performance to date for the GNI customer segment to the Phase III savings target. Based on the latest available information, Duquesne Light has achieved 334% of the Phase III GNI energy savings target.

<sup>5</sup> The 17,052 MWh of VTD savings include 15,202 MWh from the Low-Income Energy Efficiency Program (LIEEP) and 1,850 MWh from the Multifamily Housing Retrofits Program that serves low-income Duquesne Light customers.

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


Source: Guidehouse

### 2.3 Phase III Demand Response Achievements to Date

The Phase III demand response performance target for Duquesne Light is 42 MW. Compliance targets for demand response programs are based on average performance across events and were established at the system level, which means the load reductions measured at the customer meter must be escalated to reflect transmission and distribution losses.

Act 129 demand response events are triggered by PJM's day-ahead load forecast. When the day-ahead forecast is above 96% of the summer peak load forecast for the year, a demand response event is initiated for the following day. For PY12 and Phase III to date, Table 2 lists the days that DR events were called along with the verified gross demand reductions achieved by each program and the average DR performance for the program year and the phase. In PY12 there were five demand response events called. Duquesne's average DR performance to date is above the Phase III compliance reduction target by 31% (performance–goal/goal). DR participation is voluntary for PY12. Therefore, Phase III compliance is based on achieved impacts through PY11,<sup>6</sup> and Duquesne Light's PY9 through PY11 performance is above the Phase III compliance reduction target by 31%. Duquesne Light's PY9 through PY12 performance is above the Phase III compliance reduction target by 16%.

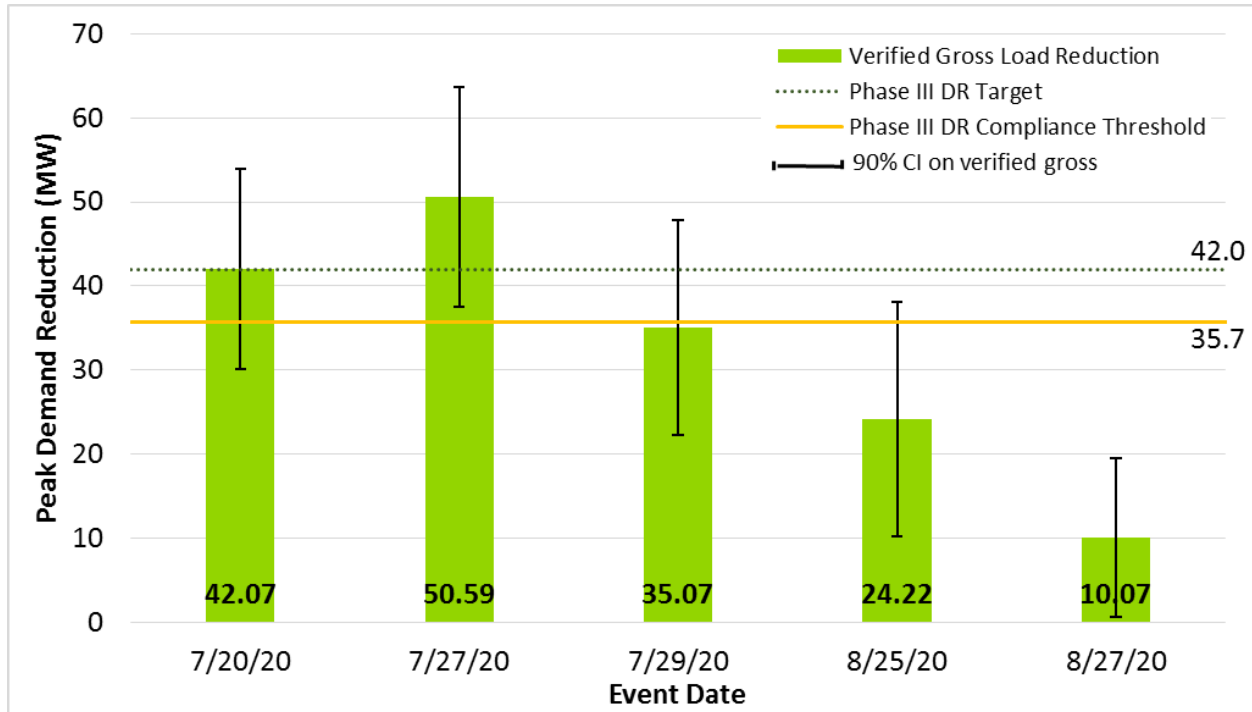
<sup>6</sup> Docket No. M-2014-2424864, *Petition to Amend the Commission's June 19, 2015 Implementation Order*, Order entered June 3, 2020. <https://www.puc.pa.gov/pcdocs/1665150.docx>

**Table 2: Demand Response PYVTD and VTD Performance by Event (MW)**

Event Date	Start Hour (Hour Ending)	End Hour (Hour Ending)	Small CI Load Curtailment	Large CI Load Curtailment	Residential DLC	BDR	Average Portfolio MW Impact
2017-06-13	15	18	0.47	61.51	NA	NA	61.98
2017-07-20	15	18	0.43	63.37	NA	NA	63.80
2017-07-21	15	18	0.39	50.98	NA	NA	51.37
2018-07-02	15	18	1.63	73.28	NA	NA	74.90
2018-07-03	15	18	0.59	51.76	NA	NA	52.35
2018-08-06	15	18	2.15	50.03	NA	NA	52.17
2018-08-28	15	18	1.32	37.46	NA	NA	38.78
2018-09-04	15	18	1.52	58.36	NA	NA	59.88
2018-09-05	15	18	0.75	37.08	NA	NA	37.82
2019-07-17	15	18	1.61	53.61	NA	NA	55.21
2019-07-18	16	19	1.56	38.34	NA	NA	39.90
2019-07-19	15	18	1.26	56.28	NA	NA	57.54
2019-08-19	15	18	1.17	70.16	NA	NA	71.34
2020-07-20	15	18	2.78	39.30	NA	NA	42.07
2020-07-27	15	18	2.27	48.32	NA	NA	50.59
2020-07-29	16	19	2.14	32.93	NA	NA	35.07
2020-08-25	15	18	1.40	22.82	NA	NA	24.22
2020-08-27	16	19	0.68	9.39	NA	NA	10.07
<b>Average PY12 DR Event Performance (voluntary)</b>							<b>32.41</b>
<b>PY9 through PY12 Average DR Event Performance (voluntary)</b>							<b>48.84</b>
<b>VTD - Average Phase III DR Event Performance (PY9 through PY11, compliance)</b>							<b>55.16</b>

Source: Guidehouse

The Commission’s Phase III Implementation Order also established a requirement that EDCs achieve at least 85% of the Phase III compliance reduction target in each DR event. For Duquesne Light, this translates to a 35.7 MW minimum for each DR event. Although PY12 is voluntary, Figure 6 compares the performance of each of the DR events in PY12 to the event-specific minimum and average targets.

**Figure 6: Event Performance Compared to 85% Per-Event Target<sup>7</sup>**


Source: Guidehouse

## 2.4 Phase III Performance by Customer Segment

Table 3 presents the participation, savings, and spending by customer sector for PY12. The residential, small C&I, and large C&I sectors are defined by EDC tariff, and the residential low-income and governmental/educational/non-profit sectors 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 GNI segment will include customers who are part of the Small C&I or Large C&I rate classes. The savings, spending, and participation values for the LI and GNI segments have been removed from the parent sectors in Table 3.

<sup>7</sup> Demand Response results are expressed at the 90% Confidence Interval (CI), as directed by the Evaluation Framework. However, the primary point of interest of the results are the point estimates shown by the green bars.

**Table 3: PY12 Summary Statistics by Customer Segment**

Parameter	Residential (Non-LI)	Residential LI	Small C&I (Non-GNI)	Large C&I (Non-GNI)	GNI	Total
# participants	3,688	403	92	239	103	<b>4,525</b>
PYRTD MWh/yr	1,370	109	4,331	32,227	11,453	<b>49,490</b>
PYRTD MW/yr (Energy Efficiency)	0.24	0.01	0.64	4.08	1.67	<b>6.64</b>
PYVTD MW (Demand Response, voluntary)	0.00	0.00	0.55	26.14	5.71	<b>32.41</b>
Incentives (\$1,000)	\$167	\$181	\$578	\$1,719	\$1,042	<b>\$3,687</b>

Source: Guidehouse

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

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

Parameter	Residential (Non-LI)	Residential LI	Small C&I (Non-GNI)	Large C&I (Non-GNI)	GNI	Total
# participants	283,728	83,105	1,962	942	570	<b>370,307</b>
PSA MWh/yr	153,824	13,917	74,327	121,517	51,472	<b>415,057</b>
PSA MW (Energy Efficiency)	16.97	1.42	11.03	15.93	6.25	<b>51.60</b>
Phase III MW PY9-PY11 compliance [PY9-PY12 voluntary] (Demand Response)	0.00 [0.00]	0.00 [0.00]	0.72 [0.68]	49.12 [42.74]	5.32 [5.43]	<b>55.16 [48.84]</b>
Incentives (\$1,000)	\$5,483	\$1,068	\$4,206	\$8,871	\$3,739	<b>\$23,367</b>

Source: Guidehouse

## 3. Updates and Findings

### 3.1 Implementation Updates and Findings

Duquesne Light's Phase III EE&C Plan portfolio of programs continues to operate through PY12 with general consistency and limited changes. Recent changes to implementation relate to certain activities winding down as the portfolio nears its Phase III targeted goals.

The Whole House Retrofit Program (WHRP) recorded no PY12 savings among market rate participants. Instead, Duquesne Light is focusing activities on low-income participants through the Low-Income Energy Efficiency Program (LIEEP) component.

The Upstream Lighting component of the Residential Energy Efficiency Program (REEP) has achieved its planned savings target for Phase III, and no savings are recorded for PY12. Duquesne Light anticipates continuing activities for the downstream components of REEP Rebates and REEP Kits for the remainder of the phase.

As previously reported, the Small Commercial Direct Install program greatly over-achieved planned savings in earlier program years. No savings are reported for the program in PY12.

The Community Education Energy Efficiency Program recorded no savings so far in PY12 as portfolio activities have shifted away from schools to market segments less affected by the pandemic.

The Large Curtailable Load Demand Response program was offered for the first time in Phase III during PY9 and there have been a total of 18 events through PY12 (three in PY9, six in PY10, four in PY11, and five in PY12). The petition to amend the Commission's June 19, 2015 Act 129 Phase III Implementation Order made PY12 DR activities and event responses voluntary.<sup>8</sup> Program performance during PY9, PY10, and PY11 are used to determine overall Phase III compliance. Although Duquesne Light was not mandated to do so, it opted to keep the program active during PY12 and engage its DR participants with the program's offerings.

During the coronavirus pandemic, Duquesne Light continues to take measured steps to support its customers with program offerings while remaining sensitive to customer burdens and safety concerns. Duquesne Light and its CSPs continue to adhere to appropriate safety procedures and policies in response to pandemic conditions in Pennsylvania.

### 3.2 Evaluation Updates and Findings

Highlights from Duquesne Light's progress on the Phase III evaluation are summarized in this section. Guidehouse submitted and the SWE approved C&I verification and sampling plans detailed in spreadsheets that describe stratification, sample targets, and research methods the team will use to gather information for the C&I programs which are the focus of verification efforts for PY12. Guidehouse is also preparing a PY12 evaluation plan update for the SWE's review. That plan will describe all activities planned for PY12 and formally present those C&I

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<sup>8</sup> Docket No. M-2014-2424864, *Petition to Amend the Commission's June 19, 2015 Implementation Order*, Order entered June 3, 2020. <https://www.puc.pa.gov/pcdocs/1665150.docx>



activities. The following summarizes additional details around the evaluation planning and efforts.

- Guidehouse provided responses to the SWE's PY11 annual data request, including data and other participation and evaluation documentation. The team also responded to several SWE questions to clarify data and the team's analysis to aid the SWE's annual reporting.
- **Residential Energy Efficiency Program (REEP)**
  - **REEP Rebates and Kits:** PY12 verification results will be informed by the PY11 verification activities.
  - **REEP Upstream Lighting:** No PY12 savings or activities.
- **Residential Appliance Recycling Program (RARP)**
  - PY12 verification results will be informed by the PY11 verification activities.
- **Residential Behavioral Savings**
  - Guidehouse plans to conduct impact evaluation activities in PY12 similar to previous years.
- **Whole House Retrofit Program (WHRP)**
  - Savings relate to the low-income component of WHRP and savings are reflected in LIEEP. PY12 verification results will be informed by the PY11 verification activities.
- **Express Efficiency, Commercial Efficiency, and Industrial Efficiency Programs**
  - Guidehouse is conducting PY12 impact verifications for a sample of projects that include engineering desk reviews and telephone interviews. The evaluation plan also calls for onsite field verification activities. Onsite activities have not started and Duquesne Light and Guidehouse will monitor pandemic conditions and engage the SWE if plans require modification to address safety concerns.
- **Midstream Lighting Program**
  - Guidehouse continues verification activities for projects that will ultimately be collected into a PY10, PY11, and PY12 combined sample. Per the SWE-approved sampling plan, the team will use realization rates from that sample to calculate verified savings for PY12 projects.
  - Guidehouse plans to conduct process and net-to-gross evaluations in PY12 using participant surveys.
- **Community Education Energy Efficiency Program (CEEP)**
  - PY12 verification results will be informed by the PY10 verification activities.
- **Public Agency Partnership Program (PAPP)**
  - In concert with Express Efficiency, Commercial Efficiency, and Industrial Efficiency, Guidehouse is conducting PY12 impact verifications for a sample of projects.
  - Guidehouse plans to conduct process and net-to-gross evaluations in PY12 using participant surveys.
- **Multifamily Housing Retrofits**
  - PY12 verification results will be informed by the PY11 verification activities
- **DR Program**
  - Guidehouse completed its verifications for PY12 events.

## 4. Summary of Participation by Program

Participation is defined differently for different 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 Table 5, and Table 6 provides the current participation totals for PY12 and Phase III.

**Table 5: Program Participation Definitions**

Programs	Component	Definition
REEP: Residential Energy Efficiency		
Low-income Energy Efficiency		
Residential Appliance Recycling		
Express Efficiency		
Small/Medium Midstream Lighting		
Small Commercial Direct Install	Downstream/Direct Install/Midstream Rebates or Kits	A participant is a customer participating in the given program within a given reporting period (e.g., Q1 through Q4 for PY12), represented by a unique participant account number. The counts appearing in Table 6 represent the summations of the unique customer participant account numbers in the tracking system for the given program in each of the periods represented (i.e., PYRTD or P3TD). Customers participating in a program more than once within a reporting period (e.g., PYRTD) are counted once; customers participating more than once but in different annual periods or programs are counted more than once (once in each period and/or program).
Multifamily Housing Retrofits		
Commercial Efficiency		
Community Education Energy Efficiency		
Large Midstream Lighting		
Industrial Efficiency		
Public Agency Partnership		
Large Curtailable Load Program	DR Curtailment	A participant is a customer participating in the program within the program event period for the program year (e.g., June-September 2019), represented by a unique participant account number. The count appearing in Table 6 represents the summation of the unique customer participant account numbers in the tracking system for the program, including all account numbers for which DR activity has been reported for at least one event during the program period for the year.
Residential Behavioral Savings	Home Energy Reports	A participant is a customer that is a member of the program's treatment group whose energy consumption is analyzed at the end of the program year, represented by a unique account number.
REEP: Residential Energy Efficiency (Upstream Lighting)	Upstream rebates for lamp sales	Participation cannot be counted because reported program data comprises lamp sales activities and not individual participating customer activities.
REEP: Residential Energy Efficiency	Giveaways	A portion of REEP program savings result from giveaways during events in which the utility has participated (event giveaways). Duquesne Light tracks events and the measures given away and not the individual participants who receive the measures.

Programs	Component	Definition
Low-income Energy Efficiency	Giveaways	A portion of program savings results from low-income-specific events during which the utility provides free kits to attendees. Duquesne Light tracks events and the measures given away and not the individual participants who receive the measures.
Residential Whole House Retrofit	Direct Installs and Audits	Defined similarly to the downstream/midstream rebates or kits component. Additionally, Whole House Retrofits also occur in multifamily buildings where a mix of market rate and low-income audits occur. The income status of individual participants is not known, but the known building-level proportion of tenants that are low-income is used to split the total count of participants between the market rate and low-income programs. Whole House Retrofit program activities in some multifamily buildings engage landlords and building managers and not individual tenants. In either case, a participant is defined as a rate-paying customer who received any efficiency measures from the program (i.e., a treated dwelling).
Low-income Whole House Retrofit		

Source: Guidehouse

**Table 6: EE&C Plan Participation by Program**

Program	PYTD Participation	P3TD Participation
REEP: Residential Energy Efficiency	2,951	56,980
REEP: Residential Energy Efficiency (Upstream Lighting)	N/A	N/A
Residential Appliance Recycling	737	8,851
Residential Behavioral Savings*	-	217,571
Residential Whole House Retrofit	-	326
Low-income Energy Efficiency	403	83,105
Express Efficiency	82	1,047
Small/Medium Midstream Lighting	-	725
Small Commercial Direct Install	-	140
Multifamily Housing Retrofit	10	50
Commercial Efficiency	26	225
Large Midstream Lighting	-	395
Industrial Efficiency	18	127
Public Agency Partnership	103	456
Community Education	-	114
Large Curtailable Load Demand Response	195	195**
<b>Portfolio Total</b>	<b>4,525</b>	<b>370,307</b>

\*Participation for Residential Behavioral Savings (and its low-income component) are reported only annually with the final Annual report.

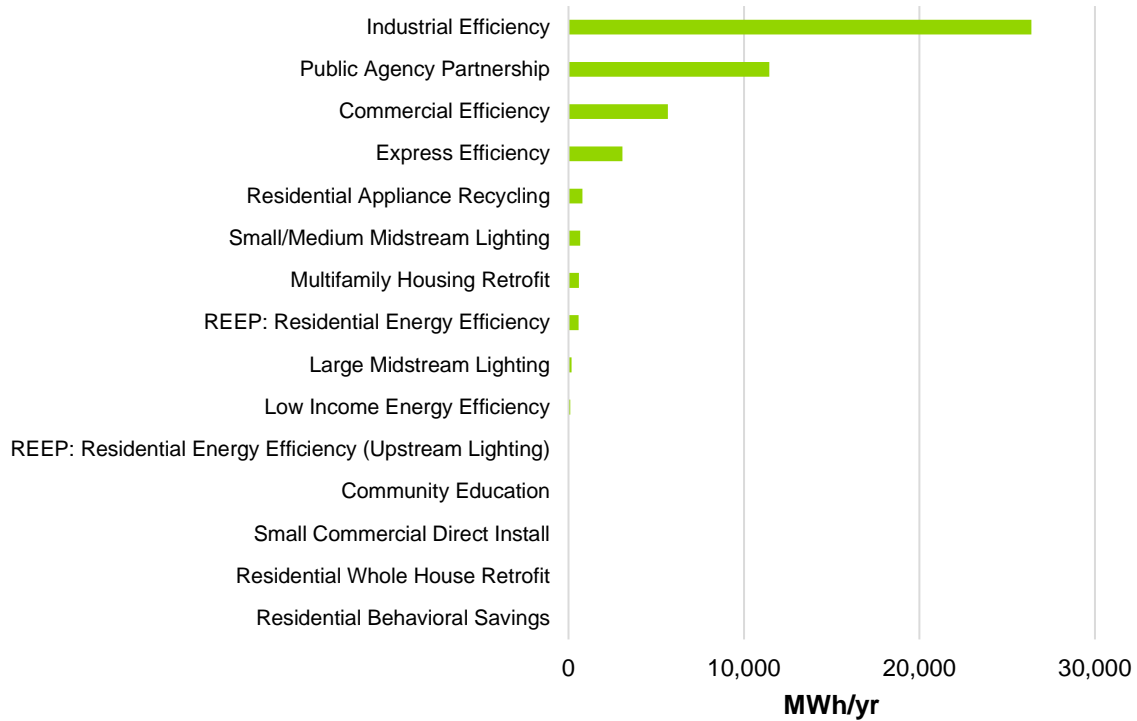
\*\*P3TD participation counts for the DR program are not cumulative but instead represent the maximum number of annual participants during the phase.

Source: Guidehouse

## 5. Summary of Energy Impacts by Program

Figure 7 presents a summary of the PYTD reported gross energy savings by program for PY12. The energy impacts in this report are presented at the meter level and do not reflect adjustments for transmission and distribution losses.

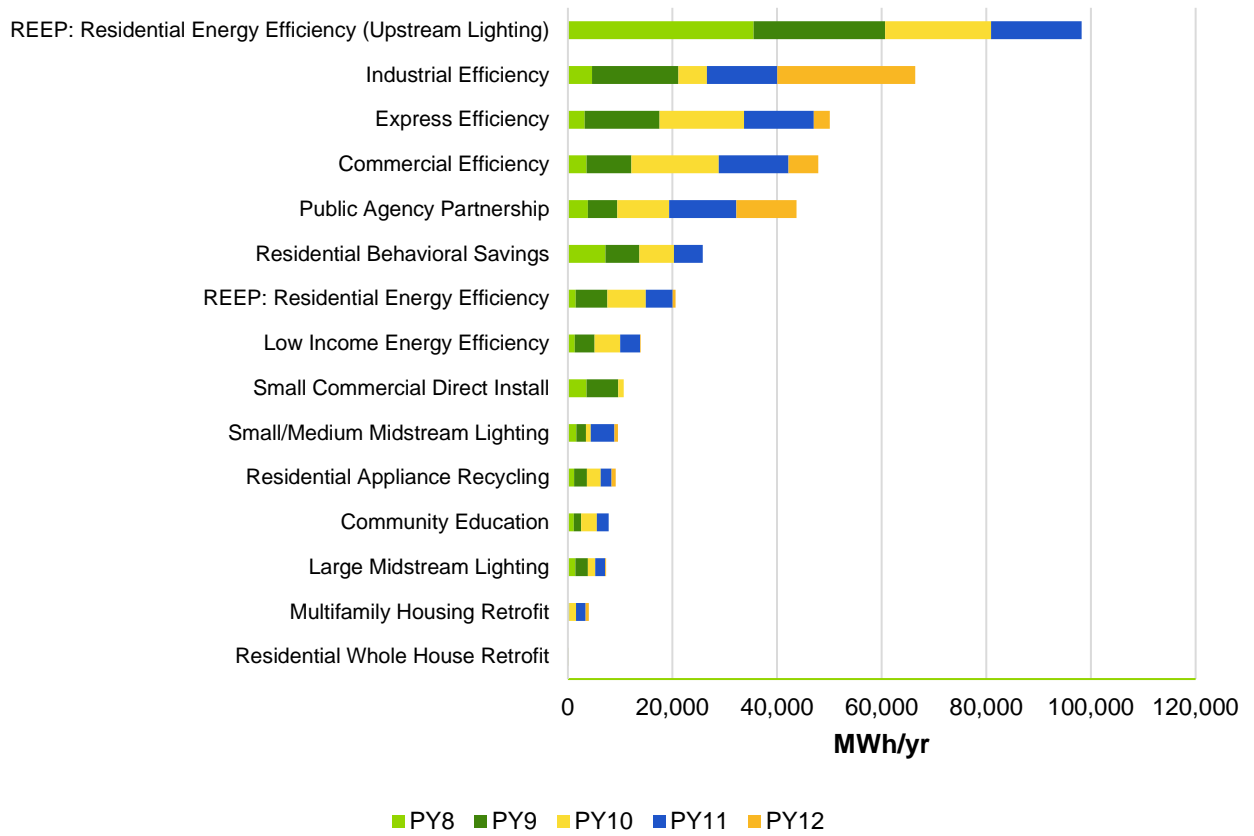
**Figure 7: PYTD Reported Gross Energy Savings by Program<sup>9</sup>**



Source: Guidehouse

Figure 8 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.

<sup>9</sup> Savings for Residential Behavioral Savings program are reported only annually with the Final Annual report

**Figure 8: PSA Energy Savings by Program for Phase III**


Source: Guidehouse

A summary of energy impacts by program through the current reporting period is presented in Table 7.

**Table 7: Energy Savings by Program (MWh/Year)**

Program	PYRTD	RTD	VTD	PSA
REEP: Residential Energy Efficiency	575	25,383	20,019	20,594
REEP: Residential Energy Efficiency (Upstream Lighting)	0	97,895	98,210	98,210
Residential Appliance Recycling	795	9,588	8,322	9,117
Residential Behavioral Savings*	0	30,503	25,789	25,789
Residential Whole House Retrofit	0	134	114	114
Low-income Energy Efficiency	109	15,127	13,808	13,917
Express Efficiency	3,078	35,865	47,007	50,085
Small/Medium Midstream Lighting	663	8,372	8,890	9,553
Small Commercial Direct Install	0	10,934	10,688	10,688
Multifamily Housing Retrofit	589	4,037	3,411	4,000
Commercial Efficiency	5,668	48,946	42,177	47,845
Large Midstream Lighting	178	6,441	7,100	7,278
Industrial Efficiency	26,380	68,603	40,013	66,393
Public Agency Partnership	11,453	42,910	32,230	43,683
Community Education	0	7,655	7,789	7,789
<b>Portfolio Total</b>	<b>49,490</b>	<b>412,395</b>	<b>365,567</b>	<b>415,057</b>

\*Savings for this program are reported only annually with the Final Annual report.

Source: Guidehouse

## 6. Summary of Demand Impacts by Program

Duquesne Light's 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 through 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 9 presents a summary of the PYRTD reported gross peak demand savings by energy efficiency program for PY12.

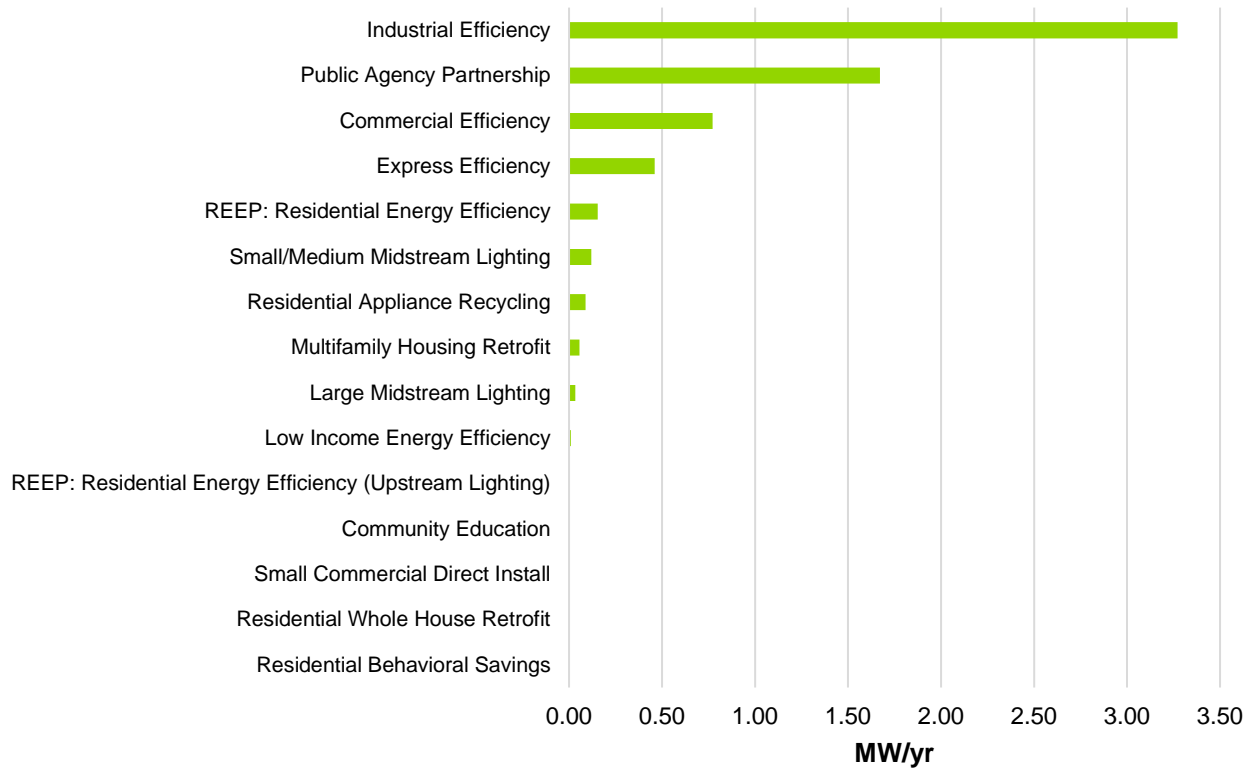
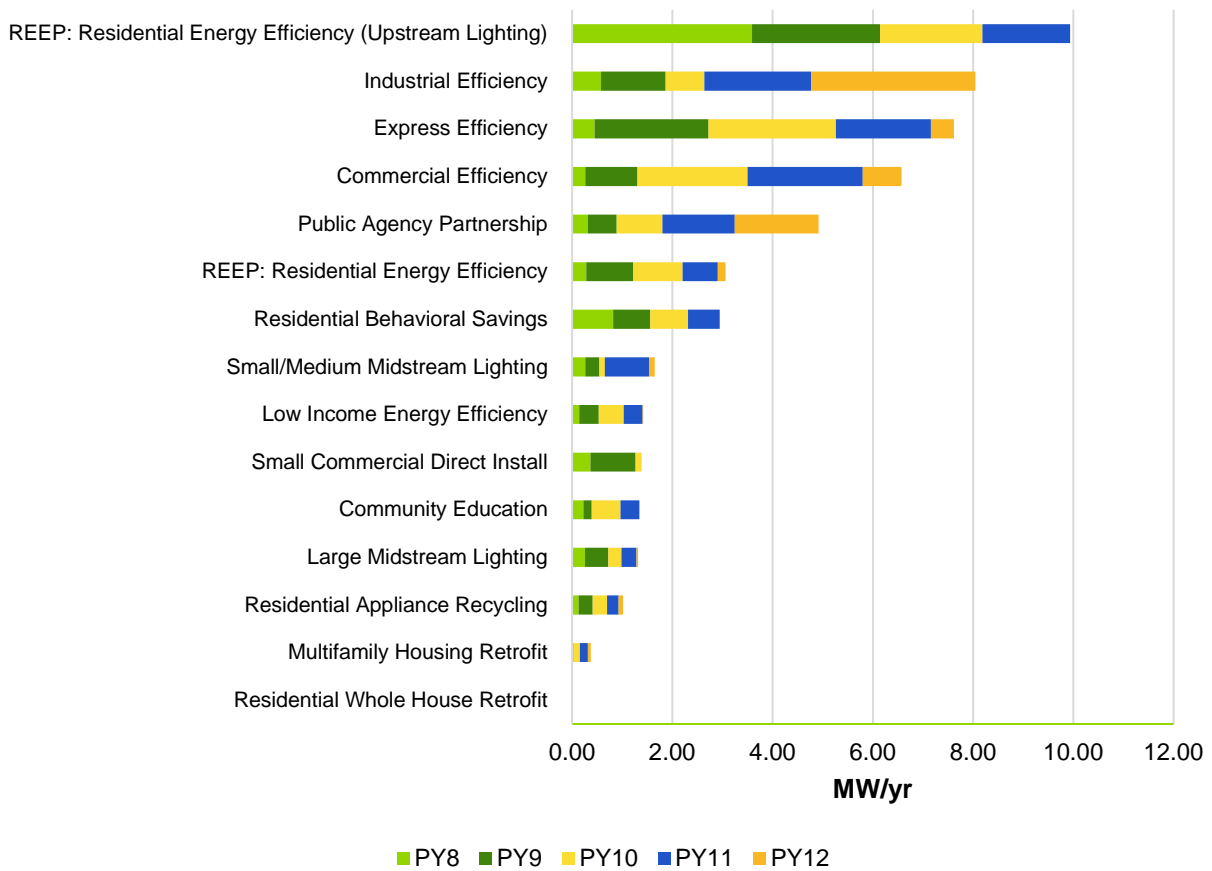
**Figure 9: PYRTD Gross Demand Savings by Energy Efficiency Program**


Figure 10 presents a summary of the PSA gross demand savings by energy efficiency program for Phase III of Act 129.



**Figure 10: PSA Demand Savings by Energy Efficiency Program for Phase III**


Source: Guidehouse

A summary of the peak demand impacts by energy efficiency program through the current reporting period are presented in Table 8.

**Table 8: Peak Demand Savings by Program (MW/Year)**

Program	PYRTD	RTD	VTD	PSA
REEP: Residential Energy Efficiency	0.16	3.49	2.91	3.07
REEP: Residential Energy Efficiency (Upstream Lighting)	0	9.92	9.94	9.94
Residential Appliance Recycling	0.09	1.07	0.93	1.02
Residential Behavioral Savings*	0	3.48	2.94	2.94
Residential Whole House Retrofit	0	0.01	0.01	0.01
Low-Income Energy Efficiency	0.01	1.50	1.41	1.42
Express Efficiency	0.46	5.34	7.16	7.62
Small/Medium Midstream Lighting	0.12	1.46	1.53	1.65
Small Commercial Direct Install	0	1.36	1.39	1.39
Multifamily Housing Retrofit	0.06	0.37	0.31	0.37
Commercial Efficiency	0.77	6.53	5.80	6.57
Large Midstream Lighting	0.03	1.16	1.28	1.31
Industrial Efficiency	3.27	8.02	4.77	8.04
Public Agency Partnership	1.67	6.07	3.24	4.91
Community Education	0	1.31	1.34	1.34
<b>Portfolio Total</b>	<b>6.64</b>	<b>51.09</b>	<b>44.96</b>	<b>51.60</b>

\*Savings for this program are reported only annually with the Final Annual report.

Source: Guidehouse

## 6.2 Demand Response

Act 129 defines peak demand savings from demand response as the average reduction in electric demand during the hours when a demand response event is initiated. Phase III DR events are initiated according to the following guidelines:

1. Curtailment events shall be limited to the months of June through September.
2. Curtailment events shall be called for the first six days of each program year (starting in PY9) in which the peak hour of PJM's day-ahead forecast for the PJM RTO is greater than 96% of the PJM RTO summer peak demand forecast for the months of June through September.
3. Each curtailment event shall last four hours.
4. Each curtailment event shall be called such that it will occur during the day's forecasted peak hour(s) above 96% of PJM's RTO summer peak demand forecast.
5. Once six curtailment events have been called in a program year, the peak demand reduction program shall be suspended for that program year.

The peak demand impacts from demand response in this report are presented at the system level and reflect adjustments to account for transmission and distribution losses. Duquesne Light uses the following line loss percentages/multipliers by sector, consistent with Table 1-4 of the 2016 PA Technical Reference Manual.

- Residential = 6.9% or 1.0741
- Commercial = 6.9% or 1.0741
- Industrial = 0.8% or 1.0081

Table 9 summarizes the PYVTD and VTD demand reductions for each of the demand response programs in the EE&C plan and for the demand response portfolio as a whole. VTD demand reductions are the average performance across all Phase III demand response events independent of how many events occurred in a given program year. The relative precision columns in Table 9 indicate the margin of error (at the 90% confidence interval) around the PYVTD and VTD demand reductions. Table 9 also distinguishes the VTD DR event performance inclusive of the voluntary PY12 activities (PY9 through PY12 events) and the DR event performance that determines compliance with Phase III targets (PY9 through PY11 events).

**Table 9: Verified Gross Demand Response Impacts by Program**

Program	PYVTD Gross MW	Relative Precision (90%)	VTD Gross MW	Relative Precision (90%)
Large Curtailable Load (voluntary)	32.41	48.83%	48.84	5.70%
Large Curtailable Load (compliance)	N/A	N/A	55.16	5.80%

*Source: Guidehouse*

Impacts were estimated using either a CBL with an optional weather-sensitivity adjustment<sup>10</sup> or a regression analysis. The PY12 set of regression models includes all models from PY11. The determination of which approach to use for each customer was based on which method provided the most accurate estimate of consumption when applied to a set of three hypothetical events in summer 2020 (the accuracy metric is described in Guidehouse’s Phase III evaluation plan). The WSA factors applied to the CBL were developed by Enerlogics, Duquesne Light’s DR Program CSP, and are included in the data request files provided to the SWE.

<sup>10</sup> PJM, *Weather Sensitive Adjustment Using the WSA Factor Method*  
<http://www.pjm.com/~media/markets-ops/demand-response/dsr-weather-sensitive-adjustment-using-wsa-factor-method.ashx>

## 7. Summary of Finances

Section 7 provides an overview of the expenditures associated with Duquesne Light's portfolio and the recovery of those costs from ratepayers.

### 7.1 Program Financials

Program-specific and portfolio total finances for PY12 are shown in Table 10. The columns in Table 10 and Table 11 are adapted from the 'Direct Program Cost' categories in the Commission's EE&V Plan template<sup>11</sup> for Phase III. EDC Materials, Labor, and Administration includes costs associated with Duquesne Light's own employees. ICSP Materials, Labor, and Administration includes both the program implementation contractor and the costs of any other outside vendors employed by Duquesne Light to support program delivery.

**Table 10: Program Year to Date Financials**

Program	Incentives to Participants and Trade Allies (\$1,000)	EDC Materials, Labor, and Administration (\$1,000)	ICSP Materials, Labor, and Administration (\$1,000)	EM&V (\$1,000)	Total Cost (\$1,000)
REEP: Residential Energy Efficiency <sup>12</sup>	\$140	\$24	\$417	\$81	\$662
Residential Appliance Recycling	\$27	\$24	\$147	\$7	\$205
Residential Behavioral Savings	\$0	\$24	\$44	\$12	\$80
Residential Whole House Retrofit	\$0	\$24	\$394	\$6	\$424
Low-income Energy Efficiency	\$181	\$24	\$1,179	\$32	\$1,416
Express Efficiency	\$203	\$25	\$363	\$42	\$633
Small/Medium Midstream Lighting	\$125	\$16	\$100	\$26	\$267
Small Commercial Direct Install	\$0	\$0	\$0	\$0	\$0
Multifamily Housing Retrofit	\$250	\$1	\$230	\$24	\$505
Commercial Efficiency	\$303	\$16	\$356	\$48	\$723
Large Midstream Lighting	\$23	\$16	\$74	\$37	\$150
Industrial Efficiency	\$1,393	\$16	\$1,650	\$79	\$3,138

<sup>11</sup> <http://www.puc.pa.gov/pcdocs/1372426.doc>, Section 10

<sup>12</sup> Duquesne Light combines financial related information here for the two program components 1) REEP: Residential Energy Efficiency and 2) REEP: Residential Energy Efficiency (Upstream Lighting) under REEP: Residential Energy Efficiency. Otherwise, energy and demand impacts are reported separately for these two programs.

Program	Incentives to Participants and Trade Allies (\$1,000)	EDC Materials, Labor, and Administration (\$1,000)	ICSP Materials, Labor, and Administration (\$1,000)	EM&V (\$1,000)	Total Cost (\$1,000)
Public Agency Partnership	\$1,042	\$25	\$688	\$44	\$1,799
Community Education	\$0	\$5	\$146	\$10	\$161
Large C&I Demand Response Curtailable	\$0	\$5	\$202	\$51	\$258
<b>Common Portfolio Costs<sup>13</sup></b>					
<b>Portfolio Total</b>	<b>\$3,687</b>	<b>\$245</b>	<b>\$5,990</b>	<b>\$499</b>	<b>\$10,421</b>
<b>SWE Costs<sup>14</sup></b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>\$200</b>
<b>Total</b>	<b>\$3,687</b>	<b>\$245</b>	<b>\$5,990</b>	<b>\$499</b>	<b>\$10,621</b>

Source: Duquesne Light

Program-specific and portfolio total finances since the inception of Phase III are shown in Table 11.

**Table 11: Phase III to Date Financials**

Program	Incentives to Participants and Trade Allies (\$1,000)	EDC Materials, Labor, and Administration (\$1,000)	ICSP Materials, Labor, and Administration (\$1,000)	EM&V (\$1,000)	Total Cost (\$1,000)
REEP: Residential Energy Efficiency <sup>15</sup>	\$5,158	\$525	\$9,655	\$555	\$15,893
Residential Appliance Recycling	\$325	\$164	\$1,356	\$50	\$1,895
Residential Behavioral Savings	\$0	\$181	\$1,415	\$77	\$1,673
Residential Whole House Retrofit	\$0	\$178	\$646	\$44	\$868
Low-income Energy Efficiency	\$1,068	\$248	\$4,268	\$231	\$5,815
Express Efficiency	\$2,457	\$671	\$3,241	\$363	\$6,732
Small/Medium Midstream Lighting	\$625	\$167	\$479	\$122	\$1,393
Small Commercial Direct Install	\$0	\$152	\$3,005	\$138	\$3,295
Multifamily Housing Retrofit	\$1,124	\$168	\$1,412	\$164	\$2,868

<sup>13</sup> Common Portfolio Costs include costs associated with program tracking data management, support (legal, IT), and portfolio level marketing.

<sup>14</sup> Statewide Evaluation costs are outside of the 2% spending cap

<sup>15</sup> Duquesne Light combines financial related information here for the two programs 1) REEP: Residential Energy Efficiency and 2) REEP: Residential Energy Efficiency (Upstream Lighting) under REEP: Residential Energy Efficiency. Otherwise, energy and demand impacts are reported separately for these two programs.

Program	Incentives to Participants and Trade Allies (\$1,000)	EDC Materials, Labor, and Administration (\$1,000)	ICSP Materials, Labor, and Administration (\$1,000)	EM&V (\$1,000)	Total Cost (\$1,000)
Commercial Efficiency	\$2,704	\$245	\$3,202	\$349	\$6,500
Large Midstream Lighting	\$483	\$216	\$819	\$256	\$1,774
Industrial Efficiency	\$3,249	\$319	\$5,095	\$577	\$9,240
Public Agency Partnership	\$3,311	\$239	\$3,548	\$320	\$7,418
Community Education	\$428	\$62	\$1,262	\$75	\$1,827
Large C&I Demand Response Curtailable	\$2,435	\$159	\$3,313	\$369	\$6,276
<b>Common Portfolio Costs<sup>16</sup></b>					
<b>Portfolio Total</b>	<b>\$23,367</b>	<b>\$3,694</b>	<b>\$42,716</b>	<b>\$3,690</b>	<b>\$73,467</b>
<b>SWE Costs<sup>17</sup></b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>\$2,105</b>
<b>Total</b>	<b>\$23,367</b>	<b>\$3,694</b>	<b>\$42,716</b>	<b>\$3,690</b>	<b>\$75,572</b>

Source: Duquesne Light

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 PY12 will be presented in the final annual report to the PA PUC due November 15, 2021 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. Duquesne Light's cost-recovery charges are organized separately by four customer sectors 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

<sup>16</sup> Common Portfolio Costs include costs associated with program tracking data management, support (legal, IT), and portfolio level marketing.

<sup>17</sup> Statewide Evaluation costs are outside of the 2% spending cap.

differences between Table 12 and Section 2.4. For example, the low-income customer segment is a subset of Duquesne Light’s residential tariff(s) and therefore not listed in Table 12.

**Table 12: EE&C Plan Expenditures by Cost-Recovery Category<sup>18</sup>**

Cost Recovery Sector	Rate Classes Included	PYTD Spending (\$1,000)	P3TD Spending (\$1,000)
Residential	RS, RH, RA	\$2,835	\$26,669
Small/Medium Commercial and Industrial	GS, GM, GMH	\$4,306	\$19,535
Large Commercial	GL, GLH, L	\$3,480	\$16,838
Large Industrial	GL, GLH, L, HVPS	\$0	\$12,531
<b>Portfolio Total</b>		<b>\$10,621</b>	<b>\$75,572</b>

Duquesne Light filed a petition to modify its Revised Phase III EE&C Plan to implement a combined EE&C Plan surcharge for the Small & Medium Commercial Class and the Small & Medium Industrial Class – *Petition of Duquesne Light Company for Approval of a Modification to its Revised Act 129 Phase III Energy Efficiency and Conservation Plan, Docket No. M-2015-2515375*, petition granted by the PUC on March 12, 2020. The Cost Recovery Sector called Small/Medium Commercial and Industrial reflects a change from previous filed reports.

Source: Duquesne Light

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<sup>18</sup> Includes SWE costs.