Semi-Annual Report to the Pennsylvania Public Utility Commission

Phase III of Act 129

Program Year 9

(June 1, 2017 – May 31, 2018)

For Pennsylvania Act 129 of 2008

Energy Efficiency and Conservation Plan

Prepared by Navigant

For

Duquesne Light Company

January 16, 2018

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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 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

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 9 (PY9), 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 PY9. Compliance with Act 129 savings goals is ultimately based on verified gross savings. Duquesne Light has retained Navigant as an independent evaluation contractor for Phase III of Act 129. Navigant is responsible for the measurement and verification of the savings and calculation of verified gross savings. The verified gross savings for PY9 energy efficiency programs will be reported in the final annual report, to be filed on November 15, 2018.

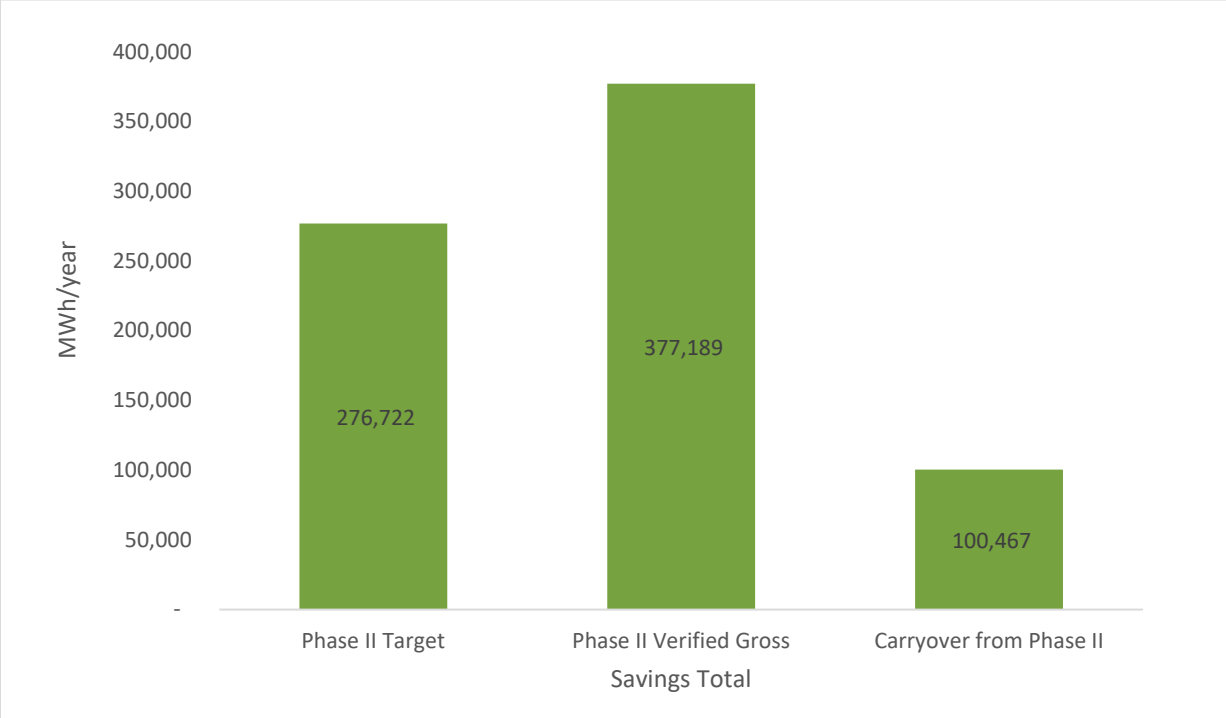
Phase III of Act 129 includes a demand response goal for Duquesne Light. Demand response events are limited to the months of June through September, which are the first four months of the Act 129 program year. Because the demand response season is completed early in the program year, it is possible to 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 PY9 as well as the cumulative demand response performance of the EE&C program to date for Phase III of Act 129.

Summary of Achievements

1.1 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.

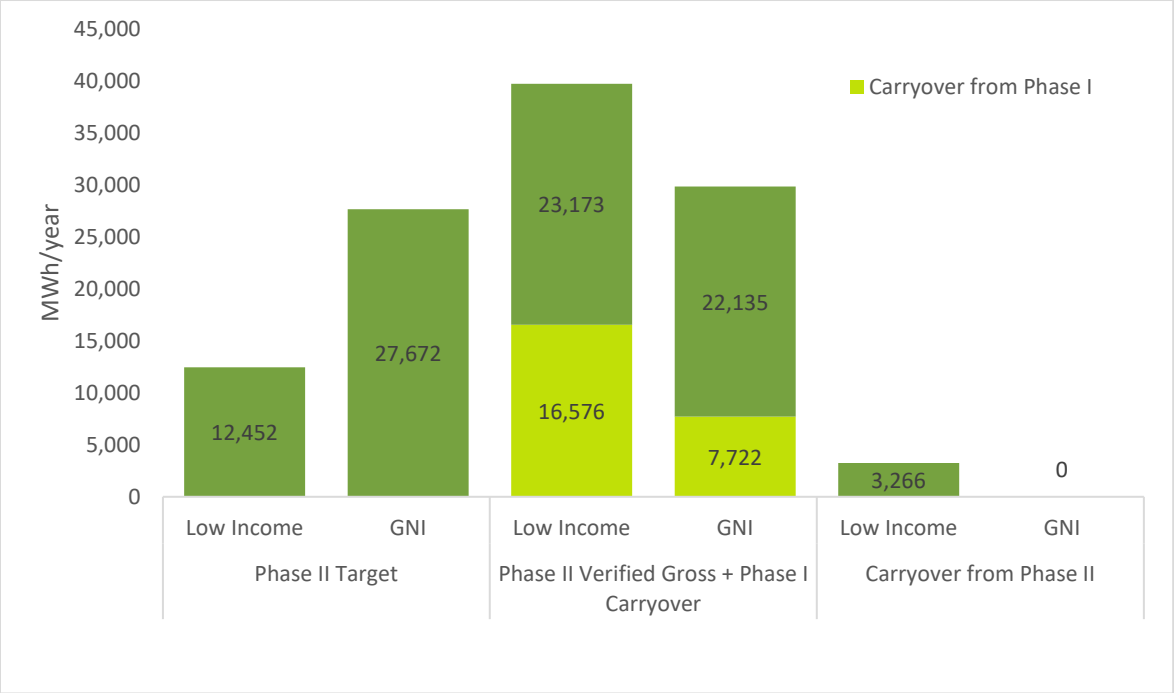
Figure 1: Carryover Savings from Phase II of Act 129



The Commission's Phase III Implementation Order[1] 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.[2] Figure 2 shows the calculation of carryover savings for the low-income and GNI targets.

[1] 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.
[2] Proportionate to those savings achieved by dedicated low-income programs in Phase III.

Figure 2: Customer Segment-Specific Carryover from Phase II



1.2 PHASE III ENERGY EFFICIENCY ACHIEVEMENTS TO DATE

Since the beginning of Program Year 9 on June 1, 2017, Duquesne Light has claimed:

- 36,532 MWh/yr of reported gross electric energy savings (PYRTD)
- 4.73 MW/yr of reported gross peak demand savings (PYRTD) from energy efficiency programs
- 62 MW/yr of verified gross peak demand savings (PYVTD) from demand response programs

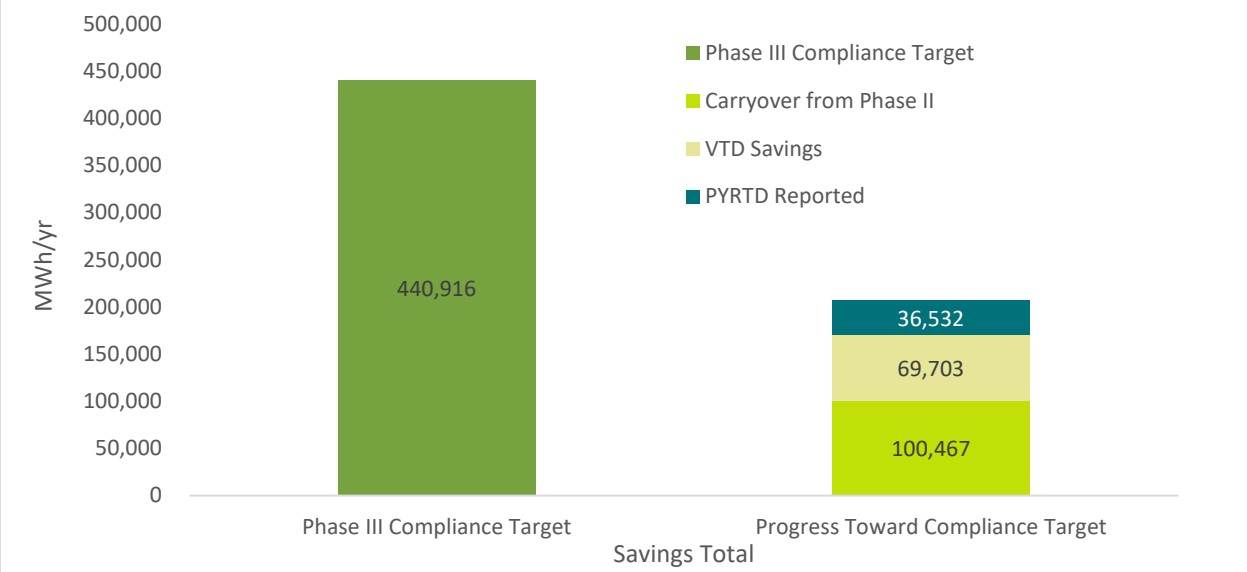
Since the beginning of Phase III of Act 129 on June 1, 2016, Duquesne Light has achieved:

- 104,269 MWh/yr of reported gross electric energy savings (RTD)
- 12.16 MW/yr of reported gross peak demand savings (RTD) from energy efficiency programs
- 106,235 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 PY9.
- 12.43 MW/yr of gross peak demand savings (PSA) from energy efficiency programs

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

- 206,702 MWh/yr of PSA+CO energy savings recorded to date in Phase III
    - This represents 47% percent of the May 31, 2021, energy savings compliance target of 440,916 MWh/yr.

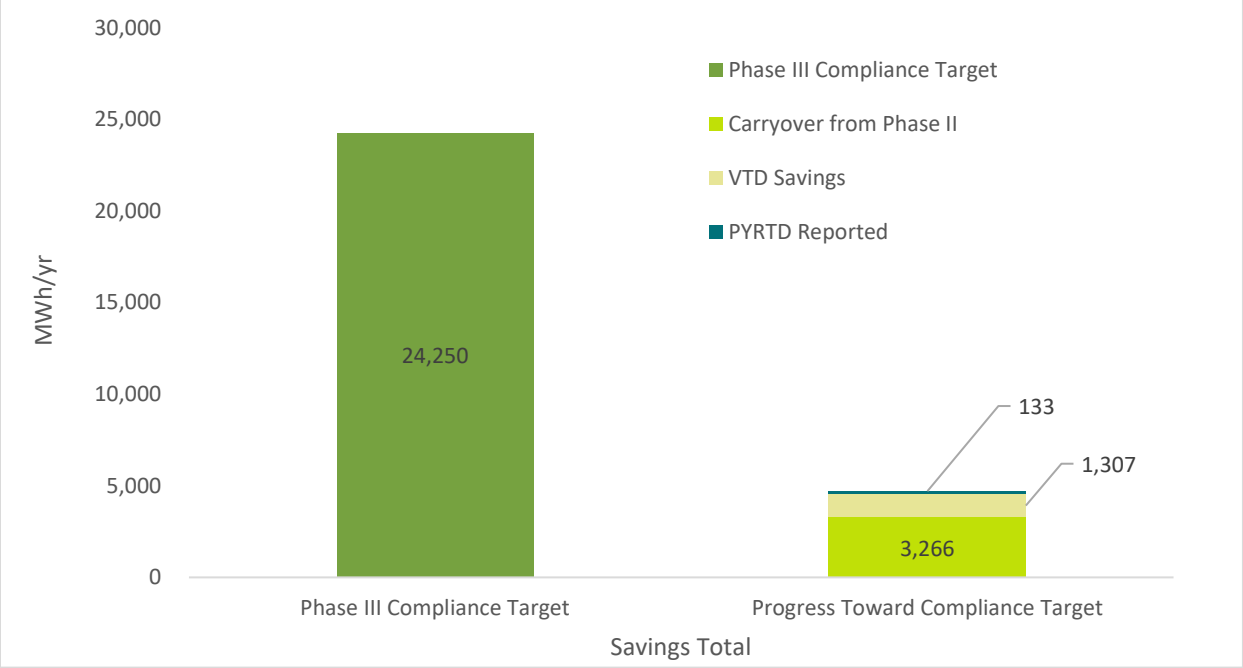
Figure 3: EE&C Plan Performance Toward Phase III Portfolio Compliance Target



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 94 EE&C measures to its residential and non-residential customer classes. There are 14 measures available to the low-income customer segment at no cost to the customer. This represents 14.9% of the total measures offered in the EE&C plan and exceeds the proportionate number of measures target.

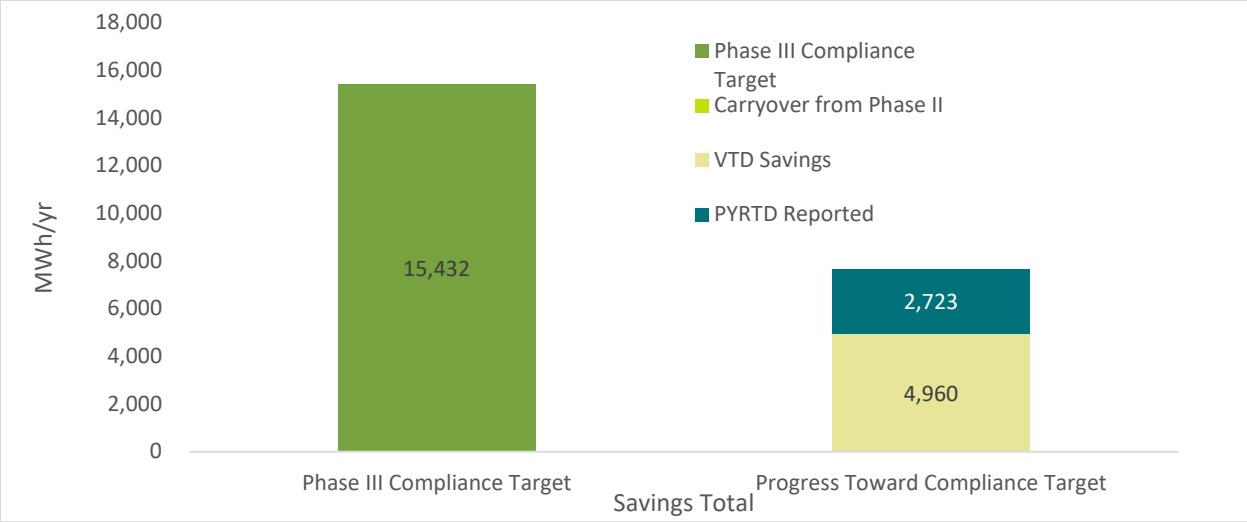
The PA PUC also established a low-income energy savings target of 5.5% of the portfolio savings goal. The low-income savings target for Duquesne Light is 24,250 MWh/yr and is based on verified gross savings. Figure 4 compares the PSA+CO performance to date for the low-income customer segment to the Phase III savings target. Based on the latest available information, Duquesne Light has achieved 19.4% of the Phase III low-income energy savings target.

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



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 50% of the Phase III GNI energy savings target.

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



1.3 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.

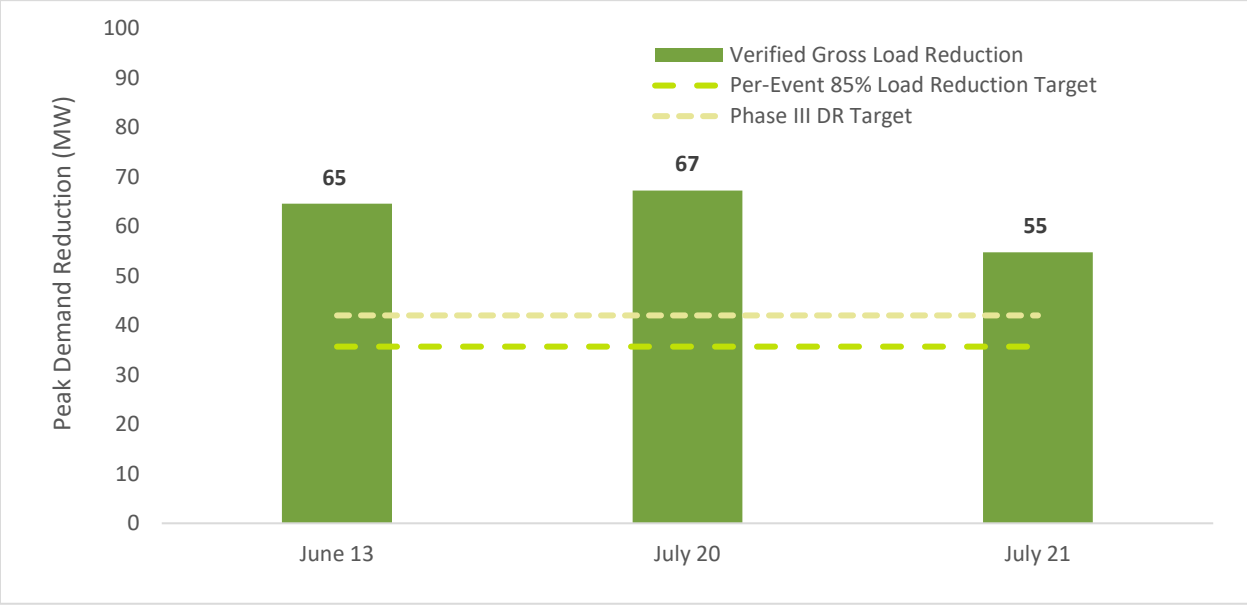
Act 129 demand response events are triggered by PJM's day-ahead load forecast. When the day-ahead forecast is above 96% of the peak load forecast for the year, a demand response event is initiated for the following day. In PY9 there were three demand response events called. Table 2 lists the days that DR events were called along with the verified gross demand reductions achieved by each program. Table 2 also lists the average DR performance for PY9 and for Phase III to date. Duquesne's average DR performance to date is above the Phase III compliance reduction target by 48% (performance–goal/goal).

Table 2: PY9 Demand Response PYVTD 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	64.10	NA	NA	64.57
2017-07-20	15	18	0.43	66.82	NA	NA	67.25
2017-07-21	15	18	0.39	54.33	NA	NA	54.73
PYVTD - Average PY9 DR Event Performance							62.18
VTD - Average Phase III DR Event Performance							62.18

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. Figure 6 compares the performance of each of the DR events in PY9 to the event-specific minimum and average targets.

Figure 6: Event Performance Compared to 85% Per-Event Target



1.4 PHASE III PERFORMANCE BY CUSTOMER SEGMENT

Table 3 presents the participation, savings, and spending by customer sector for PY9. 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.

Table 3: PY9 Summary Statistics by Customer Segment

Parameter	Residential (Non-LI)	Residential LI	Small C&I (Non-GNI)	Large C&I (Non-GNI)	GNI
# participants	12,324	0	220	72	93
PYRTD MWh/yr	18,651	133	9,535	5,490	2,723
PYRTD MW/yr (Energy Efficiency)	2.10	0.00	1.59	0.71	0.32
PYVTD MW (Demand Response)	0.00	0.00	0.38	50.84	10.97
Incentives ($1000)	$647	$0	$307	$967	$142

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

Table 4: Phase III Summary Statistics by Customer Segment

Parameter	Residential	Low Income	Small C&I	Large C&I	GNI
# participants	79,388	19,206	434	136	147
PSA MWh/yr	64,081	1,341	18,027	15,103	7,683
PSA MW (Energy Efficiency)	6.94	0.14	2.69	1.81	0.86
Phase III MW (Demand Response)	0.00	0.00	0.38	50.84	10.97
Incentives ($1000)	$2,511	$0	$566	$1,411	$368

Updates and Findings

1.5 Implementation Updates and Findings

Duquesne Light has made no substantive changes to its Phase III EE&C Plan portfolio during PY9. The Large Curtailable Demand Response program was offered for the first time in Phase III during PY9 and involved three events.

1.6 Evaluation Updates and Findings

Duquesne Light's progress on the Phase III evaluation effort is summarized below.

- Navigant wrote the annual report for PY8 including both process and impact evaluation elements, as well as separate residential and non-residential process evaluation reports. Navigant responded to SWE comments on the PY8 annual report and updated verified savings as a result. These changes are reflected in this Semi-annual report and will be reflected in an updated PY8 report.
- Navigant provided responses to the SWE's annual data request, including data and other participation and evaluation documentation.
- **REEP:** Navigant has drafted an in-store intercept survey for the upstream lighting component of REEP, which has been reviewed by the SWE and is being programmed. Surveys will be conducted in Q3 and Q4 of PY9.
- **C&I Programs:** Navigant has drafted participant surveys for the C&I programs. These surveys will be provided to the SWE for review prior to survey programming and fielding.
- **DR Program:** Navigant conducted an analysis of the results of Duquesne Light's Summer 2017 Demand Response program. Results appear in Section 2.3 of this document.

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 PY9 and Phase III.

Table 5: Program Participation Definitions

Programs	Component	Definition
REEP: Residential Energy Efficiency	Downstream/ 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 PY9), represented by a unique participant account number. The counts appearing in Table 6, below, 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).
Residential Appliance Recycling		
Express Efficiency		
Small/Medium Midstream Lighting		
Small Commercial Direct Install		
Multifamily Housing Retrofits		
Commercial Efficiency		
Large Midstream Lighting		
Industrial Efficiency		
Public Agency Partnership		
Large Curtailable Load Program	Demand Response Curtailment	A participant is a customer participating in the program within the program event period for the program year (e.g., June-September 2017), represented by a unique participant account number. The count appearing in Table 6, below, 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.

Table 6: EE&C Plan Participation by Program

Program	PYTD Participation	P3TD Participation
REEP: Residential Energy Efficiency	10,679	15,627
REEP: Residential Energy Efficiency (Upstream Lighting)	N/A	N/A
Residential Appliance Recycling	1,645	2,806
Residential Behavioral Savings	0	60,955
Residential Whole House Retrofit	0	0
Low Income Energy Efficiency	N/A	19,206
Express Efficiency	160	254
Small/Medium Midstream Lighting	105	183
Small Commercial Direct Install	55	93
Multifamily Housing Retrofit	1	5
Commercial Efficiency	27	37
Large Midstream Lighting	50	93
Industrial Efficiency	10	21
Public Agency Partnership	30	71
Community Education	28	41
Large C&I Demand Response Curtailable	74	74
Portfolio Total	**12,864**	**99,466**

Summary of Energy Impacts by Program

Figure 7 presents a summary of the PYTD reported gross energy savings by program for Program Year 9. 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

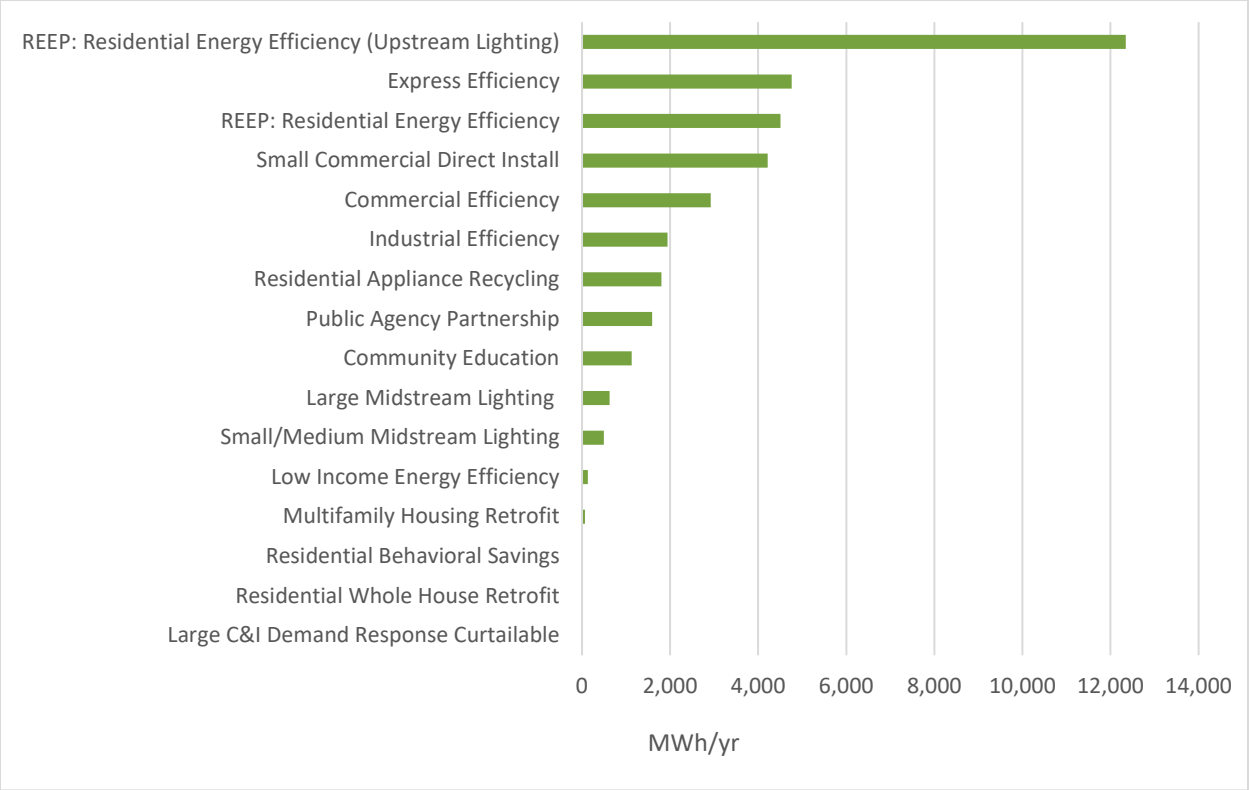
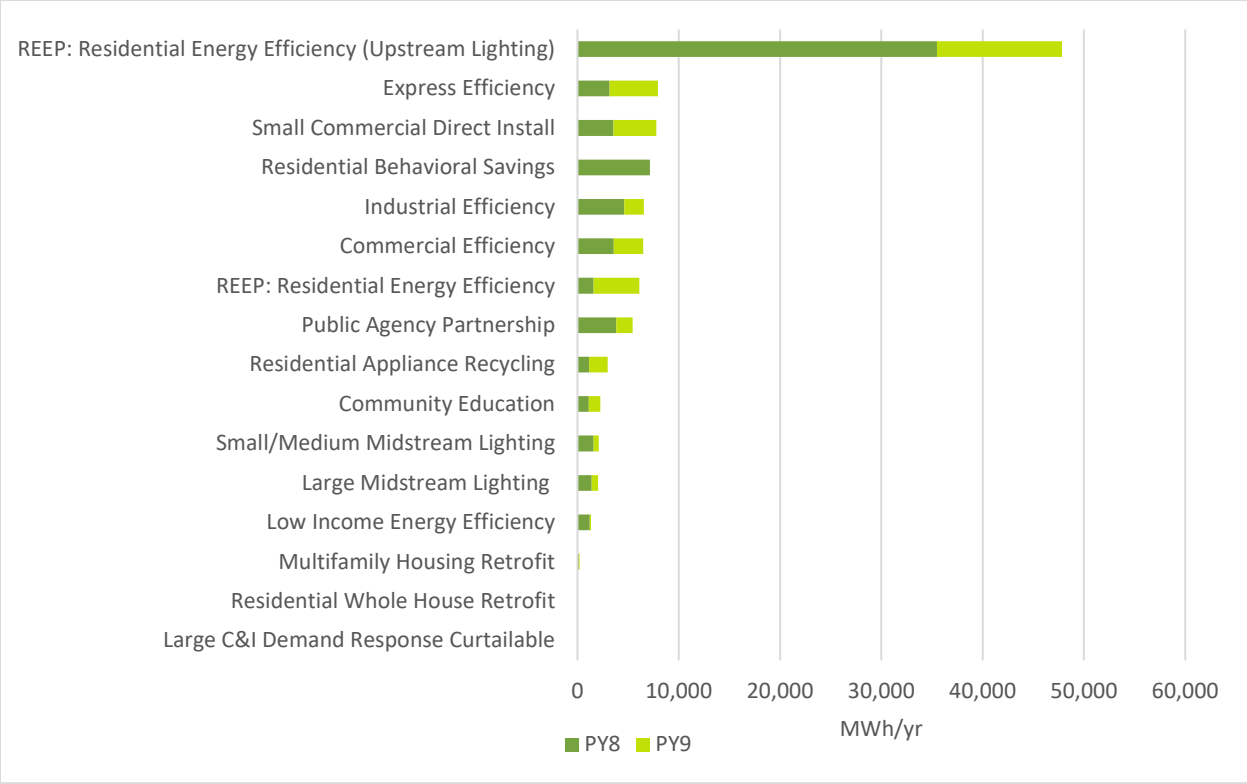


Figure 8 presents a summary of the PSA gross energy savings by program for Phase III of Act 129. PSA savings include verified gross savings from previous program years and the PYTD savings from the current program year.

Figure 8: PSA Energy Savings by Program for Phase III



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	4,504	6,830	1,606	6,110
REEP: Residential Energy Efficiency (Upstream Lighting)	12,343	46,701	35,496	47,839
Residential Appliance Recycling	1,805	3,066	1,165	2,970
Residential Behavioral Savings	0*	6,536	7,162	7,162
Residential Whole House Retrofit	0	0	0	0
Low Income Energy Efficiency	133	1,265	1,208	1,341
Express Efficiency	4,763	8,002	3,183	7,946
Small/Medium Midstream Lighting	492	1,516	1,595	2,087
Small Commercial Direct Install	4,218	7,844	3,562	7,780
Multifamily Housing Retrofit	63	222	151	214
Commercial Efficiency	2,921	6,563	3,579	6,500
Large Midstream Lighting	628	1,532	1,407	2,036
Industrial Efficiency	1,941	6,591	4,627	6,568
Public Agency Partnership	1,595	5,388	3,845	5,440
Community Education	1,128	2,212	1,115	2,243
Portfolio Total	**36,532**	**104,269**	**69,703**	**106,235**

*Savings for this program are reported only annually.

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.

1.7 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 9 presents a summary of the PYRTD reported gross peak demand savings by energy efficiency program for Program Year 9.

Figure 9: PYRTD Gross Demand Savings by Energy Efficiency Program

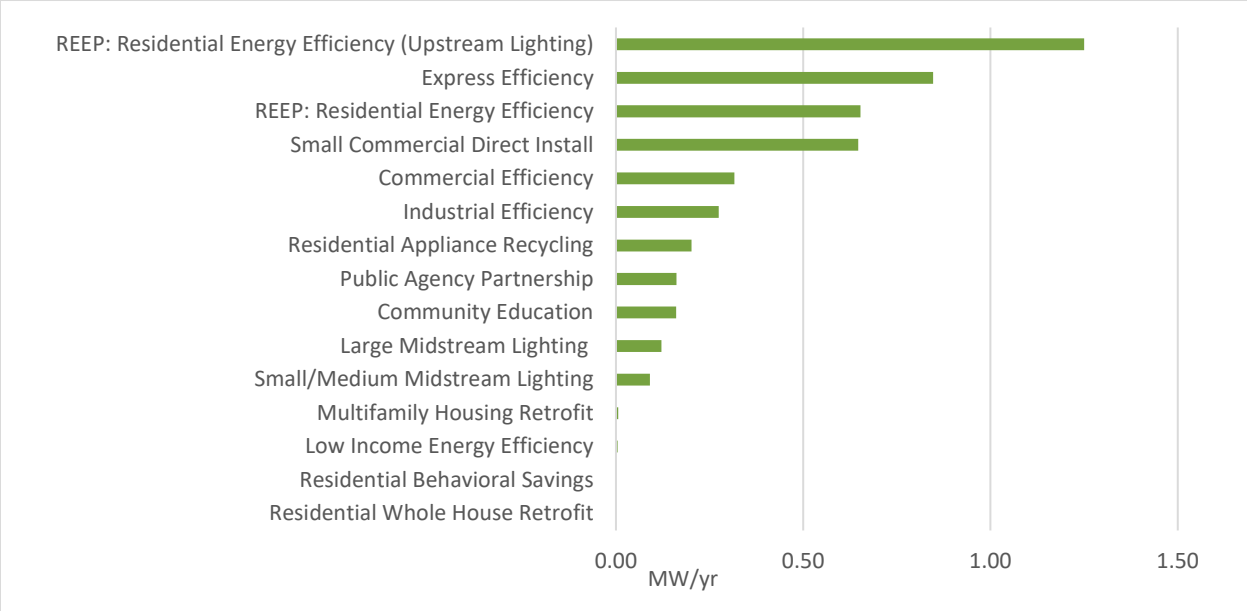
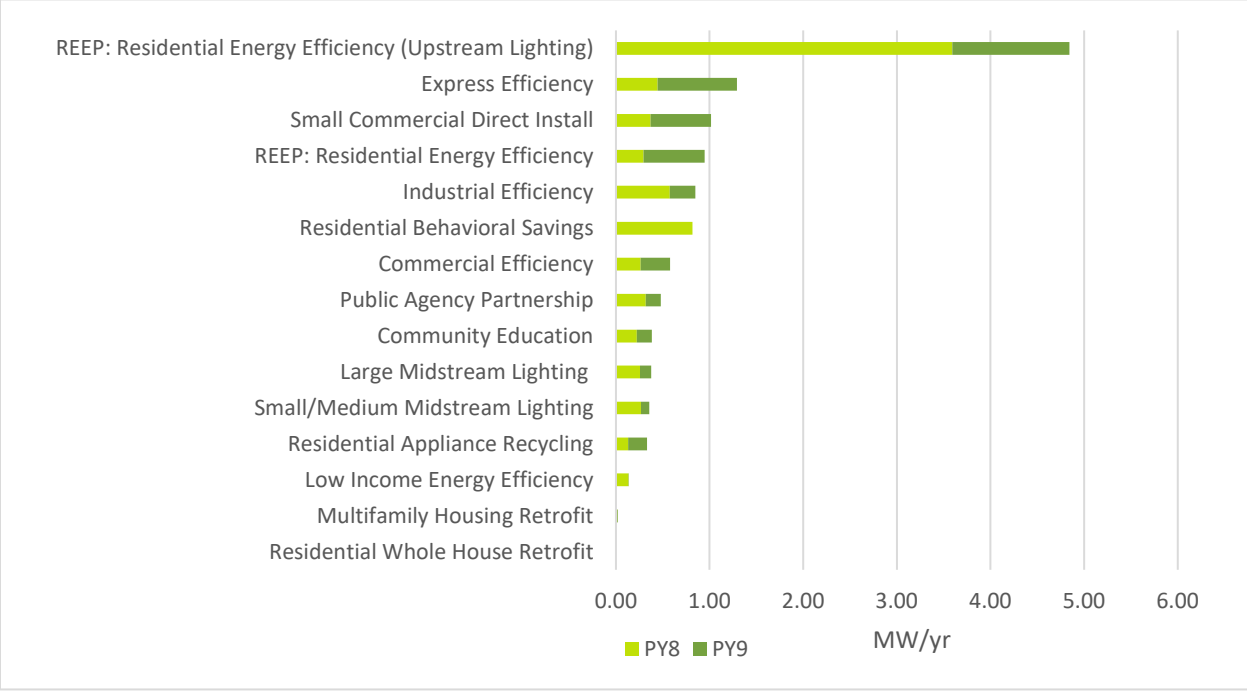


Figure 10 presents a summary of the PSA gross demand savings by energy efficiency program for Phase III of Act 129.

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



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	0.65	1.02	0.30	0.95
REEP: Residential Energy Efficiency (Upstream Lighting)	1.25	4.73	3.59	4.84
Residential Appliance Recycling	0.20	0.34	0.13	0.33
Residential Behavioral Savings	0.00	0.75	0.82	0.82
Residential Whole House Retrofit	0.00	0.00	0.00	0.00
Low Income Energy Efficiency	0.00	0.13	0.13	0.14
Express Efficiency	0.85	1.28	0.45	1.29
Small/Medium Midstream Lighting	0.09	0.25	0.27	0.36
Small Commercial Direct Install	0.65	1.01	0.37	1.02
Multifamily Housing Retrofit	0.01	0.02	0.02	0.02
Commercial Efficiency	0.32	0.57	0.26	0.58
Large Midstream Lighting	0.12	0.28	0.26	0.38
Industrial Efficiency	0.27	0.86	0.58	0.85
Public Agency Partnership	0.16	0.53	0.32	0.48
Community Education	0.16	0.39	0.22	0.38
Portfolio Total	**4.73**	**12.16**	**7.70**	**12.43**

1.8 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.

- Residential = 6.9% or 1.0741
- Small C&I = 6.9% or 1.0741
- Large C&I = 6.9% or 1.0741

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: Verified Gross Demand Response Impacts by Program

Program	PYVTD Gross MW	Relative Precision (90%)	VTD Gross MW	Relative Precision (90%)
Large Curtailable Load	62	43%	62	43%
Portfolio Total	**62**	**43%**	**62**	**43%**

Impacts were estimated using either a CBL with weather-sensitivity adjustment, or using a regression analysis. 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 hypothetical events in summer 2016 (the testing criteria described in Navigant's Phase III evaluation plan). The CBL approach is slightly different from that described in the evaluation plan in that CBLs were adjusted using the PJM WSA (Weather Sensitive Adjustment) Factor Method.[3] The WSA factors applied to deliver the adjustment were developed by Enerlogics, Duquesne's DR Program CSP, and are included in the Data Request files provided to the SWE.

[3] PJM, *Weather Sensitive Adjustment Using the WSA Factor Method*, accessed October 2017 http://www.pjm.com/~/media/markets-ops/demand-response/dsr-weather-sensitive-adjustment-using-wsa-factor-method.ashx

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.

1.9 PROGRAM FINANCIALS

Program-specific and portfolio total finances for PY9 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[4] 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.

[4] http://www.puc.pa.gov/pcdocs/1372426.doc Section 10

Table 10: Program Year to Date Financials

Program	Incentives to Participants and Trade Allies ($1000)	EDC Materials, Labor, and Administration ($1000)	ICSP Materials, Labor, and Administration ($1000)	EM&V ($1000)	Total Cost ($1000)
REEP: Residential Energy Efficiency[5]	$585	$129	$1,846	$80	$2,640
Residential Appliance Recycling	$62	$20	$215	$7	$304
Residential Behavioral Savings	$0	$25	$331	$10	$366
Residential Whole House Retrofit	$0	$21	$168	$6	$195
Low Income Energy Efficiency	$0	$48	$240	$31	$319
Express Efficiency	$257	$52	$311	$40	$660
Small/Medium Midstream Lighting	$42	$29	$20	$14	$105
Small Commercial Direct Install	$0	$37	$1,191	$24	$1,252
Multifamily Housing Retrofit	$8	$35	$93	$22	$158
Commercial Efficiency	$179	$59	$178	$47	$463
Large Midstream Lighting	$62	$47	$170	$34	$313
Industrial Efficiency	$75	$89	$323	$78	$565
Public Agency Partnership	$82	$55	$124	$43	$304
Community Education	$60	$14	$179	$10	$263
Large C&I Demand Response Curtailable	$651	$51	$799	$50	$1,551
Common Portfolio Costs[6]					$0
Portfolio Total	**$2,063**	**$711**	**$6,188**	**$496**	**$9,458**
SWE Costs[7]	**N/A**	**N/A**	**N/A**	**N/A**	**$200**
Total	**$2,063**	**$711**	**$6,188**	**$496**	**$9,658**

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

[5] 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.
[6] Common Portfolio Costs include costs associated with program tracking data management, support (legal, IT), and portfolio level marketing.
[7] Statewide Evaluation costs are outside of the 2% spending cap

Table 11: Phase III to Date Financials

Program	Incentives to Participants and Trade Allies ($1000)	EDC Materials, Labor, and Administration ($1000)	ICSP Materials, Labor, and Administration ($1000)	EM&V ($1000)	Total Cost ($1000)
REEP: Residential Energy Efficiency[8]	$2,411	$248	$4,354	$114	$7,127
Residential Appliance Recycling	$100	$45	$406	$10	$561
Residential Behavioral Savings	$0	$52	$430	$14	$496
Residential Whole House Retrofit	$0	$55	$190	$9	$254
Low Income Energy Efficiency	$0	$86	$487	$44	$617
Express Efficiency	$396	$449	$454	$57	$1,356
Small/Medium Midstream Lighting	$129	$54	$71	$20	$274
Small Commercial Direct Install	$0	$62	$2,106	$34	$2,202
Multifamily Housing Retrofit	$41	$62	$268	$31	$402
Commercial Efficiency	$358	$86	$681	$67	$1,192
Large Midstream Lighting	$171	$74	$449	$48	$742
Industrial Efficiency	$231	$118	$920	$111	$1,380
Public Agency Partnership	$231	$81	$960	$61	$1,333
Community Education	$137	$21	$315	$14	$487
Large C&I Demand Response Curtailable	$651	$61	$1,183	$71	$1,966
Common Portfolio Costs[9]					$0
Portfolio Total	**$4,856**	**$1,554**	**$13,274**	**$705**	**$20,389**
SWE Costs[10]	**N/A**	**N/A**	**N/A**	**N/A**	**$900**
Total	**$4,856**	**$1,554**	**$13,274**	**$705**	**$21,289**

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 PY9 will be presented in the final annual report to the PA PUC on November 15, 2018 along with a more granular breakdown of portfolio costs.

[8] 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.
[9] Common Portfolio Costs include costs associated with program tracking data management, support (legal, IT), and portfolio level marketing.
[10] Statewide Evaluation costs are outside of the 2% spending cap

1.10 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 five 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 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[11]

Cost Recovery Sector	Rate Classes Included	PYTD Spending ($1000)	P3TD Spending ($1000)
Residential	RS, RH, RA	$3,881	$9,301
Small/Medium Commercial	GS, GM, GMH	$2,257	$4,428
Small/Medium Industrial	GM, GMH	$224	$492
Large Commercial	GL, GLH, L	$1,038	$3,264
Large Industrial	GL, GLH, L, HVPS	$2,258	$3,804
Portfolio Total		**$9,658**	**$21,289**

[11] Includes SWE costs