

Preliminary 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

July 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 1.8 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

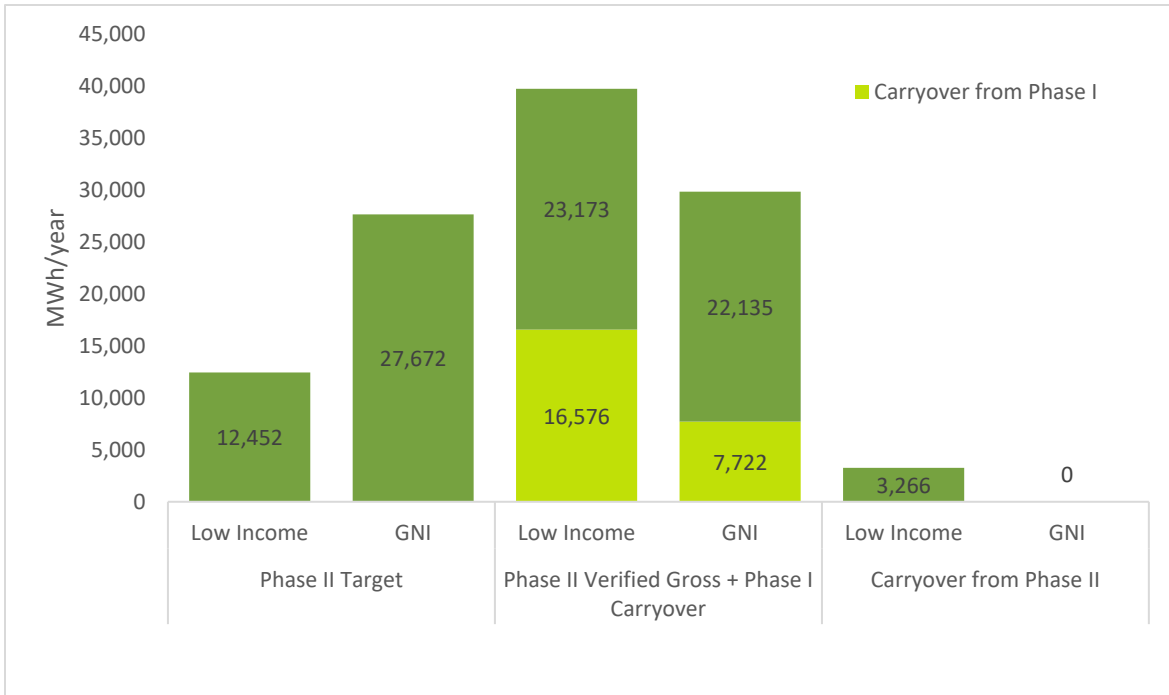


The Commission’s Phase III Implementation Order¹ also allowed EDCs to carry over savings in excess of the Phase II Government, Non-Profit, and Institutional (GNI) savings goal and excess savings from the low income customer segment.² Figure 2 shows the calculation of carryover savings for the low income 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:

- 90,158 MWh/yr of reported gross electric energy savings (PYRTD)
- 10.31 MW/yr of reported gross peak demand savings (PYRTD) from energy efficiency programs
- 59.06 MW/yr of verified gross peak demand savings (PYVTD) from demand response programs

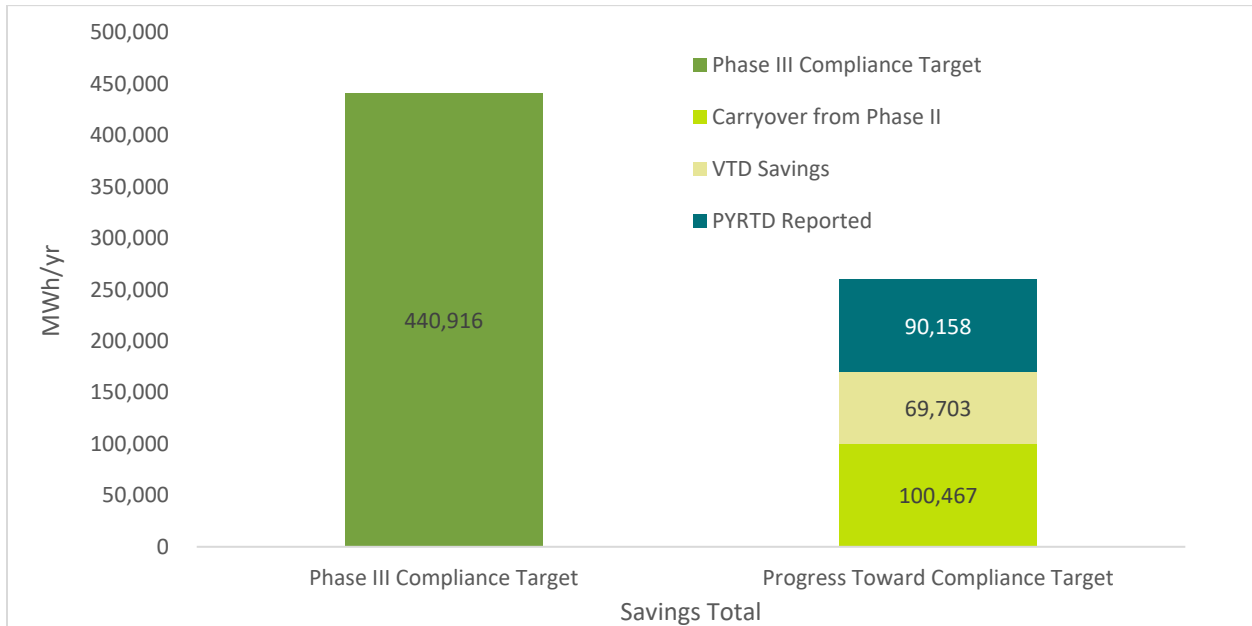
Since the beginning of Phase III of Act 129 on June 1, 2016, Duquesne Light has achieved:

- 157,895 MWh/yr of reported gross electric energy savings (RTD)
- 17.74 MW/yr of reported gross peak demand savings (RTD) from energy efficiency programs
- 159,861 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.
- 18.01 MW/yr of gross peak demand savings (PSA) from energy efficiency programs

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

- 260,328 MWh/yr of PSA+CO energy savings recorded to date in Phase III
 - This represents 59% percent of the May 31, 2021, energy savings compliance target of 440,916 MWh/yr.

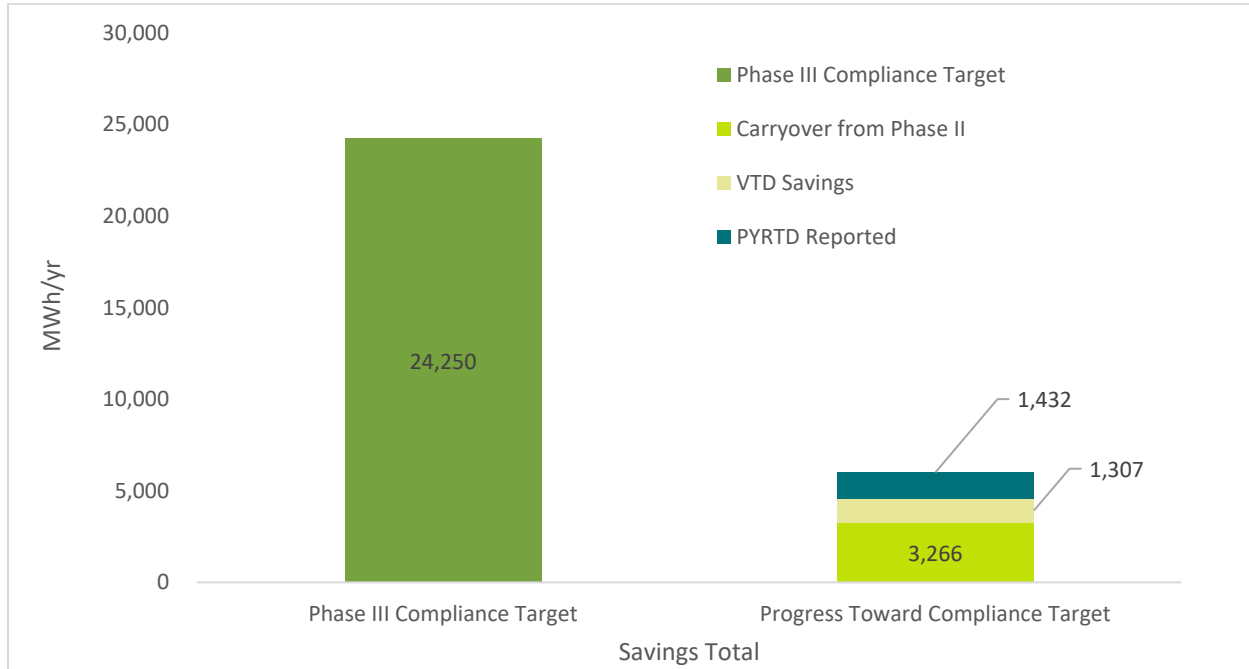
Figure 3: EE&C Plan Performance Toward Phase III Portfolio Compliance Target



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.

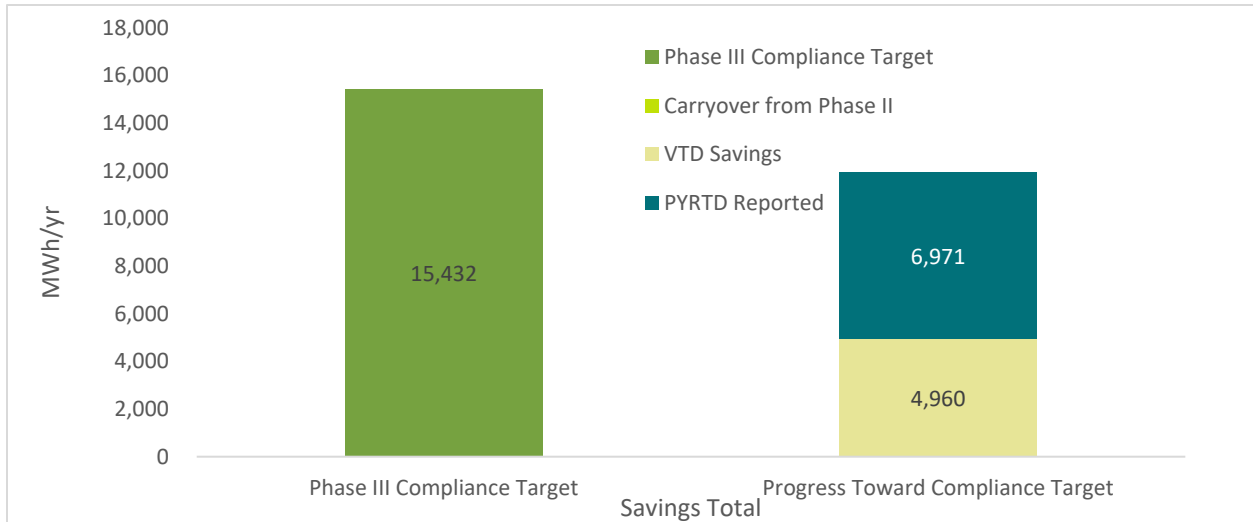
The PA PUC also established a low income energy savings target of 5.5% of the portfolio savings goal. The low income savings target for Duquesne Light is 24,250 MWh/yr and is based on verified gross savings. Figure 4 compares the PSA+CO performance to date for the low income customer segment to the Phase III savings target. Based on the latest available information, Duquesne Light has achieved 24.8% 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 77% 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.

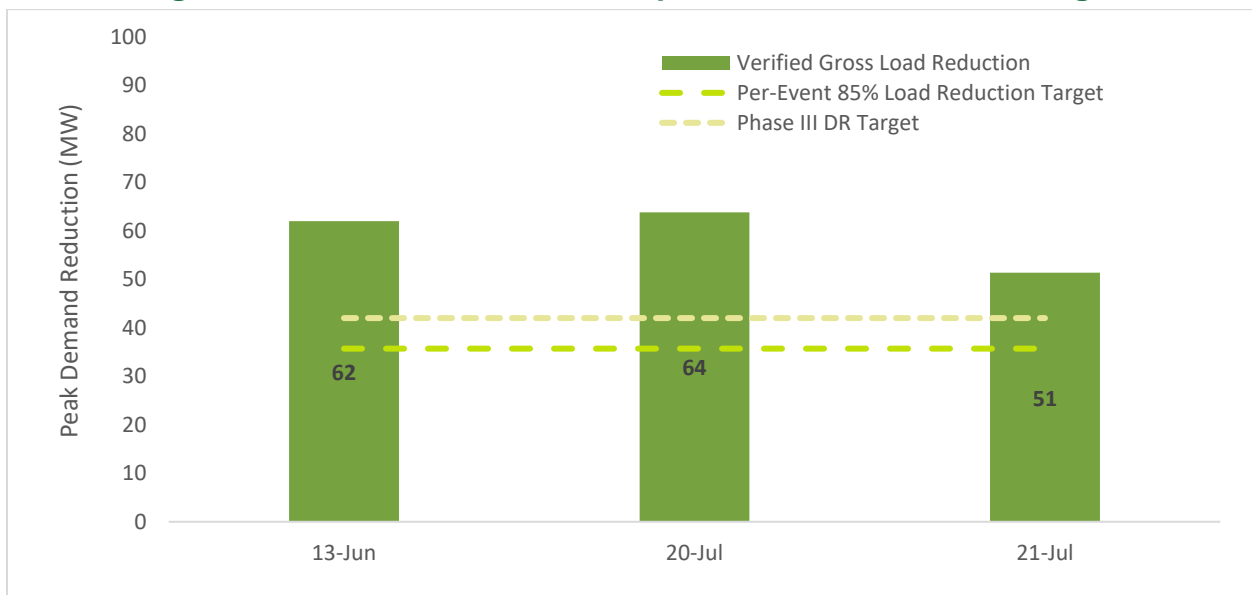
Act 129 demand response events are triggered by PJM’s day-ahead load forecast. When the day-ahead forecast is above 96% of the peak load forecast for the year, a demand response event is initiated for the following day. In PY9 there were three demand response events called. Table 2 lists the days that 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 41% (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	61.51	NA	NA	61.99
2017-07-20	15	18	0.43	63.37	NA	NA	63.81
2017-07-21	15	18	0.39	50.98	NA	NA	51.38
PYVTD - Average PY9 DR Event Performance							59.06
VTD - Average Phase III DR Event Performance							59.06

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	23,529	1,680	399	109	139
PYRTD MWh/yr	37,376	1,432	18,517	25,862	6,971
PYRTD MW/yr (Energy Efficiency)	4.08	0.14	2.86	2.40	0.83
PYVTD MW (Demand Response)	0.00	0.00	0.38	48.36	10.33
Incentives (\$1000)	\$1,268	\$0	\$761	\$1,980	\$325

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	90,593	20,886	613	173	193
PSA MWh/yr	82,806	2,640	27,009	35,476	11,931
PSA MW (Energy Efficiency)	8.92	0.28	3.93	3.49	1.37
Phase III MW (Demand Response)	0.00	0.00	0.38	48.36	10.33
Incentives (\$1000)	\$3,132	\$0	\$1,020	\$2,424	\$551

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. Nearly all programs in the portfolio have operated consistently across PY8 and PY9. One exception includes the launch of the Whole House Retrofit Program during PY9. This program is divided into market rate and low-income components. The low-income component contributes to meeting the low-income compliance goal. Duquesne Light did not report savings for the Whole House Retrofit Program during PY8.

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 submitted and the SWE approved an evaluation plan for the PY9 program portfolio. This plan included an update to the Demand Response (DR) impact evaluation methodology, based on results obtained from the impact evaluation of the Summer 2017 program. Navigant is currently conducting evaluation research for a number of programs active in PY9.

- **REEP: Residential Energy Efficiency:**
 - Navigant launched and is currently conducting an impact verification and process evaluation survey among REEP Rebate and Kit participants. Results will inform the PY9 evaluation findings.
 - Navigant launched and is currently analyzing results from an in-store intercept survey for the upstream lighting component of REEP. The cross-sector sales estimate will be updated with results from this study. The NTG results from this survey will be combined with results from the general population survey to determine overall NTG for the lighting component of REEP.
- **Residential Behavioral Savings:** Navigant launched and is currently conducting a process evaluation survey among market rate and low-income participants who receive Home Energy Reports through the Residential Behavioral Savings program.
- **Residential Whole House Retrofit:** Navigant is conducting evaluation activities in response to the launch of the program. Savings were first reported during PY9Q3. Activities recently commenced and will include in-depth interviews with the program administrators and CSP to understand program implementation specifics. Navigant will also conduct desk reviews of program tracking details and a participant impact verification and process evaluation survey.
- **C&I Programs:** Navigant is finalizing a participant process evaluation and net-to-gross survey for the C&I programs. While impact evaluations will be conducted and reported

on for the Industrial Efficiency and Commercial Midstream Lighting programs in PY9, telephone and/or on-site verification efforts also are active for small samples of three additional programs – the Commercial Efficiency, Express Efficiency and Public Agency Partnership programs. PY9 participant verification results for these latter three programs will be combined with PY10 participant verification results to estimate PY10 realization rates at the required level statistical precision. For PY9 reporting the three programs will use the most recent realization rates available. The same will be true for the PY9 SCDI, Multifamily Housing Retrofit, and Community Education programs. Additionally, Navigant is completing participant surveys for the Industrial Efficiency, Commercial Efficiency, Express Efficiency, Community Education, Public Agency Partnership and Multifamily Housing Retrofit Programs, Trade Ally interviews and interviews with school representatives who have participated in the community education program and with trade allies who have participated in the other C&I programs.

- **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. These results have been updated since they were first reported in the January 2018 Semi-Annual Report, reflecting feedback provided by the SWE.

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).
Low Income Energy Efficiency		
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.
Residential Whole House Retrofit	Direct Installs	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 split the total count of participants between the market rate and low income programs.
Low Income Whole House Retrofit		

Table 6: EE&C Plan Participation by Program

Program	PYTD Participation	P3TD Participation
REEP: Residential Energy Efficiency	20,786	25,734
REEP: Residential Energy Efficiency (Upstream Lighting)	N/A	N/A
Residential Appliance Recycling	2,469	3,630
Residential Behavioral Savings	0	60,955
Residential Whole House Retrofit	274	274
Low Income Energy Efficiency	1,680	20,886
Express Efficiency	298	392
Small/Medium Midstream Lighting	N/A*	78
Small Commercial Direct Install	94	132
Multifamily Housing Retrofit	3	7
Commercial Efficiency	49	59
Large Midstream Lighting	N/A*	43
Industrial Efficiency	25	36
Public Agency Partnership	71	112
Community Education	33	46
Large C&I Demand Response Curtailable	74	74
Portfolio Total	25,856	112,458

*Data is pending, and will be included in final report.

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

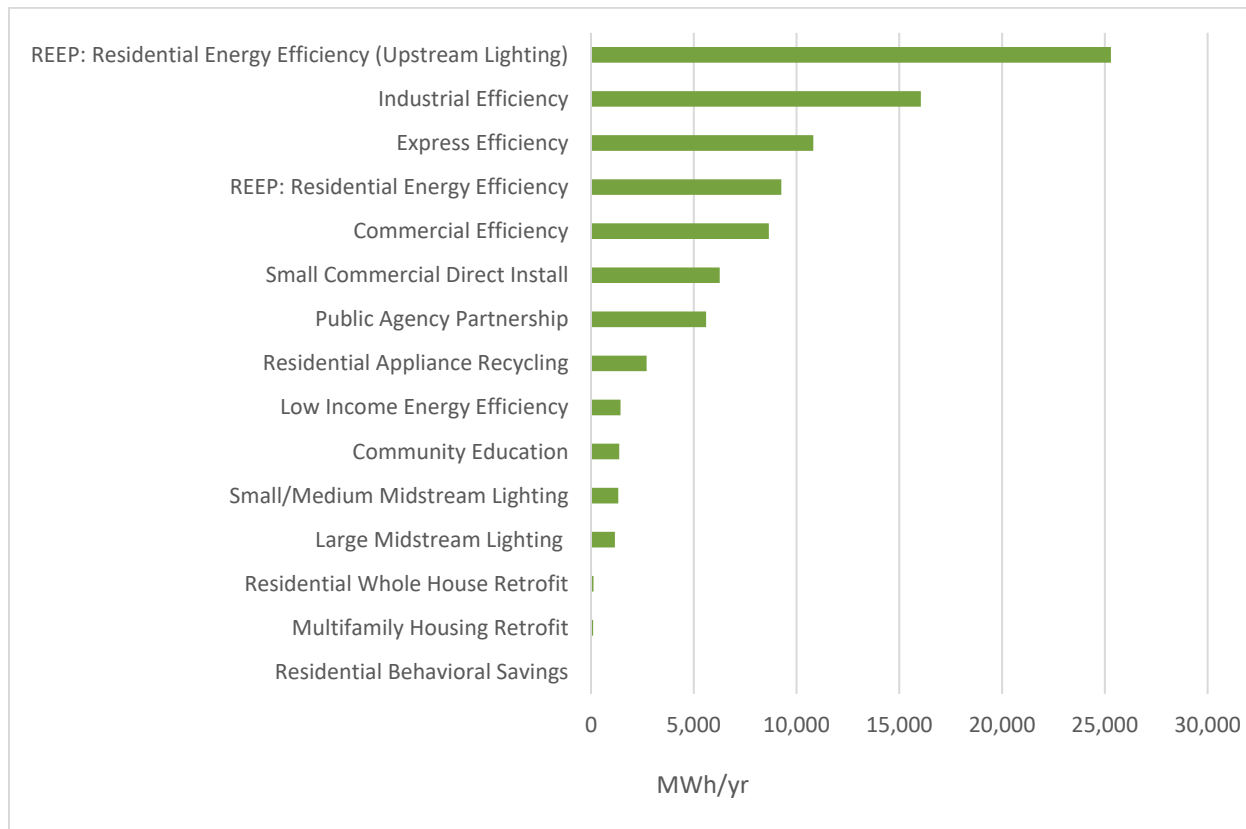
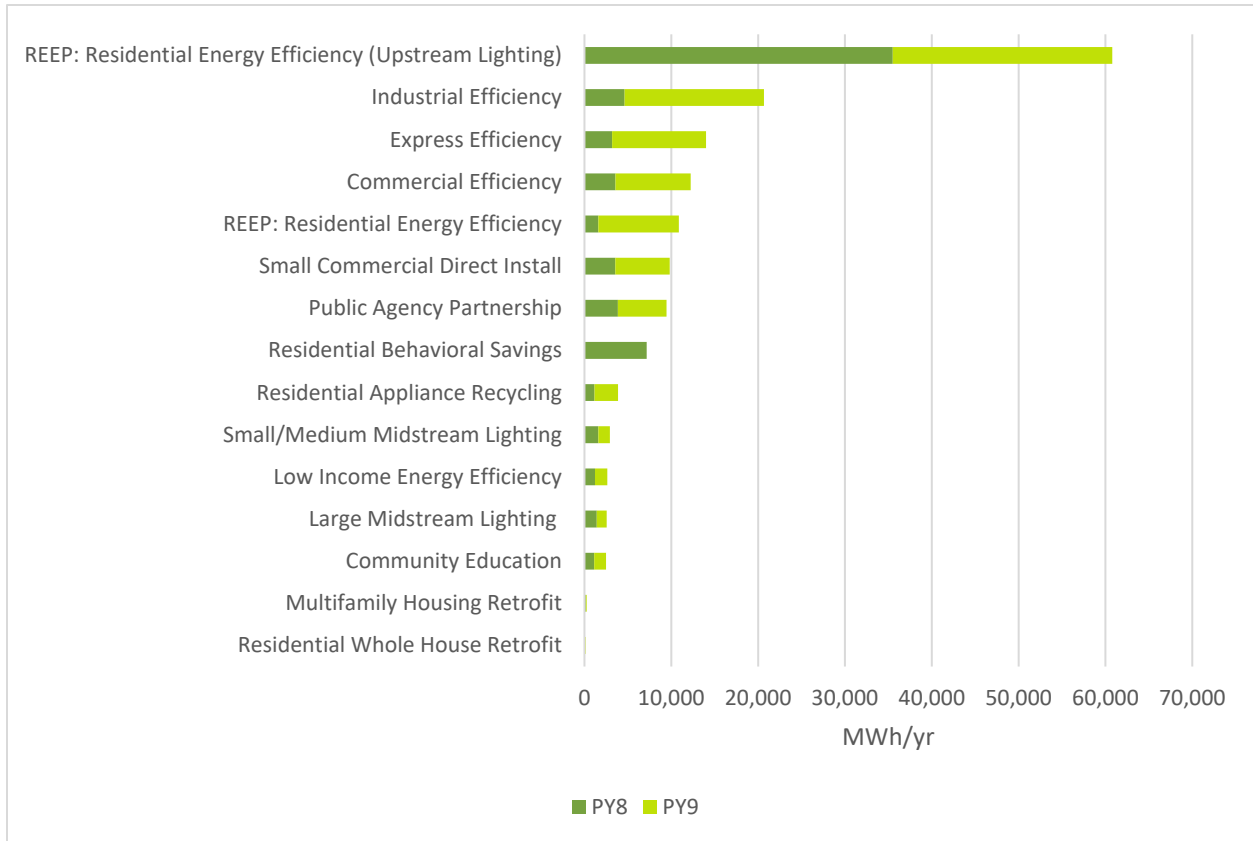


Figure 8 presents a summary of the PSA gross energy savings by program for Phase III of Act 129. PSA savings include verified gross savings from previous program years and the PYTD savings from the current program year.

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	9,256	11,583	1,606	10,863
REEP: Residential Energy Efficiency (Upstream Lighting)	25,298	59,656	35,496	60,794
Residential Appliance Recycling	2,703	3,965	1,165	3,868
Residential Behavioral Savings*	0	6,536	7,162	7,162
Residential Whole House Retrofit	118	118	0	118
Low Income Energy Efficiency	1,432	2,564	1,208	2,640
Express Efficiency	10,818	14,057	3,183	14,001
Small/Medium Midstream Lighting	1,329	2,353	1,595	2,924
Small Commercial Direct Install	6,264	9,890	3,562	9,826
Multifamily Housing Retrofit	107	265	151	258
Commercial Efficiency	8,653	12,296	3,579	12,233
Large Midstream Lighting	1,159	2,063	1,407	2,566
Industrial Efficiency	16,050	20,701	4,627	20,677
Public Agency Partnership	5,599	9,393	3,845	9,444
Community Education	1,372	2,455	1,115	2,487
Portfolio Total	90,158	157,895	69,703	159,861

*Savings for this program are reported only annually with the compliance report submitted in November.

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

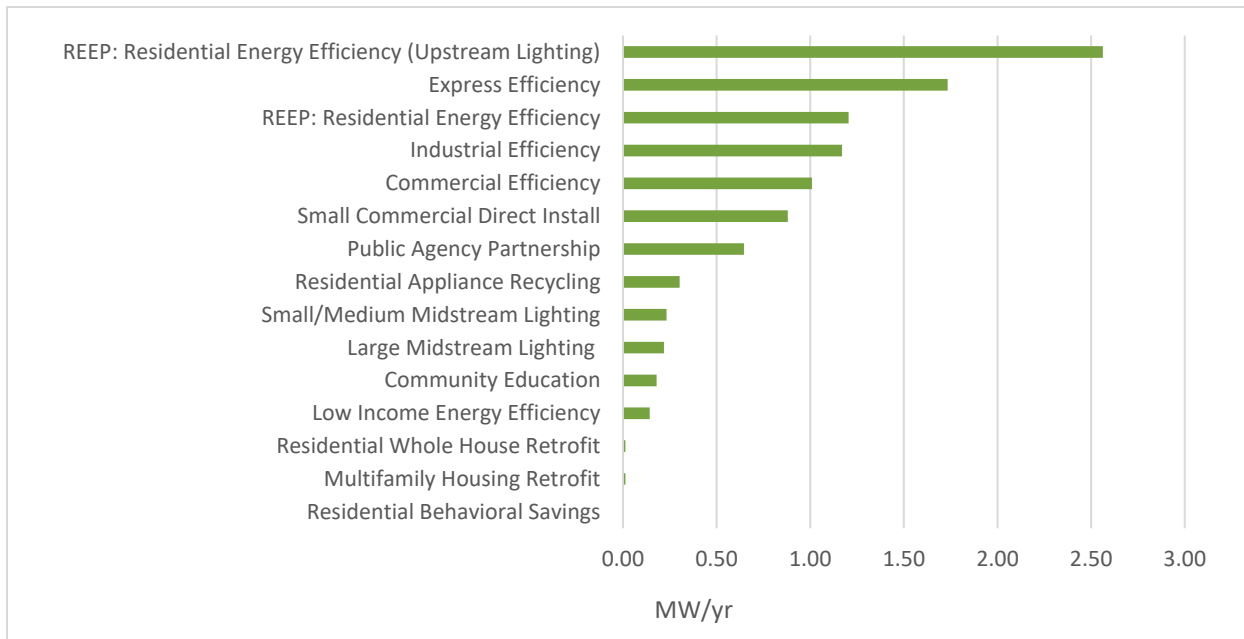
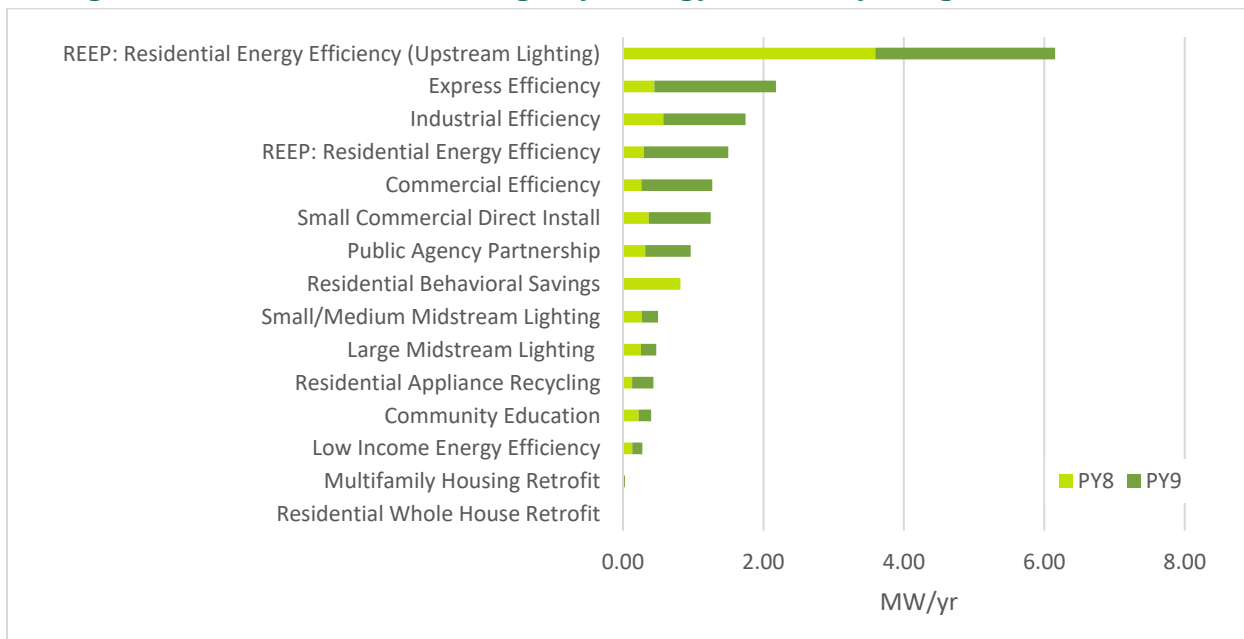


Figure 10 presents a summary of the PSA gross demand savings by energy efficiency program for Phase III of Act 129.

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	1.20	1.58	0.30	1.50
REEP: Residential Energy Efficiency (Upstream Lighting)	2.56	6.04	3.59	6.16
Residential Appliance Recycling	0.30	0.44	0.13	0.43
Residential Behavioral Savings	0.00	0.75	0.82	0.82
Residential Whole House Retrofit	0.01	0.01	0.00	0.01
Low Income Energy Efficiency	0.14	0.27	0.13	0.28
Express Efficiency	1.73	2.17	0.45	2.18
Small/Medium Midstream Lighting	0.23	0.39	0.27	0.50
Small Commercial Direct Install	0.88	1.24	0.37	1.25
Multifamily Housing Retrofit	0.01	0.03	0.02	0.03
Commercial Efficiency	1.01	1.27	0.26	1.27
Large Midstream Lighting	0.22	0.37	0.26	0.48
Industrial Efficiency	1.17	1.76	0.58	1.75
Public Agency Partnership	0.65	1.01	0.32	0.96
Community Education	0.18	0.41	0.22	0.40
Portfolio Total	10.31	17.74	7.70	18.01

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	59.06	12%	59.06	12%
Portfolio Total	59.06	12%	59.06	12%

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

0 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 template⁴ 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	\$1,175	\$269	\$2,977	\$160	\$4,581
Residential Appliance Recycling	\$93	\$43	\$348	\$14	\$498
Residential Behavioral Savings	\$0	\$53	\$375	\$20	\$448
Residential Whole House Retrofit	\$0	\$44	\$175	\$12	\$231
Low Income Energy Efficiency	\$0	\$104	\$1,046	\$62	\$1,212
Express Efficiency	\$640	\$114	\$681	\$80	\$1,515
Small/Medium Midstream Lighting	\$104	\$61	\$36	\$28	\$229
Small Commercial Direct Install	\$0	\$79	\$1,483	\$48	\$1,610
Multifamily Housing Retrofit	\$17	\$75	\$255	\$44	\$391
Commercial Efficiency	\$453	\$130	\$577	\$94	\$1,254
Large Midstream Lighting	\$118	\$103	\$257	\$68	\$546
Industrial Efficiency	\$758	\$196	\$548	\$155	\$1,657
Public Agency Partnership	\$236	\$120	\$354	\$86	\$796
Community Education	\$89	\$30	\$334	\$20	\$473
Large C&I Demand Response Curtailable	\$651	\$114	\$899	\$99	\$1,763
Common Portfolio Costs⁶					\$0
Portfolio Total	\$4,334	\$1,535	\$10,345	\$990	\$17,204
SWE Costs⁷	N/A	N/A	N/A	N/A	\$400
Total	\$4,334	\$1,535	\$10,345	\$990	\$17,604

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	\$3,001	\$388	\$5,485	\$194	\$9,068
Residential Appliance Recycling	\$131	\$68	\$539	\$17	\$755
Residential Behavioral Savings	\$0	\$80	\$474	\$24	\$578
Residential Whole House Retrofit	\$0	\$78	\$197	\$15	\$290
Low Income Energy Efficiency	\$0	\$142	\$1,293	\$75	\$1,510
Express Efficiency	\$779	\$511	\$824	\$97	\$2,211
Small/Medium Midstream Lighting	\$191	\$86	\$87	\$34	\$398
Small Commercial Direct Install	\$0	\$104	\$2,398	\$58	\$2,560
Multifamily Housing Retrofit	\$50	\$102	\$430	\$53	\$635
Commercial Efficiency	\$632	\$157	\$1,080	\$114	\$1,983
Large Midstream Lighting	\$227	\$130	\$536	\$82	\$975
Industrial Efficiency	\$914	\$225	\$1,145	\$188	\$2,472
Public Agency Partnership	\$385	\$146	\$1,190	\$104	\$1,825
Community Education	\$166	\$37	\$470	\$24	\$697
Large C&I Demand Response Curtailable	\$651	\$124	\$1,283	\$120	\$2,178
Common Portfolio Costs⁹					\$0
Portfolio Total	\$7,127	\$2,378	\$17,431	\$1,199	\$28,135
SWE Costs¹⁰	N/A	N/A	N/A	N/A	\$1,100
Total	\$7,127	\$2,378	\$17,431	\$1,199	\$29,235

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 1.4. 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 Category¹¹

Cost Recovery Sector	Rate Classes Included	PYTD Spending (\$1000)	P3TD Spending (\$1000)
Residential	RS, RH, RA	\$7,062	\$12,482
Small/Medium Commercial	GS, GM, GMH	\$3,807	\$5,978
Small/Medium Industrial	GM, GMH	\$512	\$780
Large Commercial	GL, GLH, L	\$2,537	\$4,763
Large Industrial	GL, GLH, L, HVPS	\$3,686	\$5,232
Portfolio Total		\$17,604	\$29,235

¹¹ Includes SWE costs