Preliminary Annual Report to the Pennsylvania Public Utility Commission

Phase III of Act 129
Program Year 11
(June 1, 2019–May 31, 2020)
For Pennsylvania Act 129 of 2008
Energy Efficiency and Conservation Plan

Prepared for:

Duquesne Light Company

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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 PY11 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	N/A

PYRTD (PY11) = 500 MWh/year
RTD = 800 + 900 + 500 + 500 = 2,700 MWh/year
VTD = 700 + 850 + 700 = 2,250 MWh / year
PSA = 2,250 + 500 = 2,750 MWh/year
PSA + CO = 2,750 + 400 = 3,150 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 11 (PY11), 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 PY11. Compliance with Act 129 savings goals is ultimately based on verified gross savings. Duquesne Light has retained Guidehouse Inc. ("Guidehouse")[1], 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 PY11 energy efficiency programs will be reported in the final annual report, due to be filed on February 15, 2021 (90 day delay from the original November 15, 2020 reporting deadline).[2]

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 PY11 as well as the cumulative demand response performance of the EE&C program to date for Phase III of Act 129.

[1] On October 11, 2019, Guidehouse LLP completed its previously announced acquisition of Navigant Consulting Inc. In furtherance of that effort, we recently renamed Navigant Consulting Inc. as Guidehouse Inc.

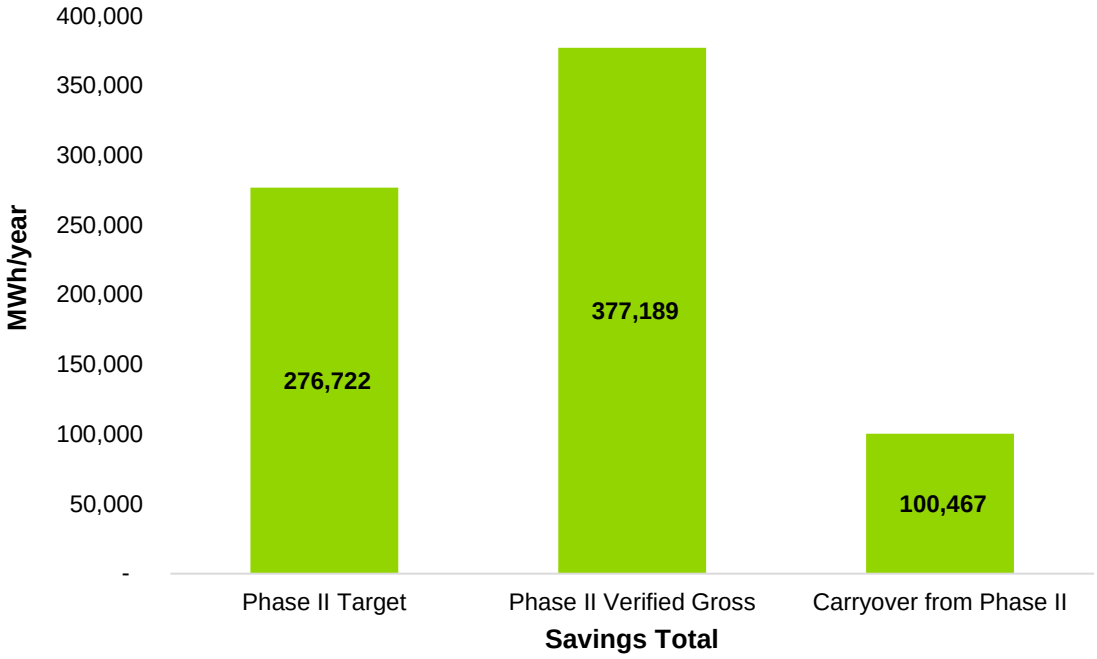
[2] *See* Docket No. M-2014-2424864, Secretarial Letter issued May 26, 2020.

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



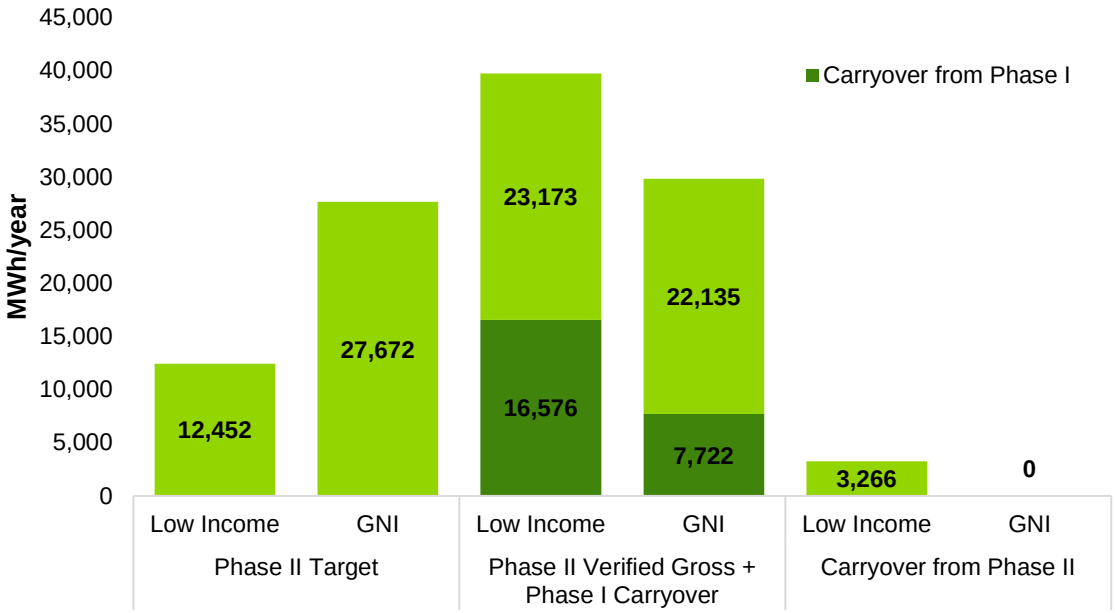
Source: Guidehouse

The Commission's Phase III Implementation Order[3] 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.[4] Figure 2 shows the calculation of carryover savings for the low-income and GNI targets.

[3] 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.

[4] 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 11 on June 1, 2019, Duquesne Light has claimed:

- 88,310 MWh/yr of reported gross electric energy savings (PYRTD)
- 12.02 MW/yr of reported gross peak demand savings (PYRTD) from energy efficiency programs
- 56.00 MW/yr of verified gross peak demand savings (PYVTD) from demand response programs

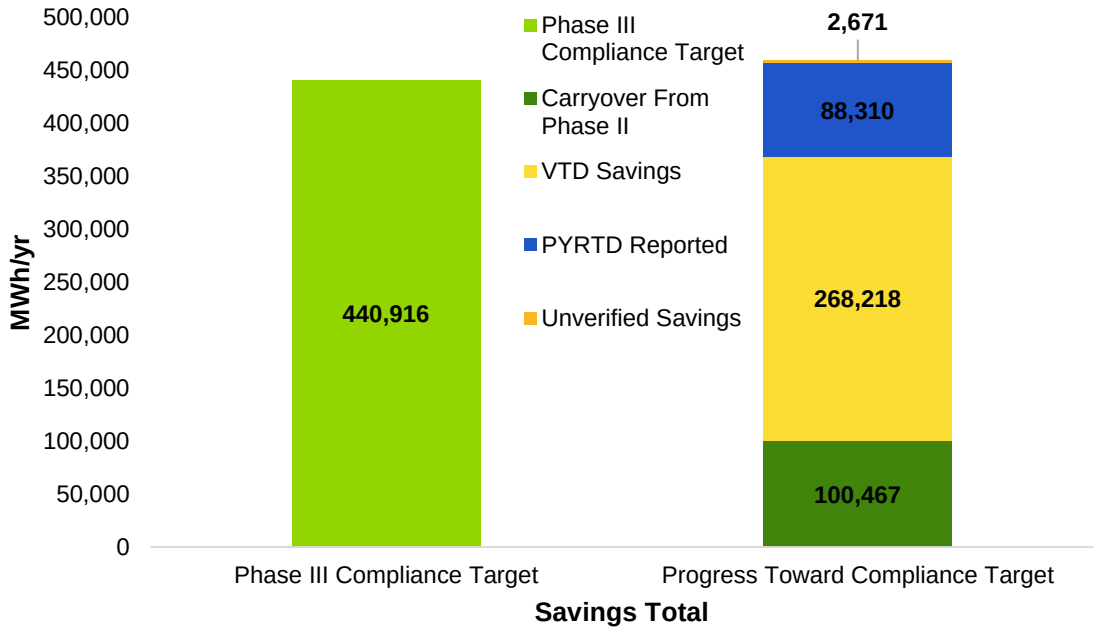
Since the beginning of Phase III of Act 129 on June 1, 2016, Duquesne Light has achieved:

- 353,077 MWh/yr of reported gross electric energy savings (RTD)
- 43.32 MW/yr of reported gross peak demand savings (RTD) from energy efficiency programs
- 356,528 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 PY11.
- 43.81 MW/yr of gross peak demand savings (PSA) from energy efficiency programs

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

- 456,995 MWh/yr of PSA+CO energy savings recorded to date in Phase III
    - This represents 104% 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[5]



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.

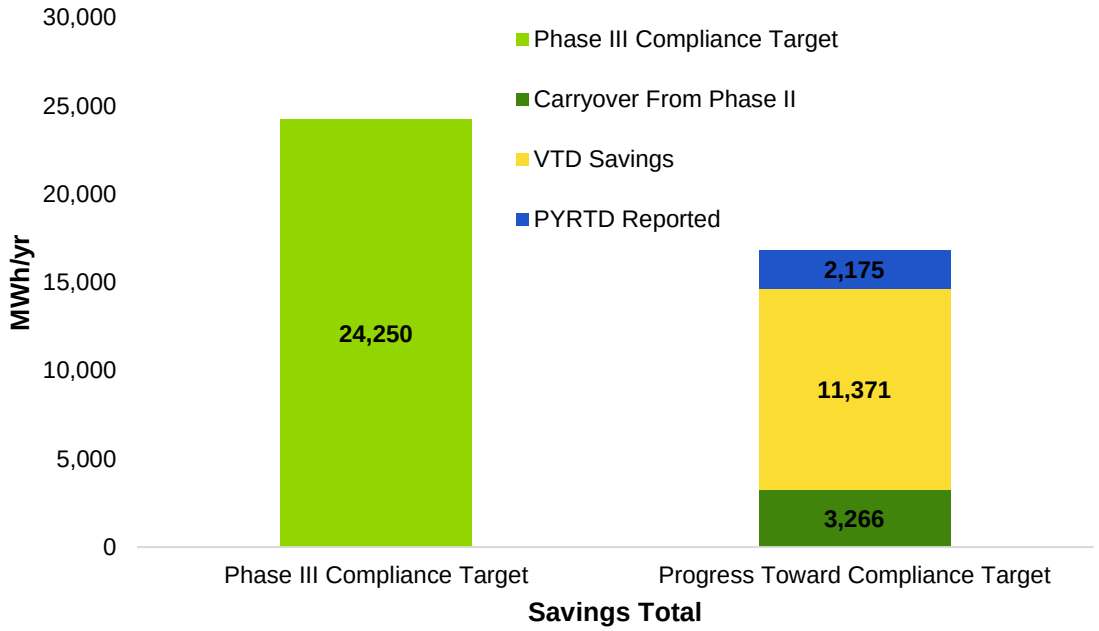
The PA PUC also established a low-income energy savings target of 5.5% of the portfolio savings goal. The low-income savings target for Duquesne Light is 24,250 MWh/yr and is based

[5] This figure includes unverified savings associated with the Small/Medium Midstream Lighting Program and the Large Midstream Lighting Program. These savings will be verified during PY11 evaluation activities. For simplicity, the remainder of the report accounts for these unverified savings as reported savings under the RTD category. The reader should note that the PSA savings conveyed within this report exclude these unverified savings. Per the PSA definition, only the verified to-date (VTD) savings and the PY11 reported savings (PYRTD) are included within the PSA savings. Unverified savings are the following:

- Small/Medium Midstream Lighting: 1,050 MWh/yr; 0.18 MW/yr
- Large Midstream Lighting: 1,621 MWh; 0.28 MW/yr

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 69% of the Phase III low-income energy savings target.

Figure 4: EE&C Plan Performance Toward Phase III Low-Income Compliance Target[6]

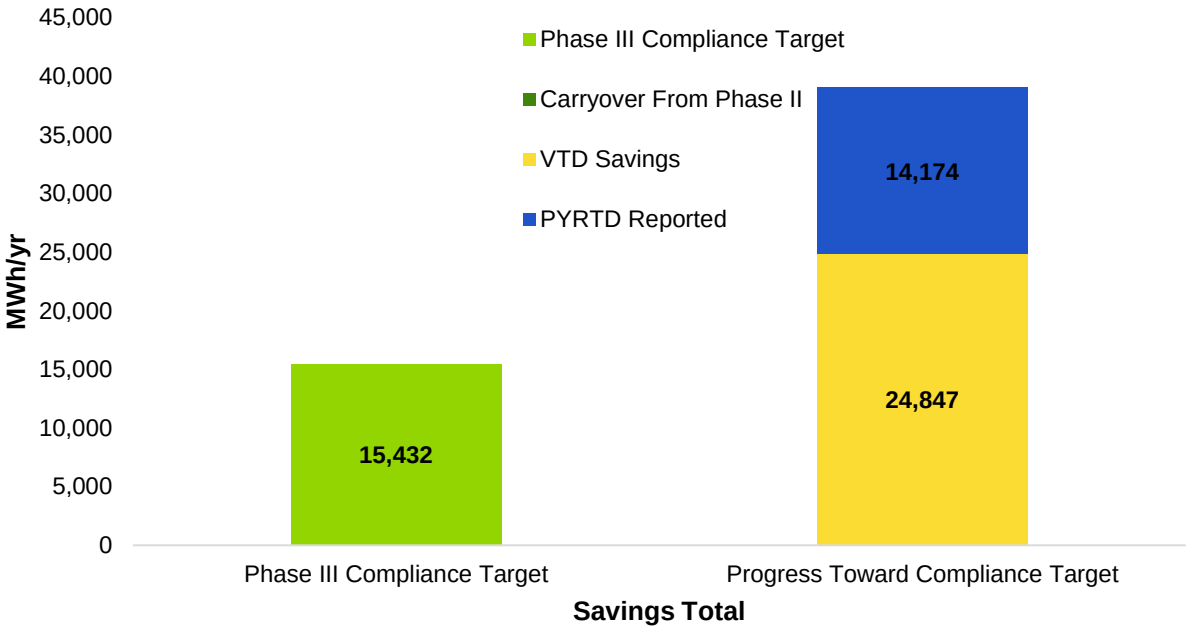


Source: Guidehouse

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 253% of the Phase III GNI energy savings target.

[6] The 11,371 MWh of VTD savings include 9,977 MWh from the Low-Income Energy Efficiency Program (LIEEP) and 1,394 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 peak load forecast for the year, a demand response event is initiated for the following day. For PY11 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 PY11 there were four demand response events called. Duquesne's average DR performance to date is above the Phase III compliance reduction target by 31% (performance–goal/goal).

Table 2: Demand Response PYVTD and VTD Performance by Event (MW)[7]

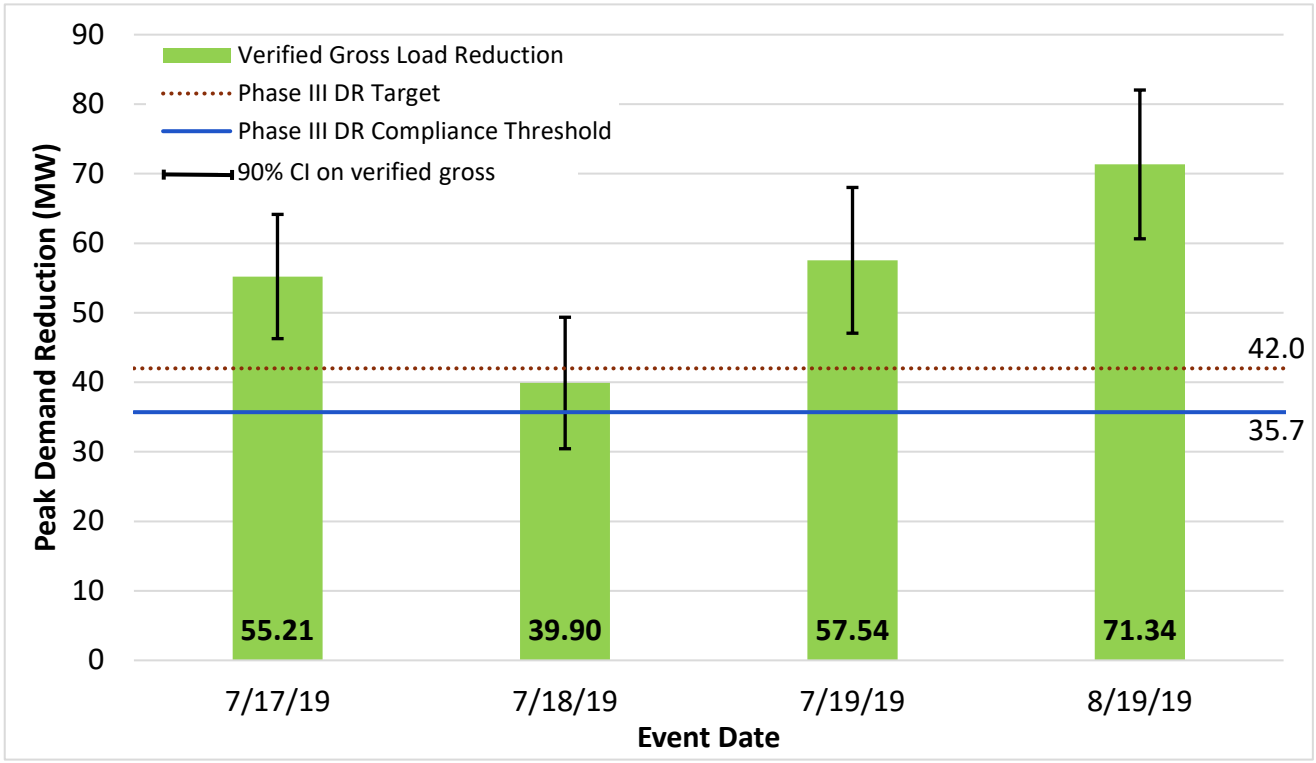
Event Date	Start Hour (Hour Ending)	End Hour (Hour Ending)	Small CI Load Curtailment	Large CI Load Curtailment	Residential DLC	BDR	Average Portfolio MW Impact
2017-06-13	15	18	0.47	61.51	NA	NA	61.98
2017-07-20	15	18	0.43	63.37	NA	NA	63.80
2017-07-21	15	18	0.39	50.98	NA	NA	51.37
2018-07-02	15	18	1.63	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
PYVTD - Average PY11 DR Event Performance							**56.00**
VTD - Average Phase III DR Event Performance							**55.16**

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. Figure 6 compares the performance of each of the DR events in PY11 to the event-specific minimum and average targets.

[7] Following the filing of the PY11 Semiannual Report that first included PY11 verified demand response results, the SWE determined that verified results were slightly lower than originally reported. This report shows updated, final values. The PYVTD decreased by 0.39 MW and the VTD decreased by 0.12 MW.

Figure 6: Event Performance Compared to 85% Per-Event Target[8]



Source: Guidehouse

2.4 Phase III Performance by Customer Segment

Table 3 presents the participation, savings, and spending by customer sector for PY11. 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.

[8] 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: PY11 Summary Statistics by Customer Segment

Parameter	Residential (Non-LI)	Residential LI	Small C&I (Non-GNI)	Large C&I (Non-GNI)	GNI
# participants	13,413	2,449	295	221	220
PYRTD MWh/yr	25,473	2,175	15,118	31,371	14,174
PYRTD MW/yr (Energy Efficiency)	2.76	0.19	2.13	4.78	2.16
PYVTD MW (Demand Response)	0.00	0.00	0.69	50.16	5.15
Incentives ($1,000)	$1,067	$254	$1,332	$2,247	$1,213

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
# participants	231,020	66,456	1,647	719	529
PSA MWh/yr	147,881	12,153	65,447	92,026	39,021
PSA MW (Energy Efficiency)	16.18	1.22	9.58	11.90	4.92
Phase III MW (Demand Response)	0.00	0.00	0.72	49.12	5.32
Incentives ($1,000)	$5,342	$887	$3,635	$6,759	$3,058

Source: Guidehouse

3. Updates and Findings

3.1 Implementation Updates and Findings

Duquesne Light's Phase III EE&C Plan portfolio of programs continue to operate through PY11 with general consistency and no significant changes as the portfolio nears its Phase III targeted goals.

The Whole House Retrofit Program (WHRP) activities continue with the new CSP that launched implementation in PY10. Nearly all reported program savings this year originate from the new CSP while a small portion of savings relates to the previous CSP's ramp-down. Additionally, PY11 is the first year to include reported savings activities from the new CSP.

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 the last quarter of PY11. Duquesne Light is evaluating future market potential and whether any Plan changes are warranted. Duquesne Light anticipates continuing activities for the downstream components of REEP Rebates and REEP Kits for the reminder 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 PY11.

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 13 events through PY11 (three in PY9, six in PY10, four in PY11). The recent petition to amend the Commission's June 19, 2015 Act 129 Phase III Implementation Order makes PY12 DR activities and event responses voluntary.[9] Program performance during PY9, PY10, and PY11 will be used to determine overall Phase III compliance., Duquesne Light intends to keep the program active during PY12 and engage its DR participants.

During the coronavirus pandemic, Duquesne Light took measured steps to support its customers through certain targeted efforts. Through the Public Agency Partnership Program (PAPP), Duquesne Light started engaging school districts for energy efficiency retrofits where flexibility for implementation exists given that school buildings are empty, but many school maintenance staff are still working. Duquesne Light also continues to support its customers through Act 129 programs during the pandemic, in general. Onsite CSP program implementation activities were halted temporarily during the last quarter of PY11. However, Duquesne Light continued accepting participant applications, fielding customer questions and inquiries, and distributing incentives. Additionally, Duquesne Light allowed CSPs to resume onsite implementation at the tail-end of the program year while requiring CSPs to operate with updated safety procedures and policies in response to the pandemic.

[9] Docket No. M-2014-2424864, *Petition to Amend the Commission's June 19, 2015 Implementation Order*, Order entered June 3, 2020.

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 an evaluation plan update for the PY11 program portfolio. This plan included an update to the evaluations for several programs across the portfolio. Guidehouse also submitted and the SWE approved several sampling memos that detailed stratification, sample targets, and research methods the team will use to gather information for the evaluations. The team is currently conducting that evaluation research, and results of these activities, including verification results, will be conveyed in the Final Annual report. For activities not yet in the field, Guidehouse plans to share research instruments with the SWE for review and approval.

- **Residential Energy Efficiency Program (REEP)**
  - **REEP Rebates and Kits:** Guidehouse is conducting impact verification, NTG estimation, and process evaluation through participant surveys. The team is relying on survey instruments developed in previous years and updating them to convert from telephone to web-based (Qualtrics) methods.
  - **REEP Upstream Lighting:** Guidehouse compiled all PY11 lamp-level details from the CSP to confirm the appropriate application of TRM savings algorithms. The team confirmed baseline assumptions, confirmed that lamps are Energy Star-certified, and recalculated all savings. Any adjustments made to calculations are reflected in the realization rate. Also, the team allocated a portion of savings to non-residential sockets based on the cross-sector sales research completed during PY9 (those savings allocations will also be reflected in the Express Efficiency program, in the Annual report). Guidehouse shared analysis details with the SWE in June who reviewed and approved the verified savings.
- **Residential Appliance Recycling Program (RARP)**
  - Similar to REEP Rebates and Kits, Guidehouse is conducting impact verification, NTG estimation, and process evaluation through web-based participant surveys.
- **Residential Behavioral Savings**
  - In addition to the impact evaluation conducted each year for Residential Behavioral savings, Guidehouse is also fielding a participant process evaluation survey. The team is leveraging an updated survey instrument previously deployed for the same research conducted in PY9.
- **Whole House Retrofit Program (WHRP)**
  - Guidehouse is compiling all CSP details to confirm and document the PY11 activities reported in Duquesne Light's program tracking database. Additionally, the team is updating survey instruments to gather impact verification information from participants. In addition to the impact evaluation, Guidehouse plans to conduct in-depth interviews with members of the CSP's field audit team.
- **Express Efficiency, Commercial Efficiency, and Industrial Efficiency Programs**
  - **Verification:** Guidehouse is conducting verifications for a sample of projects that include engineering desk reviews and telephone interviews. The evaluation plan also calls for onsite field verification activities. However, field work was put on hold temporarily because of the coronavirus pandemic. In response to that, the SWE recently issued guidance for evaluation plan and verification modifications that the Guidehouse team has incorporated into plan revisions that have been approved by the SWE. Additionally, Duquesne Light has allowed onsite evaluation work to resume with EM&V personnel that follow updated and

appropriate safety procedures and policies (and pending acceptance by the customers at the given sampled site). Guidehouse anticipates site visits to start in July.
    - **Process and NTG Research:** In addition to gross impact verifications, Guidehouse is also conducting process evaluations for these programs. The team is updating survey instruments that include NTG assessment and process evaluation questions for program participants as well as interview guides that will target program trade allies and contractors.
- **Midstream Lighting Program**
    - Guidehouse continues verification activities (including onsite field verifications that were temporarily halted for the pandemic and then converted to telephone verifications) for projects that will ultimately be collected into a PY10 and PY11 combined sample. Per the SWE-approved evaluation plan, the team will use realization rates from that sample to calculate verified savings for PY11 projects as well as PY10 projects that are currently reported as unverified.
- **Community Education Energy Efficiency Program (CEEP)**
    - PY11 verification results are informed by the PY10 verification activities.
    - Guidehouse also conducted in-depth process evaluation interviews with teachers who participated in the program in the past year.
- **Public Agency Partnership Program (PAPP)**
    - Guidehouse is conducting impact verifications and trade ally interviews to inform process evaluation for this program. Net impacts will rely on NTG ratios developed in PY9.
- **Multifamily Housing Retrofits**
    - Guidehouse is conducting impact verification and trade ally interviews to inform process evaluation for this program. Net impacts will rely on NTG ratios developed in PY9.
- **DR Program**
    - As previously mentioned, the PY12 DR season is voluntary for EDCs. Guidehouse is currently working with Duquesne Light and its program CSP to understand details about planned program implementation. Guidehouse is also working with Duquesne Light to determine changes, if any, to the evaluation methodology given the changes to compliance requirements.

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 PY11 and Phase III.

Table 5: Program Participation Definitions

Programs	Component	Definition
REEP: Residential Energy Efficiency	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 PY11), 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).
Low-income Energy Efficiency		
Residential Appliance Recycling		
Express Efficiency		
Small/Medium Midstream Lighting		
Small Commercial Direct Install		
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	11,345	54,029
REEP: Residential Energy Efficiency (Upstream Lighting)	N/A	N/A
Residential Appliance Recycling	2,068	8,114
Residential Behavioral Savings*	0	168,551
Residential Whole House Retrofit	0	326
Low-income Energy Efficiency	2,449	66,456
Express Efficiency	265	965
Small/Medium Midstream Lighting	0	487
Small Commercial Direct Install	0	140
Multifamily Housing Retrofit	15	40
Commercial Efficiency	63	199
Large Midstream Lighting	0	296
Industrial Efficiency	43	109
Public Agency Partnership	134	353
Community Education	24	114
Large Curtailable Load Demand Response	192	192**
Portfolio Total	**16,598**	**300,371**

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

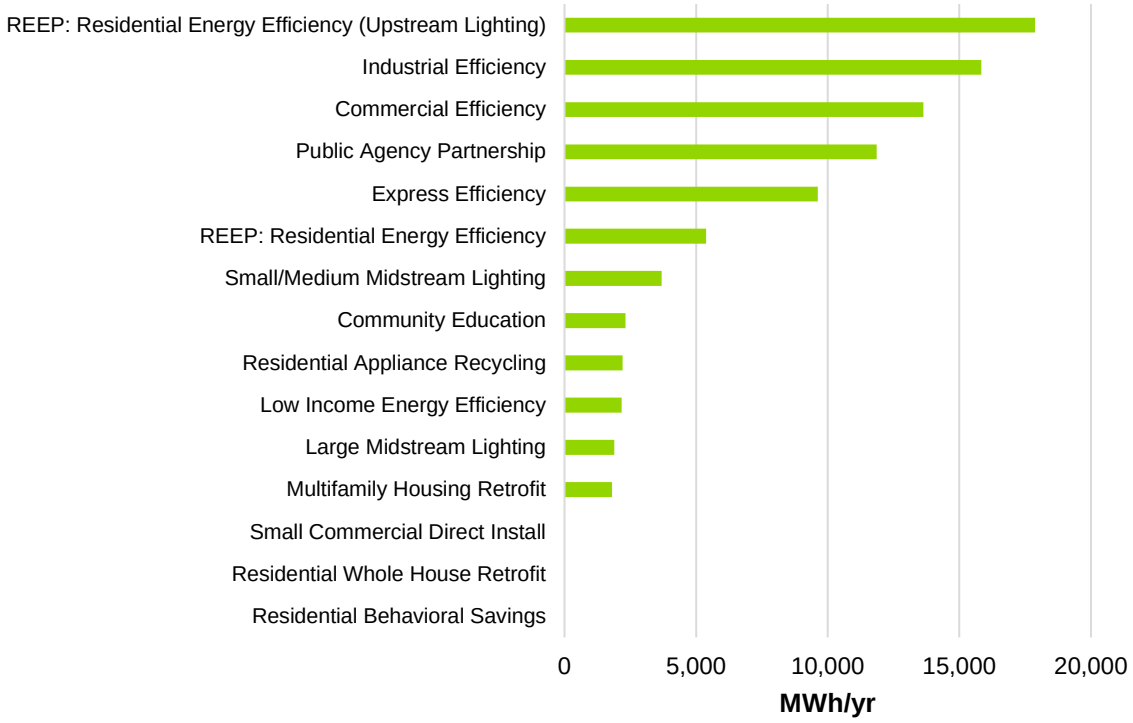
**P3TD participation counts for the DR program are not cumulative but instead represent the maximum number of annual participants during the phase.

Source: Guidehouse

5. Summary of Energy Impacts by Program

Figure 7 presents a summary of the PYTD reported gross energy savings by program for PY11. 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[10]

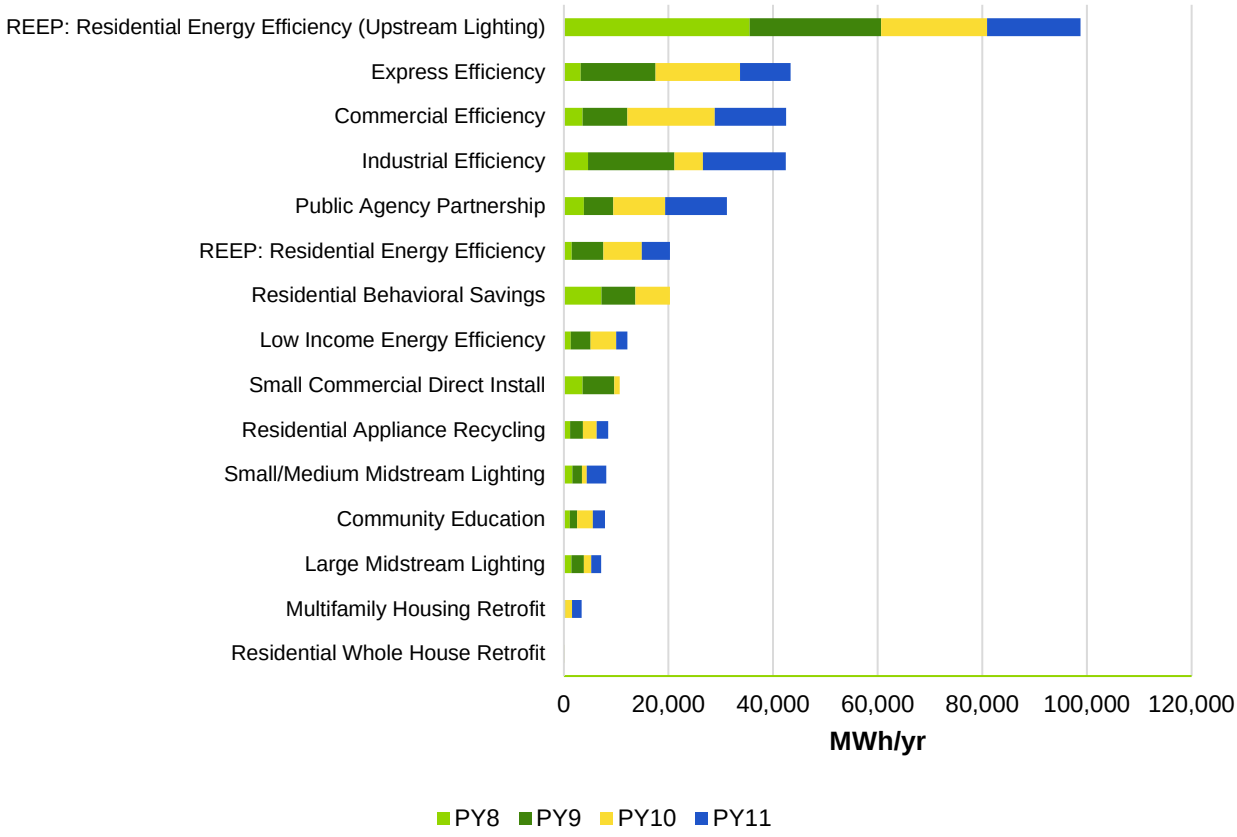


Source: Guidehouse

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.

[10] 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	5,384	24,808	14,881	20,266
REEP: Residential Energy Efficiency (Upstream Lighting)	17,882	97,895	80,893	98,776
Residential Appliance Recycling	2,206	8,793	6,257	8,463
Residential Behavioral Savings*	0	22,368	20,264	20,264
Residential Whole House Retrofit	0	134	114	114
Low-income Energy Efficiency	2,175	13,323	9,977	12,153
Express Efficiency	9,620	32,787	33,700	43,320
Small/Medium Midstream Lighting	3,691	7,709	4,381	8,072
Small Commercial Direct Install	0	10,934	10,688	10,688
Multifamily Housing Retrofit	1,807	3,448	1,561	3,367
Commercial Efficiency	13,633	43,278	28,862	42,496
Large Midstream Lighting	1,897	6,263	5,222	7,118
Industrial Efficiency	15,841	42,223	26,571	42,412
Public Agency Partnership	11,857	31,457	19,333	31,190
Community Education	2,317	7,655	5,514	7,831
Portfolio Total	**88,310**	**353,077**	**268,218**	**356,528**

*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 PY11.

Figure 9: PYRTD Gross Demand Savings by Energy Efficiency Program

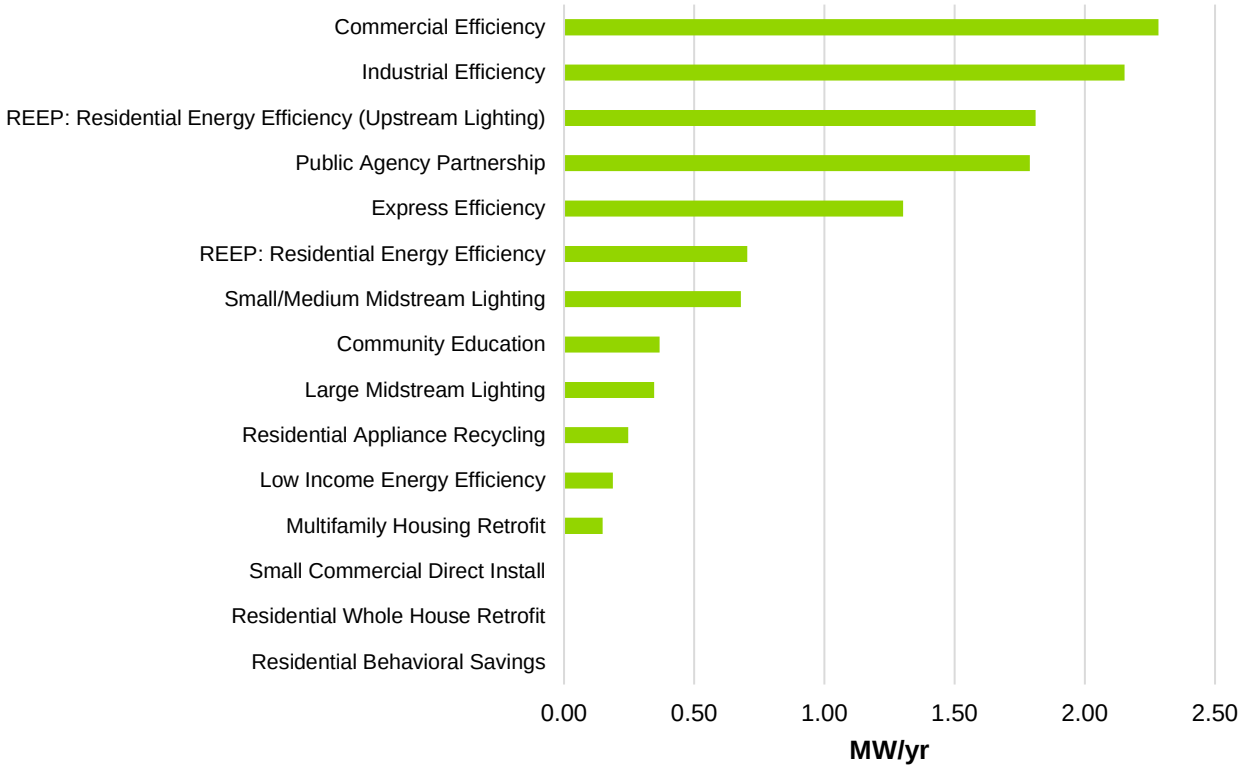
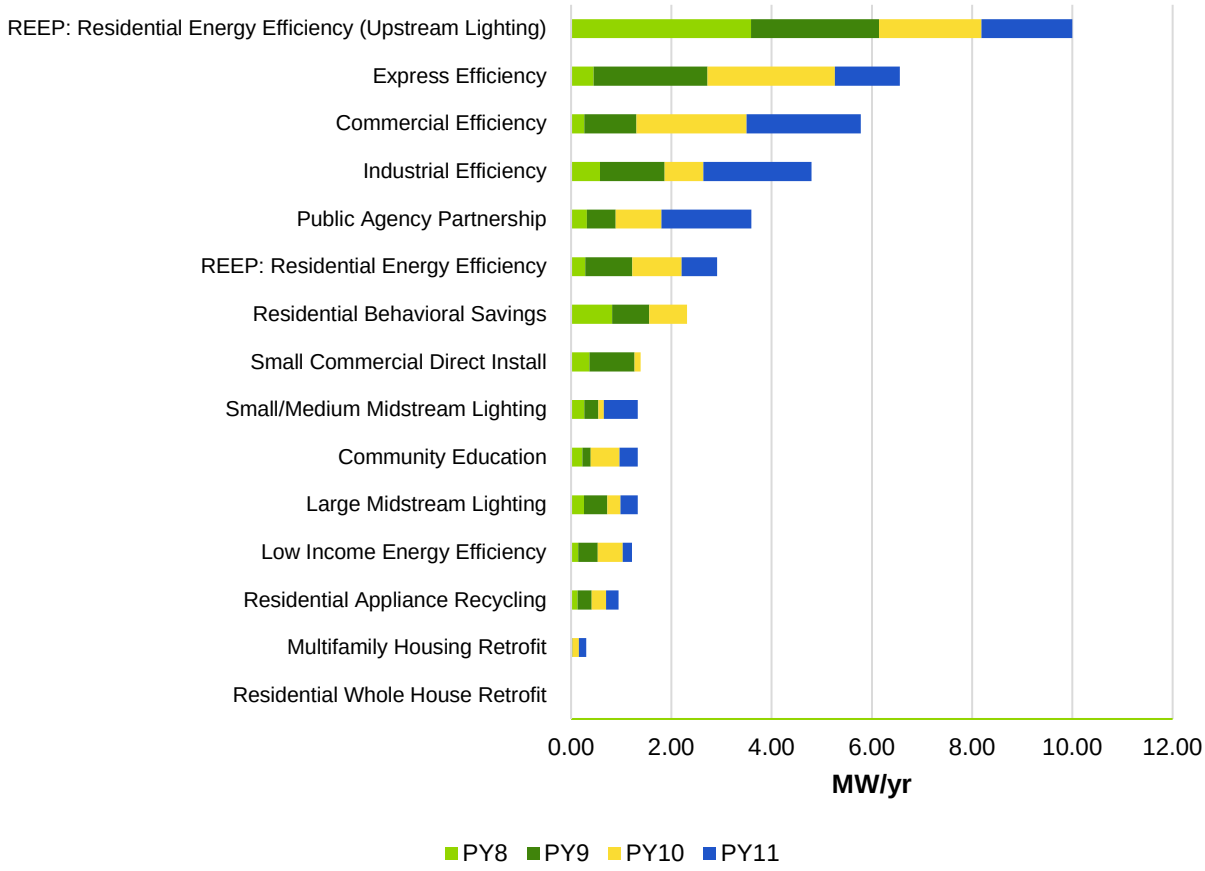


Figure 10 presents a summary of the PSA gross demand savings by energy efficiency program for Phase III of Act 129.

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	0.70	3.33	2.21	2.91
REEP: Residential Energy Efficiency (Upstream Lighting)	1.81	9.92	8.19	10.00
Residential Appliance Recycling	0.25	0.98	0.70	0.95
Residential Behavioral Savings*	0.00	2.55	2.31	2.31
Residential Whole House Retrofit	0.00	0.01	0.01	0.01
Low-Income Energy Efficiency	0.19	1.29	1.03	1.22
Express Efficiency	1.30	4.88	5.26	6.56
Small/Medium Midstream Lighting	0.68	1.34	0.65	1.33
Small Commercial Direct Install	0.00	1.36	1.39	1.39
Multifamily Housing Retrofit	0.15	0.31	0.16	0.30
Commercial Efficiency	2.28	5.76	3.50	5.78
Large Midstream Lighting	0.35	1.13	0.98	1.33
Industrial Efficiency	2.15	4.75	2.64	4.79
Public Agency Partnership	1.79	4.40	1.80	3.59
Community Education	0.37	1.31	0.96	1.33
Portfolio Total	**12.02**	**43.32**	**31.79**	**43.81**

*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: Verified Gross Demand Response Impacts by Program

Program	PYVTD Gross MW	Relative Precision (90%)	VTD Gross MW	Relative Precision (90%)
Large Curtailable Load	56.00	8.86%	55.16	5.80%
Portfolio Total	**56.00**	**8.86%**	**55.16**	**5.80%**

Source: Guidehouse

Impacts were estimated using either a CBL with an optional weather-sensitivity adjustment[11] or a regression analysis. The PY11 set of regression models includes all models from PY10 and one new model, the "base simple model." The new model was included with the goal of improving the accuracy of the resulting baseline. 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 2019 (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.

[11] 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 PY11 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[12] 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[13]	$990	$51	$2,047	$159	$3,247
Residential Appliance Recycling	$77	$41	$317	$13	$448
Residential Behavioral Savings	$0	$41	$856	$21	$918
Residential Whole House Retrofit	$0	$41	$22	$11	$74
Low-income Energy Efficiency	$254	$42	$1,061	$62	$1,419
Express Efficiency	$607	$46	$849	$89	$1,591
Small/Medium Midstream Lighting	$212	$31	$191	$33	$467
Small Commercial Direct Install	$0	$15	$21	$32	$68
Multifamily Housing Retrofit	$502	$31	$521	$43	$1,097
Commercial Efficiency	$724	$32	$790	$93	$1,639
Large Midstream Lighting	$104	$32	$118	$68	$322
Industrial Efficiency	$704	$32	$1,299	$154	$2,189

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

[13] 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	$1,115	$31	$936	$86	$2,168
Community Education	$0	$8	$399	$21	$428
Large C&I Demand Response Curtailable	$824	$9	$919	$98	$1,850
Common Portfolio Costs[14]					
Portfolio Total	**$6,113**	**$483**	**$10,346**	**$983**	**$17,925**
SWE Costs[15]	**N/A**	**N/A**	**N/A**	**N/A**	**$400**
Total	**$6,113**	**$483**	**$10,346**	**$983**	**$18,325**

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[16]	$5,044	$506	$9,428	$489	$15,467
Residential Appliance Recycling	$298	$140	$1,209	$43	$1,690
Residential Behavioral Savings	$0	$157	$1,371	$65	$1,593
Residential Whole House Retrofit	$0	$154	$252	$38	$444
Low-income Energy Efficiency	$887	$224	$3,089	$199	$4,399
Express Efficiency	$2,228	$641	$2,688	$306	$5,863
Small/Medium Midstream Lighting	$500	$151	$379	$96	$1,126
Small Commercial Direct Install	$0	$152	$3,005	$138	$3,295
Multifamily Housing Retrofit	$874	$167	$1,182	$140	$2,363

[14] Common Portfolio Costs include costs associated with program tracking data management, support (legal, IT), and portfolio level marketing.

[15] Statewide Evaluation costs are outside of the 2% spending cap

[16] 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	$2,401	$229	$2,846	$301	$5,777
Large Midstream Lighting	$460	$200	$745	$219	$1,624
Industrial Efficiency	$1,856	$303	$3,445	$498	$6,102
Public Agency Partnership	$2,269	$214	$2,860	$276	$5,619
Community Education	$428	$57	$1,116	$65	$1,666
Large C&I Demand Response Curtailable	$2,435	$154	$3,111	$318	$6,018
Common Portfolio Costs[17]					
Portfolio Total	**$19,680**	**$3,449**	**$36,726**	**$3,191**	**$63,046**
SWE Costs[18]	**N/A**	**N/A**	**N/A**	**N/A**	**$1,505**
Total	**$19,680**	**$3,449**	**$36,726**	**$3,191**	**$64,551**

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 PY11 will be presented in the final annual report to the PA PUC due February 15, 2021 (90 day delay from the original November 15, 2020 reporting deadline) 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 five customer sectors[19] 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

[17] Common Portfolio Costs include costs associated with program tracking data management, support (legal, IT), and portfolio level marketing.

[18] Statewide Evaluation costs are outside of the 2% spending cap.

[19] Please note that effective June 1, 2020, Duquesne Light has implemented a combined surcharge for Small & Medium Commercial and Small & Medium Industrial customers. Docket No. M-2015-2515375, *Petition of Duquesne Light Company for Approval of a Modification to its Revised Act 129 Phase III Energy Efficiency and Conservation Plan,* Order entered March 12, 2020. Therefore, future program years will indicate four customer sectors instead of five.

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[20]

Cost Recovery Sector	Rate Classes Included	PYTD Spending ($1,000)	P3TD Spending ($1,000)
Residential	RS, RH, RA	$6,211	$24,076
Small/Medium Commercial	GS, GM, GMH	$3,168	$12,913
Small/Medium Industrial	GM, GMH	$646	$2,074
Large Commercial	GL, GLH, L	$4,505	$13,358
Large Industrial	GL, GLH, L, HVPS	$3,795	$12,530
Portfolio Total		**$18,325**	**$64,951**

Source: Duquesne Light

[20] Includes SWE costs.