Duquesne Light
Our Energy...Your Power

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VIA OVERNIGHT MAIL

November 15, 2012

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120

RE: Energy Efficiency and Conservation Program
Petition of Duquesne Light Company for Approval of its
Energy Efficiency and Conservation and Demand Response Plan
Docket Nos.: M-2008-2069887 and M-2009-2093217

Dear Secretary Chiavetta:

Please find enclosed for filing the original and three copies of Duquesne Light Company's final Annual Report for its Energy Efficiency and Conservation Demand Response Plan for the program year ending May 31, 2012.

Sincerely,

Tishekia Williams /pg

Tishekia Williams
Senior Counsel
Duquesne Light Company

TW/pg

Enclosure

cc: Certificate of Service
Office of Consumer Advocate
Office of Small Business Advocate
Bureau of Investigation and Enforcement

Final Annual Report
to the
Pennsylvania Public Utility Commission

For the Period
June 2011 through May 2012
Program Year 3

For Pennsylvania Act 129 of 2008
Energy Efficiency and Conservation Plan

Prepared by Navigant Consulting, Inc.

For

Duquesne Light

November 15, 2012

Table of Contents

Acronyms

C&I	Commercial and Industrial
CATI	Computer-Aided Telephone Interview
CFL	Compact Fluorescent Lamp
CPITD	Cumulative Program/Portfolio Inception to Date
CPITD-Q	Cumulative Program/Portfolio Inception through Current Quarter
CSP	Conservation Service Provider or Curtailment Service Provider
CVR	Conservation Voltage Reduction
CVRf	Conservation Voltage Reduction factor
DLC	Direct Load Control
DR	Demand Response
EDC	Electric Distribution Company
EE&C	Energy Efficiency and Conservation
EM&V	Evaluation, Measurement, and Verification
GNI	Government, Non-Profit, Institutional
HVAC	Heating, Ventilating, and Air Conditioning
IQ	Incremental Quarter
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light Emitting Diode
LEEP	Low-Income Energy Efficiency Program
LIURP	Low-Income Usage Reduction Program
M&V	Measurement and Verification
MW	Megawatt
MWh	Megawatt-hour
NTG	Net-to-Gross
PA PUC	Pennsylvania Public Utility Commission
PY1	Program Year 2009, from June 1, 2009 to May 31, 2010
PY2	Program Year 2010, from June 1, 2010 to May 31, 2011
PY3	Program Year 2011, from June 1, 2011 to May 31, 2012
PY4	Program Year 2012, from June 1, 2012 to May 31, 2013
PYX QX	Program Year X, Quarter X
PYTD	Program Year to Date
SEER	Seasonal Energy Efficiency Rating
SWE	Statewide Evaluator
TRC	Total Resource Cost
TRM	Technical Reference Manual

Report Definitions

Note: Definitions provided in this section are limited to terms critical to understanding values presented in this report. For other definitions, please refer to the Act 129 glossary.

REPORTING PERIODS

Cumulative Program Inception to Date (CPITD)
Refers to the period of time since the start of the Act 129 programs. CPITD is calculated by totaling all program year results, including the current program year to date results. For example, CPTID results for PY3 Q3 is the sum of PY1, PY2, PY3 Q1, PY3 Q2, and PY3 Q3 results.

Incremental Quarter (IQ)
Refers to the current reporting quarter only. Activities occurring during previous quarters are not included. For example, IQ results for PY3 Q3 will only include results that occurred during PY3 Q3 and not PY2 Q2.

Program Year to Date (PYTD)
Refers to the current reporting program year only. Activities occurring during previous program years are not included. For example, PYTD results for PY3 Q3 will only include results that occurred during PY3 Q1, PY3 Q2, and PY3 Q3. It will not include results from PY1 and PY2.

SAVINGS TYPES

Preliminary
Qualifier used in all reports except the final annual report to signify that evaluations are still in progress and that results have not been finalized. Most often used with "realization rate" or "verified gross savings".

Reported Gross
Refers to results of the program or portfolio determined by the program administrator (e.g., the EDC or the program implementer). Also known as *ex-ante*, or "before the fact" (using the annual evaluation activities as the reference point).

Verified Gross
Refers to results of the program or portfolio determined by the evaluation activities. Also known as *ex-post*, or "after the fact" (using the annual evaluation activities as the reference point).

TRC COMPONENTS[1]

Administration Costs
Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical costs.

EDC Costs
Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenditures only.

Management Costs
Includes the EDC program management, CSP program management, general management oversight and major accounts.

Participant Costs
Per the 2011 Total Resource Cost Test Order, the net participant costs are the costs for the end use customer.

Total TRC Costs
Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs and Participant Costs.

Total TRC Benefits
Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[1] All TRC definitions are subject to the 2011 Total Resource Cost Test Order.

1 Overview of Portfolio

Pennsylvania Act 129 of 2008 signed on October 15, 2008 mandated energy savings and coincident peak demand reduction goals for the largest electric distribution companies (EDCs) in Pennsylvania. Each EDC submitted energy efficiency and conservation (EE&C) plans—which were approved by the Pennsylvania Public Utility Commission (PA PUC)—pursuant to these goals. This report documents the progress and effectiveness of the EE&C accomplishments for Duquesne Light Company (DLC) in Program Year 3 (PY3), defined as June 1, 2011 through May 31, 2012, as well as the cumulative accomplishments of the programs since inception.

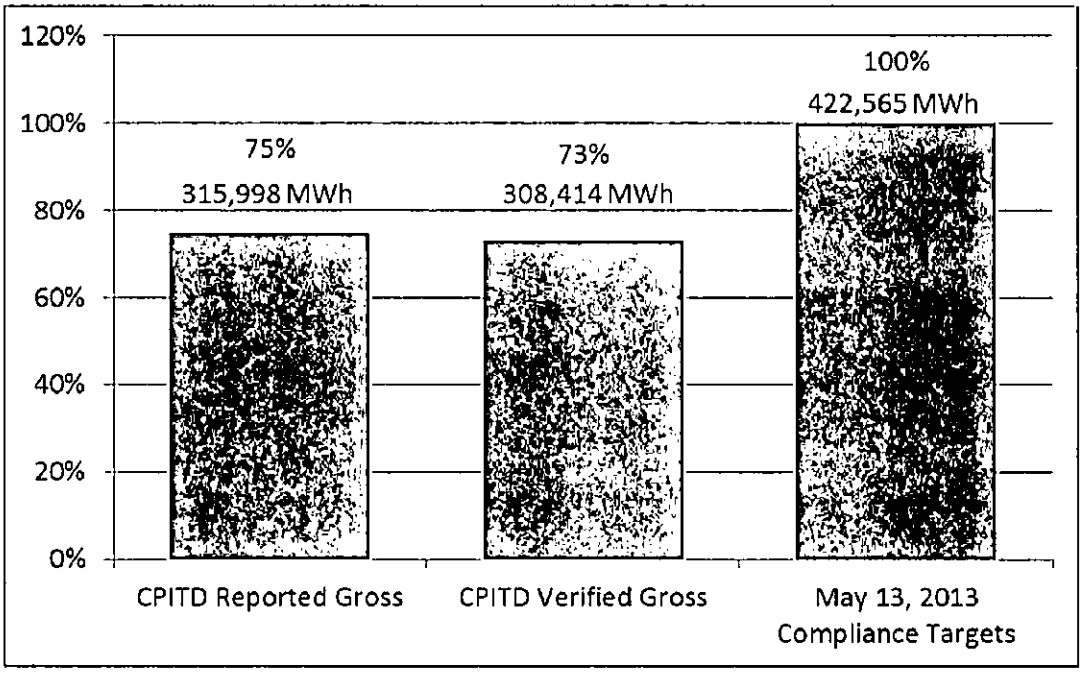
Navigant Consulting, Inc. has evaluated the programs, which included measurement and verification of the savings. The final verified savings for PY3 and the cumulative verified savings since inception of the programs are included in this final annual report.

This report is organized into two major sections. The first section provides an overview of activities for the entire portfolio. This includes summary information and portfolio level details regarding the progress towards compliance goals, energy and demand impacts, net-to-gross ratios, finances, and cost-effectiveness. The following sections include program specific details, including program updates, impact evaluation findings, and process evaluation findings.

1.1 Summary of Progress Toward Compliance Targets

The energy savings[2] compliance target for Duquesne Light is 422,565 MWh and must be achieved by May 31, 2013 per Act 129. Based on CPITD verified gross energy savings[3], DLC has achieved 73 percent of the energy savings compliance target. These figures are shown in Figure 1-1. The PUC will determine compliance using CPITD verified gross energy savings.

Figure 1-1: Portfolio CPITD Energy Savings

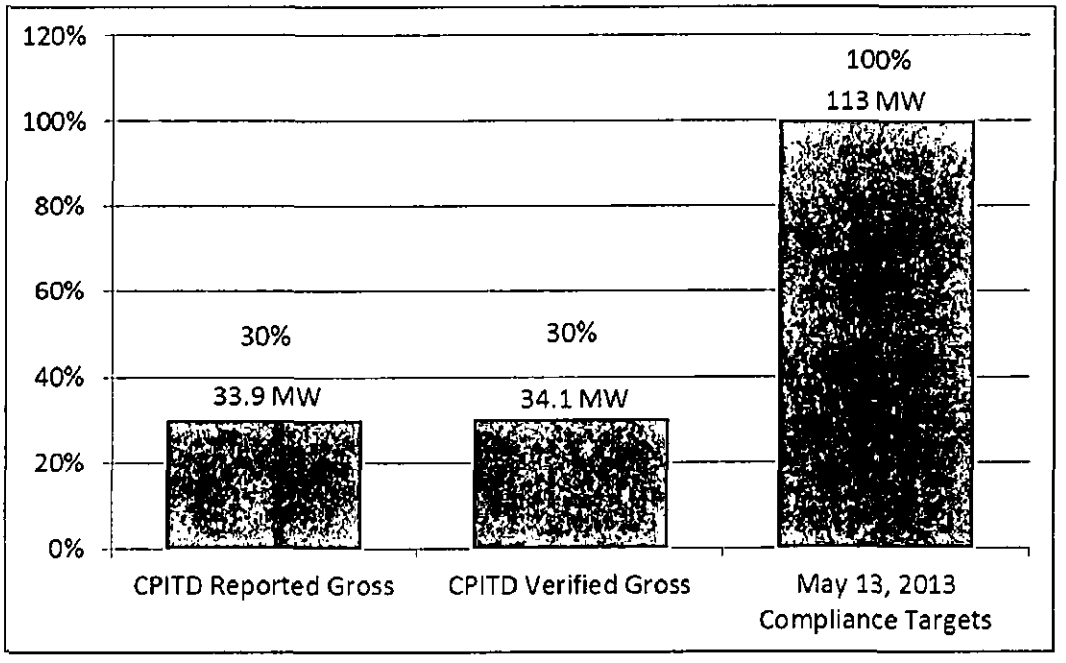


[2] Herein, energy savings refers to annualized energy savings and is measured in kWh/year or MWh/year. Energy savings are reported at the meter.

[3] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

The system peak demand reduction[4] compliance target for DLC is 113 MW per Act 129 and must be achieved by September 30, 2012. Based on CPITD verified gross demand reduction[5], DLC has achieved 30 percent of the demand reduction compliance target. These figures are shown in Figure 1-2. The PUC will determine compliance using CPITD verified gross demand reduction.

Figure 1-2: Portfolio CPITD Peak Demand Reduction



Act 129 mandates that the number of measures offered to the low-income sector be proportionate to the low-income sector's share of total energy usage.[6] There are 27 measures available to the low-income sector. The measures offered to the low-income sector therefore comprise 39 percent of the total measures offered. This exceeds the fraction of the electric consumption of the utility's low-income households divided by the total electricity consumption in the DLC territory (7.88 percent). These values are shown in Table 1-1.

[4] Herein, demand reduction refers to the EDC's system peak demand reduction in the EDC's top 100 hours of highest demand, as defined by the PA PUC and is measured in kW or MW.

[5] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

[6] Act 129 includes a provision requiring electric distribution companies to offer a number of energy conservation measures to low-income households that are "proportionate to those households' share of the total energy usage in the service territory." 66 Pa.C.S. §2806.1(b)(i)(G). The legislation contains no provisions regarding targets for participation, or energy or demand savings.

Table 1-1: Low-Income Sector Compliance Metrics

	Low-Income Sector	All Sectors	% Low-Income
# of Measures Offered	27	70	38.6%
Electric Consumption (MWh/yr)[7]	1,092,156	13,860,634	7.88%

The CPITD reported gross energy savings for low-income sector programs (excluding low-income participation in non-low-income programs) is 423.2 MWh/yr; this is 0.13 percent of the CPITD total portfolio reported gross energy savings.

Including low-income customer participation in non-low-income programs, the CPITD reported gross energy savings achieved is 24,267 MWh/yr; this is 7.68 percent of the CPITD total portfolio reported gross energy savings.

The CPITD verified gross energy savings achieved for low-income programs (excluding low-income participation in non-low-income programs) is 363 MWh/yr; this is 0.12 percent of the CPITD total portfolio verified gross energy savings.[8]

Including low-income customer participation in non-low-income programs, the CPITD reported verified energy savings achieved is 23,556 MWh/yr; this is 7.64 percent of the CPITD total portfolio verified energy savings.[9][10]

[7] Act 129 Low Income Working Group Report, Docket Number M-2009-2146801, March 2010, page 6.

[8] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

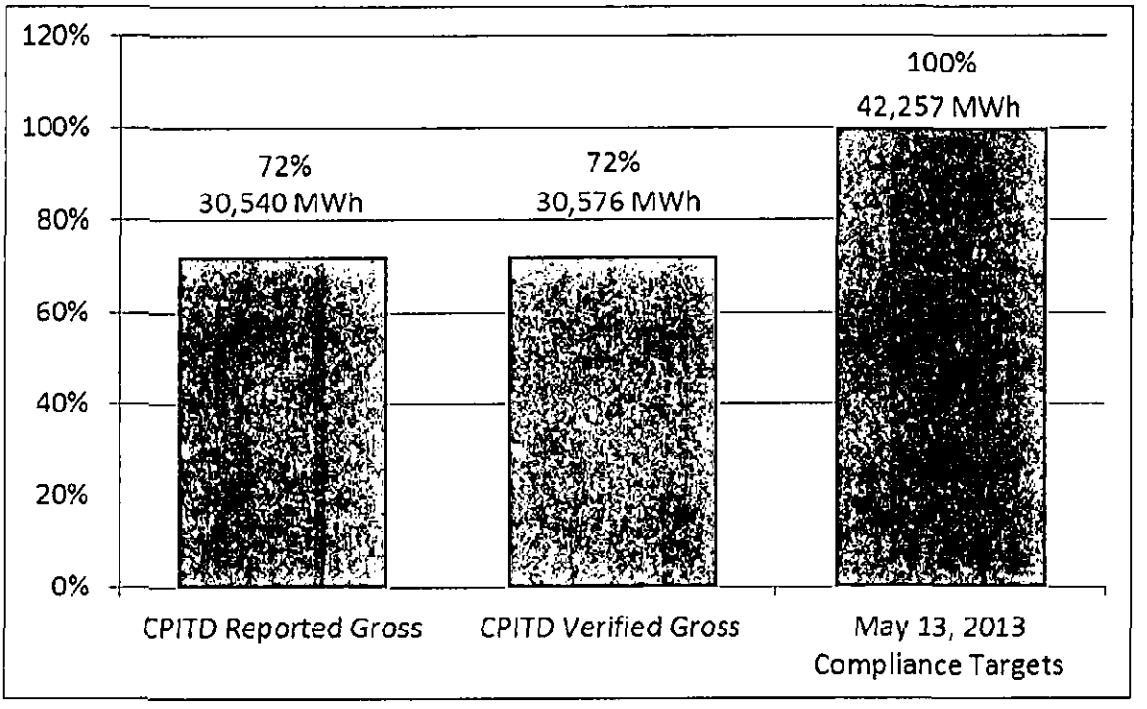
[9] The low-income program is defined such that any program activity in the REEP, RARP, or SEP program on the part of customers identified as low-income is assigned to the low-income program, including savings and costs.

[10] The estimated Total Resource Cost of low-income savings from non-low-income programs is $784,000.

Act 129 mandates that a minimum of 10 percent of the required energy and demand targets be obtained from units of federal, state and local governments, including municipalities, school districts, institutions of higher education and nonprofit entities. Herein, this group is referred to as the government, nonprofit and institutional (GNI) sector.

The energy savings compliance target for the GNI sector for DLC is 42,257 MWh/yr, which must be obtained by May 31, 2013. Based on CPITD verified gross energy savings[11], DLC achieved 72 percent of the target. These values are shown in Figure 1-3.

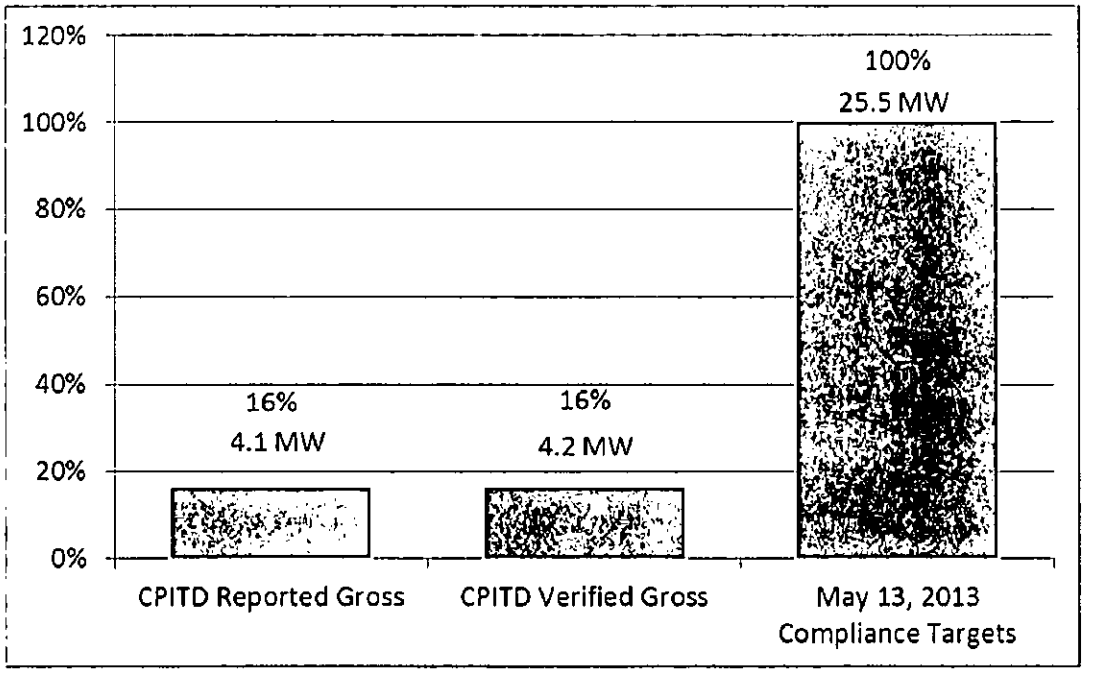
Figure 1-3: GNI CPITD Energy Savings



[11] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

The peak demand reduction compliance target for the GNI sector for DLC is 25 MW. Based on CPITD verified gross demand reduction[12], DLC achieved 16 percent of the target. These values are shown in Figure 1-4.

Figure 1-4: GNI CPITD Peak Demand Reduction

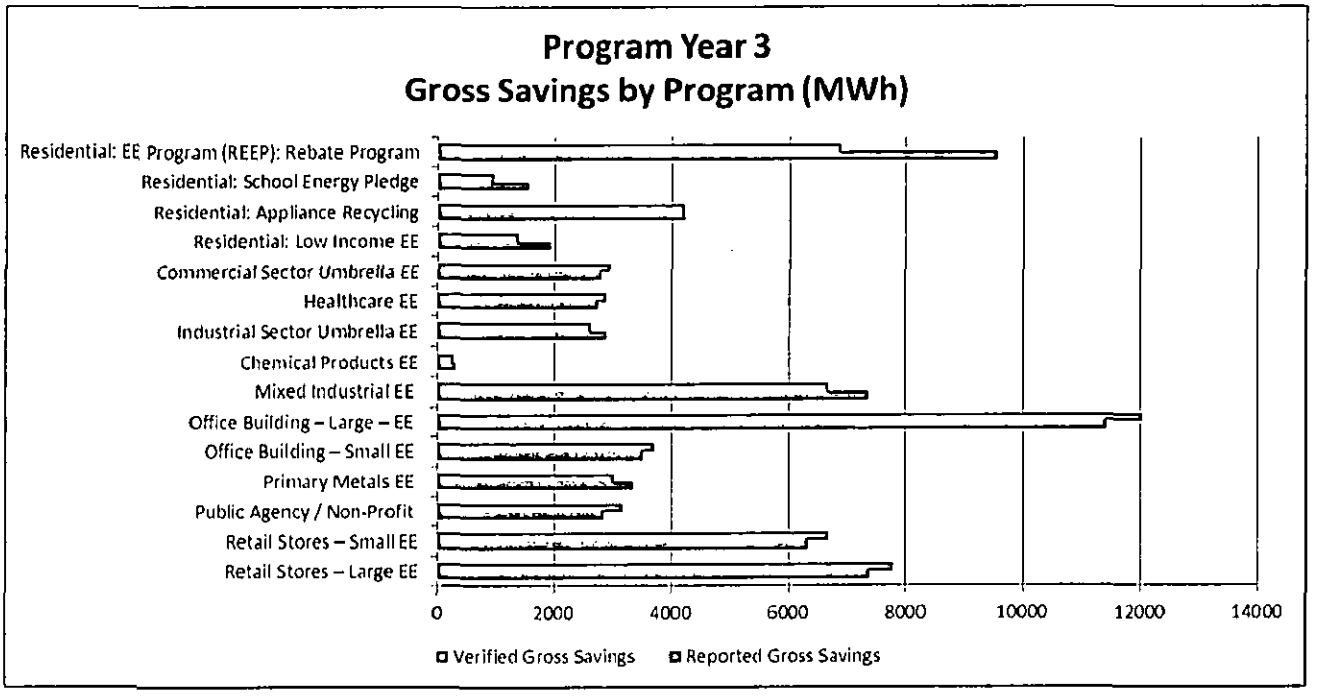


[12] See the "Report Definitions" section for an explanation of how CPITD verified gross savings are calculated.

1.2 Summary of Energy Impacts

A summary of the reported and verified energy savings by program for the program year is presented in Figure 1-5.

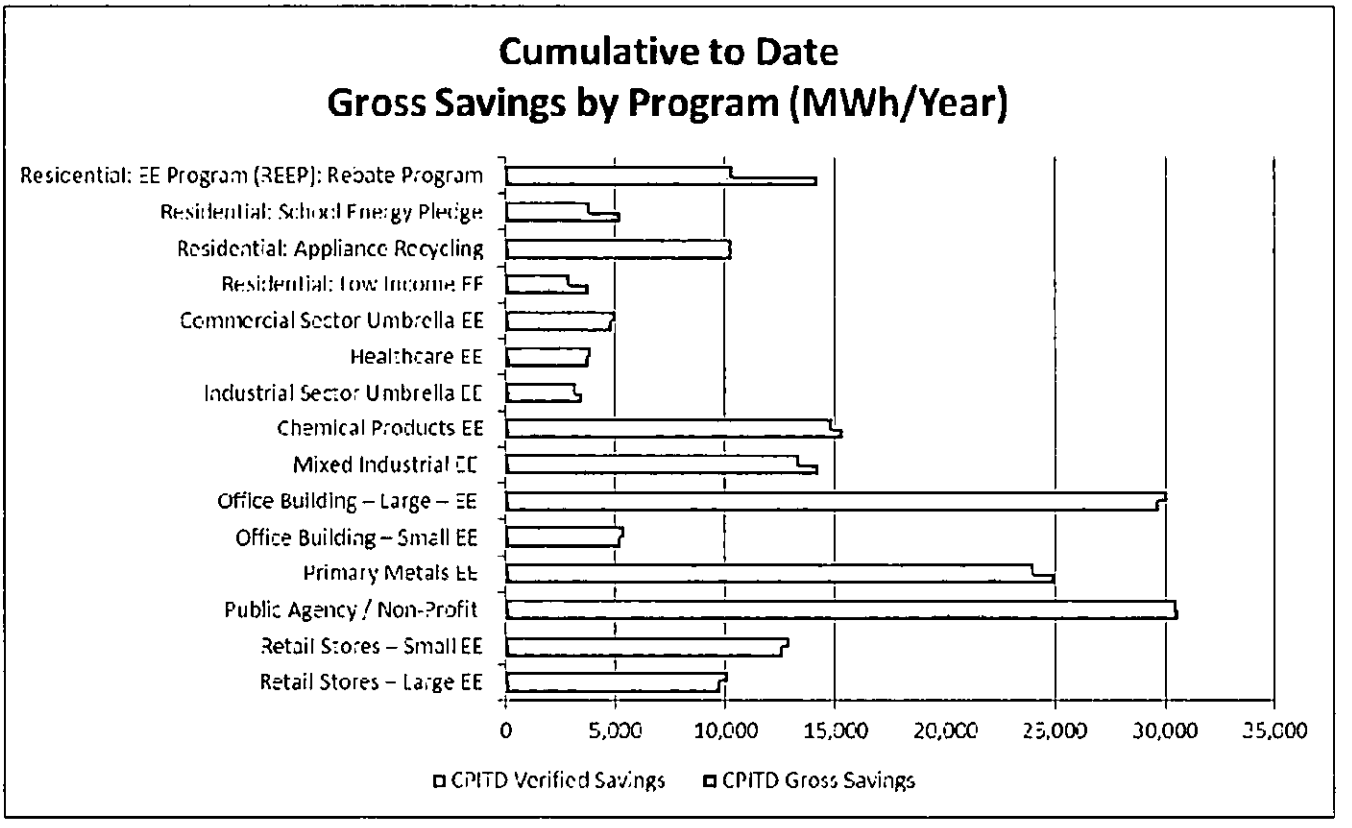
Figure 1-5: PYTD Gross Energy Savings by Program[13]



[13] Graph does not show Upstream Lighting programs, because the savings values dwarf the other programs. REEP Upstream Lighting Gross Savings are 69,351 MWh, and Verified Gross Savings are 68,657 MWh. LIEEP Upstream Lighting Gross Savings are 5,932 MWh, and Verified Gross Savings are 5,992 MWh.

A summary of the cumulative reported and verified energy savings by program is presented in Figure 1-6.

Figure 1-6: CPITD Gross Energy Savings by Program[14]



A summary of energy impacts by program through PY3 is presented in Table 1-2 and Table 1-3.

Table 1-2: EDC Reported Participation and Gross Energy Savings by Program

Program	Participants			Reported Gross Impact (MWh/Year)		
	IQ	PYTD	CPITD	IQ	PYTD	CPITD
Residential: EE Program (REEP): Rebate Program	6,743	22,757	35,933	3,228	9,560	14,202
Residential: EE Program (Upstream Lighting)	N/A	N/A	N/A	24,509	69,351	107,311
Residential: School Energy Pledge	2,017	3,764	12,860	835	1,558	5,256

[14] Graph does not show Upstream Lighting programs, because the savings values dwarf the other programs. REEP Upstream Lighting Gross Savings are 107.3 MWh, and Verified Gross Savings are 106.6 MWh. LIEEP Upstream Lighting Gross Savings are 20.5 MWh, and Verified Gross Savings are 20.6 MWh.

Program	Participants			Reported Gross Impact (MWh/Year)		
	IQ	PYTD	CPITD	IQ	PYTD	CPITD
Residential: Appliance Recycling	682	2,772	6,626	1,039	4,216	10,284
Residential: Low Income EE	1,778	4,067	7,338	793	1,932	3,763
Residential: Low Income EE (Upstream Lighting)	N/A	N/A	N/A	5,932	5,932	20,505
Commercial Sector Umbrella EE	44	83	156	1,164	2,809	4,887
Healthcare EE	4	13	22	147	2,751	3,780
Industrial Sector Umbrella EE	3	4	8	2,771	2,898	3,502
Chemical Products EE	3	3	11	54	319	15,317
Mixed Industrial EE	7	48	86	615	7,375	14,274
Office Building – Large – EE	11	47	114	3,977	11,427	29,709
Office Building – Small EE	44	116	184	1,696	3,515	5,269
Primary Metals EE	1	12	31	701	3,346	24,981
Government, Nonprofit and Institutional (GNI)	13	94	244	144	2,850	30,540
Retail Stores – Small EE	65	299	510	1,057	6,336	12,635
Retail Stores – Large EE	19	41	88	2,341	7,388	9,782
TOTAL PORTFOLIO	**11,434**	**34,120**	**64,211**	**51,003**	**143,564**	**315,998**

Table 1-3: Verified Gross Energy Savings by Program

Program	PYTD Reported Gross Energy Savings (MWh/Year)	PYTD Energy Realization Rate	PYTD Verified Gross Energy Savings (MWh/Year)	PYTD Confidence	PYTD Achieved Precision	CPITD Verified Gross Energy Savings (MWh/Year)
Residential: EE Program (REEP): Rebate Program	9,560	73%	6,979	85%	6.6%	10,508
Residential: EE Program (Upstream Lighting)	69,351	99%	68,657	N/A	N/A	106,611
Residential: School Energy Pledge	1,558	63%	982	85%	9.0%	3,920
Residential: Appliance Recycling	4,216	100%	4,216	85%	1.9%	10,271
Residential: Low Income EE	1,932	73%	1,411	85%	6.2%	2,995
Residential: Low Income EE (Upstream Lighting)	5,932	101%	5,992	N/A	N/A	20,561
Commercial Sector Umbrella EE	2,809	105%	2,950	85%	2.8%	5,003

Program	PYTD Reported Gross Energy Savings (MWh/Year)	PYTD Energy Realization Rate	PYTD Verified Gross Energy Savings (MWh/Year)	PYTD Confidence	PYTD Achieved Precision	CPITD Verified Gross Energy Savings (MWh/Year)
Healthcare EE	2,751	105%	2,889	85%	2.8%	3,905
Industrial Sector Umbrella EE	2,898	91%	2,638	85%	3.7%	3,224
Chemical Products EE	319	91%	290	85%	3.7%	14,869
Mixed Industrial EE	7,375	91%	6,711	85%	3.7%	13,417
Office Building – Large – EE	11,427	105%	11,988	85%	2.8%	30,059
Office Building – Small EE	3,515	105%	3,691	85%	2.8%	5,424
Primary Metals EE	3,346	91%	3,045	85%	3.7%	24,074
Government, Nonprofit and Institutional (GNI)	2,850	113%	3,220	85%	8.0%	30,576
Retail Stores – Small EE	6,336	105%	6,653	85%	2.8%	12,876
Retail Stores – Large EE	7,388	105%	7,757	85%	2.8%	10,123
TOTAL PORTFOLIO	**143,564**	**98%**	**140,078**	**90%**	**1.01%**	**308,414**

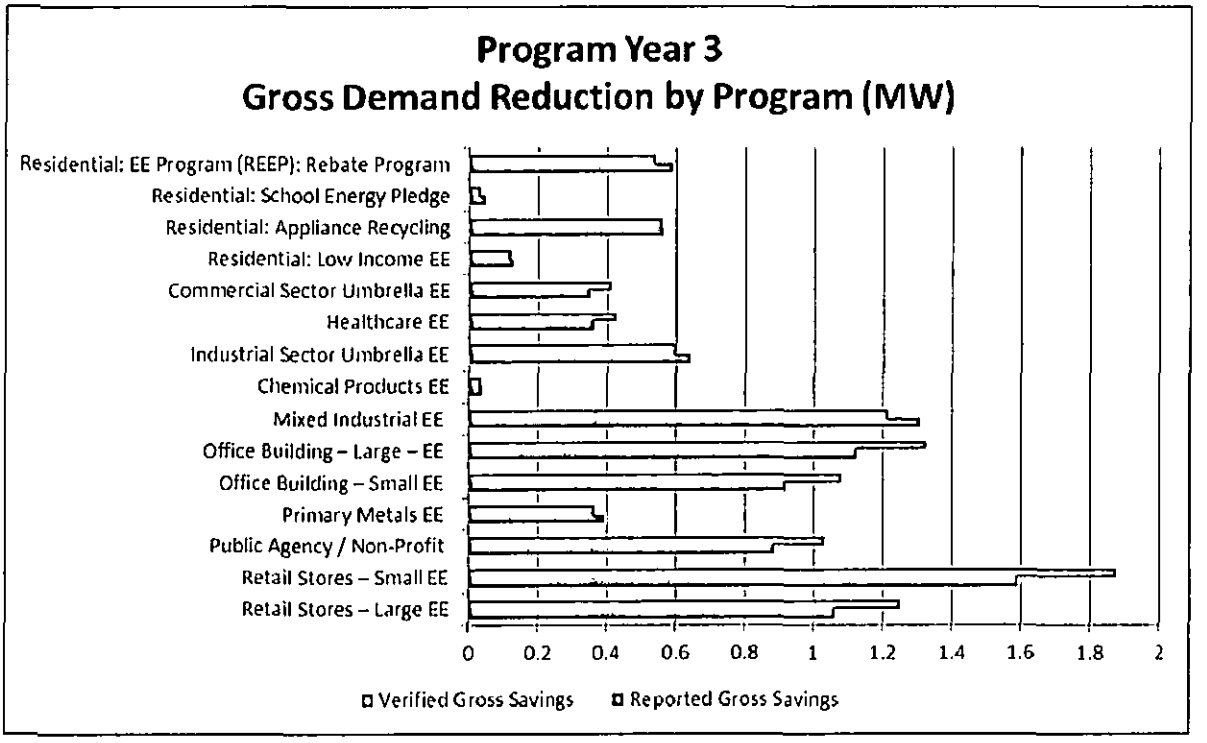
NOTES:

1. Verification of savings for one project in the Industrial Sector Umbrella Program will continue until sufficient data have been collected to provide a reliable result. The verification results for this project are NOT included in this table, but will be included in future reporting for this program. PY3 realization rate and confidence and precision values for results should be considered preliminary for this program.
2. A minimum 85% confidence with 15% precision was targeted at the program group level, as approved by the Statewide Evaluator in the Duquesne PY3 sampling plan. These program groups include Residential Energy Efficiency Program (excluding Upstream Lighting component), Residential School Energy Pledge, Residential Appliance Recycling Program, Residential Low-Income Energy Efficiency Program (including Upstream Lighting component), Commercial program and Industrial program.

1.3 Summary of Demand Impacts

A summary of the reported and verified demand reduction by program for the program year is presented in Figure 1-7. The impacts below reflect a line loss factor of 6.9 percent.

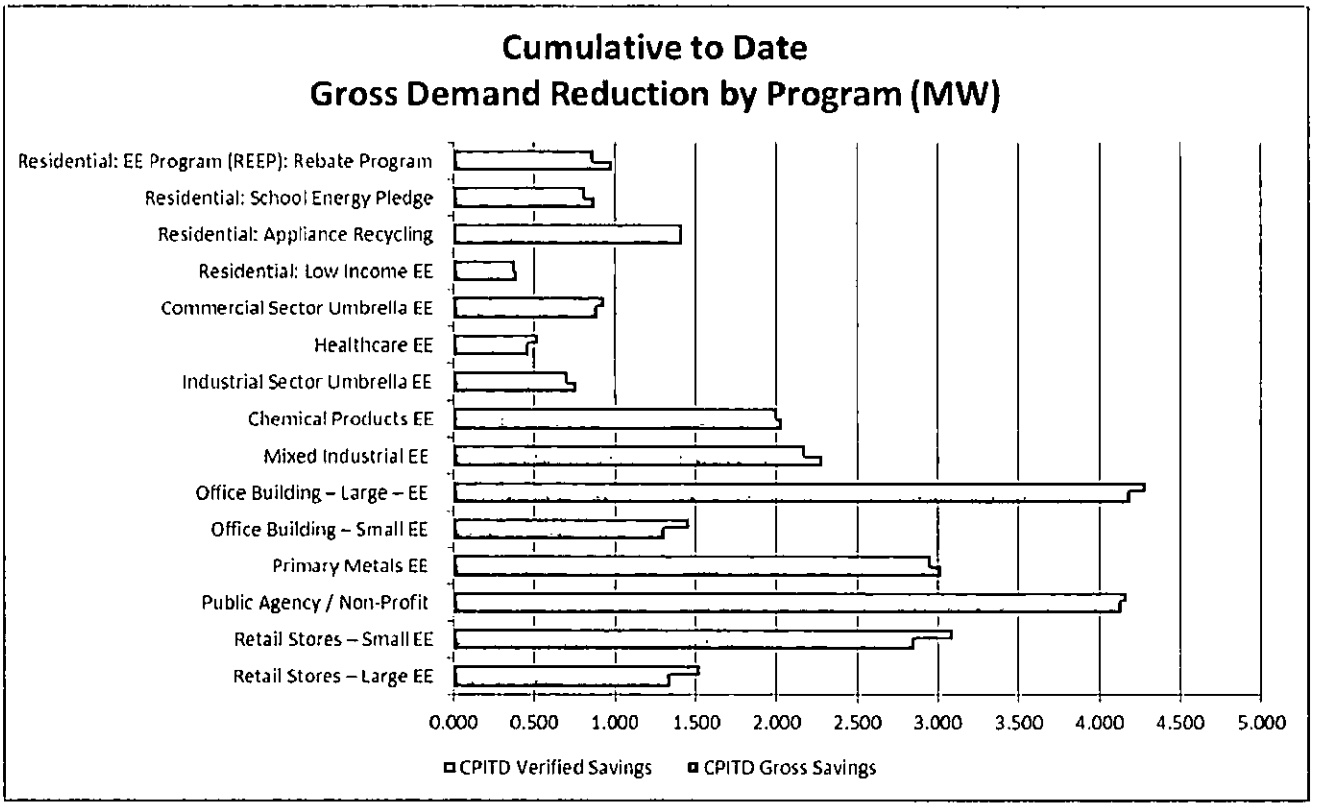
Figure 1-7: PYTD Reported Demand Reduction by Program[15]



[15] Graph does not show Upstream Lighting programs, because the savings values dwarf the other programs. REEP Upstream Lighting Gross Savings are 3.44 MW, and Verified Gross Savings are 3.37 MW. LIEEP Upstream Lighting Gross Savings are 0.30 MW, and Verified Gross Savings are 0.29 MW.

A summary of the cumulative reported and verified demand reduction by program is presented in Figure 1-8.

Figure 1-8: CPITD Reported Demand Reduction by Program[16]



A summary of demand reduction impacts by program through PY3 is presented in Table 1-4 and Table 1-5.

Table 1-4: EDC Reported Participation and Gross Demand Reduction by Program

	Participants			Reported Gross Impact (MW/Year)		
Program	IQ	PYTD	CPITD	IQ	PYTD	CPITD
Residential: EE Program (REEP): Rebate Program	6,743	22,757	35,933	0.190	0.588	0.978
Residential: EE Program (Upstream	N/A	N/A	N/A	1.218	3.439	5.648

[16] Graph does not show Upstream Lighting programs, because the savings values dwarf the other programs. REEP Upstream Lighting Gross Savings are 5.65 MW, and Verified Gross Savings are 5.58 MW. LIEEP Upstream Lighting Gross Savings are 1.25 MW, and Verified Gross Savings are 1.14 MW.

Program	Participants			Reported Gross Impact (MW/Year)		
	IQ	PYTD	CPITD	IQ	PYTD	CPITD
Lighting)						
Residential: School Energy Pledge	2,017	3,764	12,860	0.025	0.046	0.875
Residential: Appliance Recycling	682	2,772	6,626	0.138	0.562	1.423
Residential: Low Income EE	1,778	4,067	7,338	0.340	0.126	0.394
Residential: Low Income EE (Upstream Lighting)	N/A	N/A	N/A	0.0002	0.296	1.247
Commercial Sector Umbrella EE	44	83	156	0.123	0.349	0.893
Healthcare EE	4	13	22	0.021	0.361	0.465
Industrial Sector Umbrella EE	3	4	8	0.622	0.641	0.757
Chemical Products EE	3	3	11	0.006	0.039	2.039
Mixed Industrial EE	7	48	86	0.120	1.309	2.282
Office Building – Large – EE	11	47	114	0.440	1.125	4.192
Office Building – Small EE	44	116	184	0.391	0.918	1.307
Primary Metals EE	1	12	31	0.089	0.393	3.020
Government, Nonprofit and Institutional (GNI)	13	94	244	0.034	0.884	4.135
Retail Stores – Small EE	65	299	510	0.223	1.591	2.851
Retail Stores – Large EE	19	41	88	0.234	1.062	1.345
TOTAL PORTFOLIO	11,434	34,120	64,211	4.213	13.730	33.851

Table 1-5: PYTD Verified Gross Demand Reduction by Program

Program	PYTD Reported Gross Energy Savings (MW/Year)	PYTD Energy Realization Rate	PYTD Verified Gross Energy Savings (MW/Year)	PYTD Confidence	PYTD Achieved Precision	CPITD Verified Gross Energy Savings (MW/Year)
Residential: EE Program (REEP): Rebate Program	0.588	92%	0.541	85%	6.7%	0.864
Residential: EE Program (Upstream Lighting)	3.439	98%	3.370	N/A	N/A	5.578
Residential: School Energy Pledge	0.046	67%	0.031	85%	10.3%	0.818
Residential: Appliance Recycling	0.562	100%	0.562	85%	1.9%	1.421
Residential: Low Income EE	0.126	98%	0.124	85%	6.2%	0.383
Residential: Low Income EE	0.296	99%	0.293	N/A	N/A	1.141

Program	PYTD Reported Gross Energy Savings (MW/Year)	PYTD Energy Realization Rate	PYTD Verified Gross Energy Savings (MW/Year)	PYTD Confidence	PYTD Achieved Precision	CPITD Verified Gross Energy Savings (MW/Year)
(Upstream Lighting)						
Commercial Sector Umbrella EE	0.349	118%	0.412	85%	8.8%	0.937
Healthcare EE	0.361	118%	0.426	85%	8.8%	0.527
Industrial Sector Umbrella EE	0.641	93%	0.507	85%	3.6%	0.711
Chemical Products EE	0.039	93%	0.031	85%	3.6%	2.005
Mixed Industrial EE	1.309	93%	1.034	85%	3.6%	2.175
Office Building – Large – EE	1.125	118%	1.327	85%	8.8%	4.288
Office Building – Small EE	0.918	118%	1.083	85%	8.8%	1.459
Primary Metals EE	0.393	93%	0.310	85%	3.6%	2.951
Government, Nonprofit and Institutional (GNI)	0.884	117%	1.035	85%	5.5%	4.173
Retail Stores – Small EE	1.591	118%	1.878	85%	8.8%	3.094
Retail Stores – Large EE	1.062	118%	1.253	85%	8.8%	1.526
TOTAL PORTFOLIO	**13.730**	**106%**	**14.216**	**90%**	**4.48%**	**34.051**

NOTES:

1. Verification of savings for one project in the Industrial Sector Umbrella Program will continue until sufficient data have been collected to provide a reliable result. The verification results for this project are NOT included in this table, but will be included in future reporting for this program. PY3 realization rate and confidence and precision values for results should be considered preliminary for this program.
2. A minimum 85% confidence with 15% precision was targeted at the program group level, as approved by the Statewide Evaluator in the Duquesne PY3 sampling plan. These program groups include Residential Energy Efficiency Program (excluding Upstream Lighting component), Residential School Energy Pledge, Residential Appliance Recycling Program, Residential Low-Income Energy Efficiency Program (including Upstream Lighting component), Commercial program and Industrial program.

1.4 Summary of PY3 Net to Gross Ratios

Per the 2011 TRC Order, EDCs are required to conduct Net-to-Gross (NTG) research. NTG ratios are not applied to gross savings and are not used for compliance purposes, but are used for future program planning purposes. Table 1-6 presents a summary of NTG ratios by program.

Table 1-6: PY3 NTG Ratios by Program

Program Name	NTG Ratio PY3	NTG Categories Included[17]
REEP	76%	Free-ridership, spillover
SEP	86%	Free-ridership, spillover
RARP	67%	Free-ridership, spillover
LIEEP	74%	Free-ridership, spillover
Commercial	83%	Free-ridership, spillover
Industrial	69%	Free-ridership, spillover
PORTFOLIO		

[17] For example, free ridership, non-participant spillover, participant spillover.

1.5 Summary of Portfolio Finances and Cost-Effectiveness

A breakdown of the portfolio finances is presented in Table 1-7.

Table 1-7: Summary of Portfolio Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$2,754	$8,974	$14,813
EDC Incentives to Trade Allies	0	0	92
Subtotal EDC Incentive Costs	**2,754**	**8,974**	**14,905**
Design & Development	0	0	3,481
Administration[1]	0	0	0
Management[2]	3,085	12,188	18,756
Marketing[3]	229	926	1,650
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**3,314**	**13,114**	**23,887**
EDC Evaluation Costs	213	874	1,329
SWE Audit Costs	350	850	1,642
Total EDC Costs[4]	6,631	23,812	41,763
Participant Costs[5]		16,362	38,265
Total TRC Costs[6]		**29,327**	**63,719**
Total Lifetime Energy & Capacity Benefits		96,710	206,080
Total TRC Benefits[7]	**N/A**	**99,037**	**211,000**
TRC Ratio[8]	**N/A**	**3.38**	**3.31**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs and Participant Costs.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits. Based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution

capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

1.6 Summary of Cost-Effectiveness by Program

TRC ratios are calculated by comparing the total TRC benefits and the total TRC costs. Table 1-8 shows the TRC ratios by program and other factors used in the TRC ratio calculation.

The portfolio level TRC ratio for PY3 is 3.38, indicating that the total TRC benefits exceed TRC costs and the portfolio is cost effective. The TRC costs include costs for all programs even if they are not yet generating savings. The total TRC benefits consist of avoided energy and capacity costs, as well as avoided costs associated with purchasing incandescent lighting. The avoided energy and capacity benefit is based on total gross reported savings, which are then adjusted for verified savings and increased based on a line loss percentage of 6.9%. The discount rate used is Duquense weighted average cost of capital (WACC) of 6.9%. Out of the 14 Act 129 energy efficiency programs in market in PY3, two programs are not individually cost effective: Chemical Products and Public Agency and Non-Profit (i.e., Government/Non-profit/Institutional). However, on a CPITD basis both of these programs are cost effective, with TRC ratios of 2.52 and 2.34, respectively.

Table 1-8: PYTD TRC Ratios by Program

Program	TRC Benefits ($1000)	TRC Costs ($1000)	TRC Ratio	Discount Rate	Line Loss Factor
REEP	$42,772	$7,438	5.75	6.9%	6.9%
SEP	$668	$566	1.18	6.9%	6.9%
RARP	$2,491	$1,066	2.34	6.9%	6.9%
LIEEP	$4,098	$804	5.10	6.9%	6.9%
Office Building Small	$3,283	$828	3.97	6.9%	6.9%
Office Building Large	$12,089	$2,888	4.19	6.9%	6.9%
Commercial Sector Umbrella Program	$2,453	$704	3.48	6.9%	6.9%
Government/Non-Profit/Institutional	$3,119	$3,225	0.97	6.9%	6.9%
Healthcare	$2,758	$2,094	1.32	6.9%	6.9%
Industrial Sector Umbrella Program	$2,033	$1,410	1.44	6.9%	6.9%
Mixed Industrial	$6,831	$1,912	3.57	6.9%	6.9%
Primary Metals	$2,933	$2,086	1.41	6.9%	6.9%
Chemical Products	$265	$380	0.70	6.9%	6.9%
Retail	$13,246	$3,927	3.37	6.9%	6.9%
Portfolio	$99,037	$29,327	3.38	6.9%	6.9%

2 Residential Energy Efficiency Program (REEP)

The Residential Energy Efficiency Rebate Program (REEP) is designed to encourage customers to make an energy efficient choice when purchasing and installing household appliance and equipment measures by offering customers educational materials on energy efficiency options and rebate incentive offerings. Program educational materials and rebates are provided in conjunction with an online survey. REEP also provides energy efficiency measures in the form of energy efficiency kits provided free of charge to Duquesne Light customers attending targeted community outreach events.

An upstream/midstream CFL program was initiated July 2010 with several targeted area retail establishments. This program provides point of purchase discounts for customers as well as an incentive for participation by the retail store. This is a more streamlined approach to discounting and is more readily engaged by customers because no rebate forms are necessary and processing costs are significantly lower by virtue of the elimination of rebate forms at the transaction level in favor of bulk processing. In addition, events are held monthly within some of the stores to educate consumers on energy efficiency products as well as providing a platform to more broadly educate on other programs within the Watt Choices offerings.

2.1 Program Updates

A new Residential Coordinator took over management of the Residential Energy Efficiency Program in PY3Q3. No other major program updates occurred in PY3. Moderate changes to REEP offerings include adding rebates for LED lights (Upstream Lighting), removing furnace whistles from efficiency kits, and replacing LED nightlights with limelight nightlights in some kits. Additionally, ECOVA retailer promotions ramped up in Fall 2011, with monthly events at big box retailers like Lowes and Sam's Club to promote CFLs through the upstream lighting program.

2.2 Impact Evaluation Gross Savings

The Residential Energy Efficiency Program is achieving its goals. By the end of PY3, Duquesne has reported cumulative gross (CPITD) savings totaling 149% of the 81,421 MWh cumulative estimate projected for PY3 in the Energy Efficiency and Conservation (EE&C) Plan.[18]

[18] Duquesne Light, Energy Efficiency & Conservation Plan, July 1, 2009 (EE&C Plan). Note that the total Duquesne Act 129 energy savings estimate shown in this plan exceeds Duquesne's total energy savings compliance target by 35%.

Table 2-1: CPITD REEP Reported Results by Sector

Sector	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
Residential	35,933	121,514	6.63	$3,063
CPITD Total	35,933	121,514	6.63	$3,063

Program participation throughout the program year was fairly steady, though 67% of gross reported savings were acquired in the second half of the program year. Participation by quarter is shown in Table 2-2.

Table 2-2: REEP Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	6,807	10,955	0.571	211
PY3 Q2	5,461	15,440	0.797	365
PY3 Q3	3,746	24,779	1.252	712
PY3 Q4	6,743	27,737	1.408	758
PY3 Total*	22,757	78,910	4.028	2,045
CPITD Total	35,933	121,514	6.626	3,063

*Sum of quarterly figures may not match PY3 Total due to rounding.

Measurement and Verification Methodology

Consistent with Duquesne Light's EM&V Plan Sections 2.5 and 2.5.1, the basic level of verification rigor was to be used for TRM deemed savings measures and measures with rebates less than $2,000. According to that plan:

The basic level of verification rigor methods for TRM deemed measures involves two basic tasks:

- Survey a random sample of participants to verify installations and estimate verification rates.
- The claimed ex ante gross kWh and kW impacts for each PMRS record in the population from which the sample was drawn are then multiplied by this verification rate.

The verification used for TRM deemed measures consists of a six-step process:

Step 1. The verification checklist for deemed savings measures includes data downloaded from PMRS and/or taken from hardcopy documentation for each participant installation or can be obtained by telephone or on-site visit. The verification checklist for deemed savings measures includes:

1. Participant has valid utility account number
2. Measure(s) is on approved list and all parameters necessary for calculating savings are present.

3. Proof of purchase identifies qualifying measure and is dated within the period being verified.
4. Rebate payment date is in the current program period being verified (for residential rebates).
5. Unit kWh and kW are correct for each listed measure.
6. Measure was actually installed at the customer site (telephone survey for basic level of rigor).

Step 2. A simple random sample of participants is selected from the PMRS database.

Step 3. Relevant documentation for item #1 through #5 from PMRS or other hardcopy documentation is then obtained for each sampled PMRS record.

Step 4. Because all participants sampled met the criterion of having incentive payments less than $2,000, telephone interviews are conducted with each sampled customer to confirm that they participated in the program, received the rebate, and purchased and installed the efficient measure(s).

Step 5. Using the data collected from program files and telephone surveys, a verification rate (VR) was calculated. The VR was calculated by summing the verified (ex post) savings for all sampled participants, summing the reported (ex ante) savings for all sampled participants, and then dividing the total verified savings by the total reported savings. For the REEP and LIEEP programs, which involved stratification by participation type, the verification rate was calculated for each stratum.

Step 6. The final step involved multiplying each program's verification rate by the total reported savings in the program tracking system for that program, to obtain a total verified savings. For REEP, the total reported savings for each stratum in the program tracking system were multiplied by the appropriate stratum-specific verification rate.

REEP program-specific variances from the six-step approach and program-specific information are outlined below.

REEP Measurement and Verification

Step 1 – Verification Checklist: Performed as described above.

Step 2 – Random Sampling: Residential programs generally use the simple ratio estimator. The reason for using a simple ratio estimator was that the vast majority of the measures installed in this program were expected to be TRM deemed. This means that the savings are subjected to the basic level of rigor that involved only the verification of installations. The only changes to the estimated gross savings in PMRS would be due to clerical errors and installation rates, which were expected to be minor. The resulting verification rate (the ratio of the ex post savings to the ex ante savings) was therefore expected to be very high with a very low variance.

For REEP, two strata were defined: 1) efficiency kits, and 2) efficiency rebates (non-kits). This approach was used under the assumption that while installation rates might not vary very much for rebated products such as Energy Star refrigerators, it was certainly possible that installation of each item in an

efficiency kit might vary among the participants who received them. Upstream Lighting participants were not included in the sample design. Verification for this program comprised a detailed comparison of the program CSP invoices to the values shown in the Duquesne database, i.e., verification of a census of the records.

In Duquesne's PY3 Sampling Plan approved by the Statewide Evaluator, the annual sample size target for REEP was 70 – including 40 kit participants and 30 rebate participants – with a targeted level of confidence and precision of 11.3%. Table 2-3, below, presents the targeted and achieved sample sizes for the program.

Table 2-3: REEP Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
REEP Kits	Kits	19,344	0.74		40	49	Telephone verification
REEP Rebates	Rebates	3,413	0.5		30	36	Telephone verification
Program Total		22,757	n/a	85/15	70	85	

Step 3 – Measure/Project Qualification: The evaluation team reviewed and confirmed relevant documentation for check list criteria item 1 through 4 described under Step 1 of the M&V methodology, or other electronic or hardcopy documentation obtained for each sampled PMRS record.

1. Participant has a valid utility account number: All sampled participants had active Duquesne Light account numbers (these were found to be validated in PMRS via linkage to the Customer Information System).
2. Measure is on approved list: All sampled project measures were confirmed to be either listed in Duquesne Light's residential rebate catalog containing approved measures or provided by Duquesne Light in a community outreach energy efficiency kit.
3. Proof of Purchase: Select PY3 sampled rebate applications and supporting proof or purchase data were requested and reviewed to ensure proof of purchase supported the rebate request. In PY3 no exceptions were noted.

Step 4 – Deemed Savings Verification: The evaluation team compared kWh and kW savings in PMRS against estimates based on the 2011 PA TRM for the REEP program.

Savings for the measures listed below were adjusted to be consistent with deemed values and algorithms from the 2011 PA TRM.

- Compact Fluorescent Lamp: Screw-In >= 26 watts
- Compact Fluorescent Lamp: Screw-In 5-25 watts
- Energy Star Dehumidifiers
- Interior Compact Fluorescent Fixture, >= 26 watts
- Interior Compact Fluorescent Fixture, 5 - 25 watts
- Programmable Thermostat
- Whole House Fans (CAC HP Cooling)

Step 5 – Participation and Installation Verification: Telephone interviews of each sampled customer confirmed participation in the program, receipt of a rebate or EE Kit, and installation of the energy saving measure(s). If the TRM included deemed savings values and/or protocols incorporating in-service rates (ISR), verification surveys confirmed program participation and participant purchase or otherwise receipt of subject energy efficiency products (i.e., in the case of EE kits provided participants at no cost). Telephone surveys were tailored to the product promotion and included questions designed to verify participants obtained and installed the EE products. For the Upstream Lighting program component, the program administrator's invoices and related detailed documentation were reviewed to ensure that measure counts and reported savings were both accurate (per the TRM) and the same as what the utility's tracking system was reporting.

Step 6 – Program Realization Rate: The program realization rate was calculated using the verified energy and demand savings from telephone interviews, as summarized below:

A realization rate (or ratio estimate) was calculated for each REEP stratum, each of which employed a simple random sampling technique. Final realization rates and relative precision at the program group and residential portfolio level (which aggregate the strata above) were calculated using the stratified ratio estimation approach, following the method outline in Lohr (1999)[19]. Aggregation of the variance of each stratum (calculated depending on the assumed distribution type) is also calculated per Lohr (1999).

Note that, per Duquesne's approved EM&V Plan, no customer-based verification efforts were required to estimate in-service/installation rate or product leakage for the Upstream Lighting Program. Verification efforts consisted only of confirming that energy and demand savings reported in Duquesne's PMRS (tracking system) could be documented based on invoicing details provided by the program implementation contractor, ECOVA (formerly ECOS), with respect to numbers of units, wattages and savings claims. As a result of using this approach, a verification of every database line item (a census approach) was conducted for upstream lighting, resulting in effectively zero *sampling uncertainty*[20] for

[19] Lohr, Sharon. *Sampling: Design and Analysis*. Pacific Grove, CA: Duxbury Press, 1999, 69-101.

[20] Of course, other sources of uncertainty exist beyond *sampling* uncertainty. For instance, uncertainty of actual savings for each CFL exists due to variance in operating hours, assumed baseline wattage, etc. As the approved

these strata. As upstream lighting accounts for a large fraction of total residential savings, the result of this approach is such that the relative precision calculated for the residential sector was found to be very low. These results are shown in Table 2-4 and Table 2-5.

Table 2-4: PY3 REEP Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings (MWh)	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings (MWh)
REEP Kits	8,884	71%	0.39	7.3%	6,308
REEP Rebates	676	98%	0.17	2.8%	662
REEP Upstream Lighting	69,351	99%	0.05	N/A	68,657
Program Total	78,911	96%	0.30	0.6%	75,627

Table 2-5: PY3 REEP Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction (MW)	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction (MW)
REEP Kits	0.48	90%	0.55	11.1%	0.43
REEP Rebates	0.11	100%	0.17	0.3%	0.11
REEP Upstream Lighting	3.44	98%	0.05	N/A	3.37
Program Total	4.03	97%	0.38	1.2%	3.91

2.3 Impact Evaluation Net Savings

Free Ridership

The free ridership estimates presented below provide an estimation of the extent to which participants would have installed the equipment they received through the program on their own. The estimation of the net-to-gross factor was completed separately for the rebate participants and the efficiency kit participants. The steps taken to evaluate the free ridership for the installation of items received in the efficiency kits through the REEP program are as follows:

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evaluation technique used *deemed* values for CFL savings, however, that uncertainty is not reflected in the reported relative precision for these measures.

1. A free ridership percentage was estimated for each respondent who completed a survey. The percentage was based on the respondent's responses to a series of key survey questions:
    a. Did the respondent have previous plans to purchase any of the items provided in the efficiency kits?
    b. What would participants have purchased in the absence of the program?
    c. Likelihood that respondent would have purchased the items in the absence of the program?
    d. How many would the respondent have purchased in absence of the program?
    e. When would the participant have made their purchase if not for the program?
2. In estimating free ridership for this program, we made the following assumptions regarding survey responses and participant actions:
    a. Respondents who indicated that they did not have plans to purchase any of the equipment prior to participation or individuals who indicated that they would have been not very or not at all likely to purchase the equipment without the program, or respondents who indicated they would have purchased kit items more than a year later were assumed to be 0% free riders.
    b. Individuals who indicated that they had previous plans to purchase all of the equipment, would have purchased the same equipment at the same time without the program and would have been extremely likely to do so in absence of the program were assigned a 100% free ridership.
    c. All other respondents were assigned a free ridership between 0 and 100 percent depending on the amount of equipment they planned to purchase and the likelihood that they would have made those purchases in the absence of the program.

The calculated free ridership values were scaled based on the savings achieved by each item individuals indicated they would have been likely to purchase and install without the program. Table 2-6: below shows the methodology applied in the derivation of the free ridership percentages for each respondent who received an efficiency kit.

Using the type of judgmental Free Rider Probability Assessment approach described in the National Action Plan for Energy Efficiency,[21] Navigant developed an algorithm for determining a free ridership fraction/percentage for each surveyed respondent. This algorithm is shown below in Table 2-6.

[21] National Action Plan for Energy Efficiency (2007). Model Energy Efficiency Program Impact Evaluation Guide. Prepared by Steven R. Schiller, Schiller Consulting, Inc. <www.epa.gov/eeactionplan>

Table 2-6: REEP Efficiency Kit Free Ridership Methodology

FR	Previous Plans to purchase any of the items received?	What would you have purchased in absence of program?	Likelihood of purchasing each item in absence of program	How Many to Purchase?	When would you have purchased the items?
100%	Y	Same Items	Extremely	More than or equal to	Same time
90%	Y	Same Items	Extremely	More than or equal to	Don't know
80%	Y	Same Items	Extremely or Very Likely	More than or equal to	2-6 months later
	Y	Same Items	Very	More than or equal to	Same time or 1 month later
50%	Y	Some of the items (fewer)	Very	Fewer	Same time or 1 month later
	Y	Some of the items (fewer)	Extremely or Very Likely	Fewer	2-6 months later
	Y	Same Items	Somewhat Likely	More than or equal to	Same time or 1 month later
25%	Y	Some of the items	Somewhat Likely		2-6 months later
	Y				7-12 months later
0%	N or	None of the items or	Not Very or Not at all likely or		More than a year later

The overall free ridership was determined to be 22%, by taking the average free ridership for each product in the kits. The free ridership results by product are illustrated below in Table 2-7. These results indicate that, of all efficiency kit products, participants would be most likely to purchase the CFLs in the absence of the program.

Table 2-7: PY3 REEP Efficiency Kit Free Ridership Results

FR	CFL	Smart Strip	LED Nightlight	Overall
100%	3	0	1	
90%	6	1	1	
80%	8	1	4	
50%	7	3	2	
25%	4	7	5	
0%	21	35	31	
Total	**49**	**47**	**47**	
FR	***39%***	***11%***	***16%***	***22%***
NTG	***61%***	***89%***	***84%***	***78%***

Free ridership is relatively low for the efficiency kit portion of this program, but Duquesne might start to consider replacement of CFLs with LEDs or other emerging efficiency measures at some point.

The steps taken to evaluate the free ridership for the REEP Rebate purchases are as follows:

1. A free ridership percentage was estimated for each respondent who completed a survey. The percentage was based on the respondent's responses to a series of key survey questions:
   a. Did the respondent have previous plans to purchase the rebated product?
   b. How much of the product was the participant previously planning to purchase?
   c. Likelihood that respondent would have purchased the rebated item in the absence of the program?
   d. What would participants have purchased in the absence of the program?
   e. When would the participants have made the purchase in absence of the program?

f. The influence of the program in the participants decision to purchase the rebated item

2. In estimating free ridership for this program, we made the following assumptions regarding survey responses and participant actions:
    a. Respondents who indicated that they did not have plans to purchase the rebated item prior to participation in the REEP rebate program, who indicated they were not very or not at all likely to purchase without the program, would have purchased less efficient products, or would have purchased the item more than a year later were assumed to be 0% free riders.
    b. Individuals who indicated that they had previous plans to purchase the same rebated item, would have purchased the same equipment at the same time without the program, and would have been extremely likely to do so in absence of the program were assigned a 100% free ridership.
    c. All other respondents were assigned a free ridership between 0 and 100 percent depending on the amount of equipment they planned to purchase, the likelihood that they would have made those purchases in the absence of the program and the influence of the program on their decision to make the purchase.

The free ridership algorithm (methodology) and results for the REEP rebate program are shown below in Table 2-8.

Table 2-8: REEP Rebate Free Ridership Methodology and Results

FR	Previous Plan to Purchase?	How much of product?	Likelihood of purchasing in absence of program	What would be purchased without program	Timing of Purchase	Influence of Program Rating (1-10)	Count
100%	Y	More or the Same	Extremely	Same Products	Same time or Within 1 month	1 or 2	4
80%	Y	Same	Extremely	Same Products	Same time	Greater than 2	6
80%	Y		Very	Same Products	Same time or Within 1 month	1 to 3	3
50%	Y	More or the Same	Somewhat Likely	Same Products	Same time or Within 1 month	1 or 2	1
50%	Y	More or the Same	Very Likely	Same Products		5 or greater	2
50%	Y	More or the Same	Very Likely	Fewer			1
25%	Y	More or the Same	Somewhat Likely	Same Products		8 or greater	1
0%	N or	N/A	Not very or Not at all or	Less Efficient or Nothing or	Greater than 1 year or		12
						Total	***30***
						FR	***45%***
						NTG	***55%***

The REEP free ridership is estimated to be 45%, which indicates that, while the program influenced most participant decisions regarding the equipment provided/rebated, it does not seem to have been very influential for a substantial minority of participants. Note that all of the above free ridership results are based on a very limited number of participants. These apparent trends will be investigated in subsequent participant surveys.

The inverse of the free rider rate is the net-to-gross (NTG) ratio. In order to determine the total NTG ratio for REEP, the NTGs of each sub-program (kits and rebates) were weighted by the savings achieved by each measure type. The results are presented in Table 2-9 below.

Table 2-9: REEP Total Net-to-Gross Ratio

REEP Sub-program	kWh Savings	Percent of Savings	Individual NTG ratios
Kits	8,884	93%	78%
Rebates	676	7%	55%
		REEP Total NTG ratio:	76%

These results suggest the possibility that the rebate portion of the program is attracting many customers who would have purchased the same product even without the program. However, it is not clear whether this is an awareness issue or suggestive of a higher baseline efficiency for certain products than assumed in the TRM. If the former, from a program design standpoint, Duquesne should consider more aggressive marketing to residential customers, to try to increase the percentage of participants who would not have purchased the products in the absence of the program. This would likely require a comprehensive campaign reaching customers through multiple touch points so that the availability of the program becomes known throughout the territory. If an incorrect baseline is the issue, Duquesne will need to consider raising minimum efficiency levels, or de-emphasizing/eliminating rebates for certain products. A practical first step will be to conduct research with non-participants, to better understand their awareness levels of various programs, the sources through which they might most effectively be influenced, and the existing likelihood of customers to purchase higher efficiency products even outside of the program.

Spillover

In the NTG surveys administered to REEP customers, Navigant also asked whether or not the customer had taken any additional energy saving actions after participating in the Duquesne program. If the respondent had made additional energy efficiency improvements as a result of the program, these would be spillover savings. These questions were asked of both respondents who participated in the REEP Rebate program as well as those who participated in the REEP Kit program. Of the 35 REEP Rebate customers surveyed, 20 had taken any additional energy saving actions, or 57 percent of respondents. Of the 51 REEP Kit customers surveyed, 38 had taken any additional energy saving actions, or 75 percent of respondents. Navigant used deemed savings values for the top 5 reported actions for both the REEP Rebate and REEP Kit participants. In addition, the survey asked the respondent how influential the Duquesne program was on their decision to take that additional energy saving action. The resulting

savings per action is discounted by the influence rate of the program.[22] The top reported actions for the REEP Rebate and REEP Kit programs are listed in Table 2-10 and Table 2-11 below, along with their influence rate, and savings attributed to the program.

Table 2-10: Top 6 REEP Rebate Spillover Actions

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Refrigerator	1	100%	85.7	85.7	PA 2012 TRM
Added ceiling/attic/wall/basement insulation	1	80%	336.0	268.8	PA 2012 TRM
Replaced windows	1	100%	450.0	450.0	Energy Star Website
Replaced my old central air conditioner with a high efficiency central air conditioner	1	100%	431.0	431.0	PA 2012 TRM
Replaced my old furnace with a high efficiency furnace	1	100%	446.0	446.0	PA 2012 TRM
Installed a programmable thermostat	3	80%	614.3	491.4	PA 2012 TRM
Total				**3,156**	
Total Savings per Respondent	**35**			**90**	

Table 2-11: Top 5 REEP Kit Spillover Actions

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Turned off / reduced use of lights	11	60%	262.8	157.7	OPA Summer Sweepstakes
Installed compact fluorescent lights	6	30%	101.4	30.4	OPA Summer Sweepstakes
Installed motion sensors or light timers	7	30%	274.0	82.2	PA 2012 TRM
Turned off / reduced use of power to electronics	7	60%	21.3	12.8	OPA Summer Sweepstakes
Unplugged devices usually plugged into outlet	4	60%	70.2	42.1	OPA Summer Sweepstakes
Total				**2,750**	

[22] Respondents were asked on a 1 to 10 scale, how influential their participation in the program was, on their decision to take additional energy-saving actions, where 10 is extremely influential. To be conservative, any rating 1-5 was considered to have no program influence. Ratings above 5 were given influence percentages on the following scale: 6-7 = 30%, 7-8 = 60%, 9 = 80%, and 10 = 100%.

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Total Savings per Respondent	51			54	

For several behavioral actions, the deemed savings values have been drawn from the 2008 Ontario Power Authority (OPA) Summer Sweepstakes program. Navigant completed an evaluation of the OPA Summer Sweepstakes program which involved surveys with participants aimed at understanding actions taken when a participant indicated they had performed certain spillover behavior such as turned off / reduced use of lights or unplugging electronic devices from outlets. Through the surveys, Navigant collected information including number of measures installed, type of measures installed, and number of hours behavior changes were made. This information allowed Navigant to estimate savings associated with each reported action. Navigant has assumed, for the purposes of this spillover estimate, that the Duquesne population behaves similarly to the OPA population when taking spillover actions, allowing spillover estimates to be approximated (accepting the uncertainties surrounding using values established in one territory and applying them in another) and giving the program an understanding of the potential magnitude of any spillover savings. The savings values taken from the OPA Summer Sweepstakes program are not for weather-dependent measures.

The total spillover savings estimate for surveyed REEP Rebate participants is 3,156 kWh *for the top 6* spillover actions, or 90 kWh per REEP rebate program respondent. The total spillover savings for surveyed REEP Kit participants is 2,750 kWh for the top 5 spillover actions, or 54 kWh per REEP kit program respondent. While spillover for this program could me estimated through a much more rigorous process, perhaps in the context of a special spillover study, these results indicate that the REEP program raises awareness about energy efficiency and encourages customers to make additional efficiency upgrades.

2.4 Process Evaluation

The process evaluation for the REEP program group in PY3 included the following activities:

- Review of the 2011 Pennsylvania TRM
- Interviews with Duquesne program staff
- Conduct and analysis of results of selected questions included in the program participant surveys conducted during verification activities
- Review of program performance as reported in Duquesne's PMRS (DSM Tracking) system, *including review of the tracking system, itself.*

The process evaluation found the following:

- The program is quite successful and is more than meeting its savings goals, due primarily to the Upstream Lighting program. However, savings from the kit component are being achieved at a slightly higher realization rate than was evident in the PY2 (previous year's) program.

- REEP participants are highly satisfied with the program. When asked about likelihood of recommending the program to others, on a scale of 1 to 10 where 1 – "not very likely" and 10 – "extremely likely", REEP Rebate participants reported an average likelihood of 9.2. REEP Kit participants reported an average likelihood of 9.4.

- According to participant survey results, the most common ways of learning about the program were online (30 percent) and through a retail store (22 percent). Duquesne has made great progress in bolstering participation with respect to the rebate component through increased marketing at the retailer level (see below).

- During P3, Duquesne worked with the program's Upstream Lighting CSP and with retailers to promote residential rebates in their stores. These events occur at large retailers, such as Lowes and Sam's club, on a monthly basis. These events use lots of program signage and information sheets, along with special pricing. For PY4, Duquesne and ECOVA have targeted promotions in 58 major appliance stores in the Pittsburgh area to display program signage on or next to qualifying appliances.

- In PY2, Navigant recommended that Duquesne investigate the cost-effectiveness of including furnace whistles in the REEP efficiency kits going forward. In PY3, the furnace whistles were not distributed in the kits.

2.5 Financial Reporting

The Residential Energy Efficiency Program is very cost-effective. It has a high TRC ratio of 5.18, indicating that the program is successful in delivering significant energy savings at a low cost. A breakdown of the program finances is presented in Table 2-12.

Table 2-12. Summary of REEP Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$747	$2,045	$3,081
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**747**	**2,045**	**3,081**
Design & Development	0	0	541
Administration[1]	0	0	0
Management[2]	942	3,493	5,068
Marketing[3]	49	200	313
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**991**	**3,693**	**5,922**
EDC Evaluation Costs	46	189	284
SWE Audit Costs	76	184	308
Total EDC Costs[4]	1,860	6,111	9,595
Participant Costs[5]	0	3,556	6,264
Total TRC Costs[6]	**0**	**7,438**	**12,548**
Total Lifetime Energy & Capacity Benefits		40,675	61,013
Total TRC Benefits[7]	**N/A**	**42,772**	**64,965**
TRC Ratio[8]	**N/A**	**5.75**	**5.18**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent

marketing costs as per the July 2011 TRC Order.
[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

3 School Energy Pledge (SEP)

The School Energy Pledge (SEP) program is designed to teach students about energy efficiency, have them participate in a school fundraising drive, and help their families to implement energy-saving measures at home. Energy efficiency impacts take place in student homes when families adopt energy efficiency measures that students learn about at school. Through the SEP, families complete a pledge form wherein they commit to install energy efficiency measures provided in an SEP Energy Efficiency Tool Kit (SEP EE Kit) provided free of charge. In return for a family's commitment to install, the participating school receives an incentive of $25.

3.1 Program Updates

A new Residential Coordinator took over management of the School Energy Pledge Program in PY3Q3. No other major program updates occurred in PY3. A moderate change in the SEP program in PY3 was the discontinuation of Duquesne's auto dial outreach campaigns. These calls were performed by Duquesne's call center personnel to collect feedback and verify that SEP kits have been received by participants, and results were fed back to Residential Coordinator. In PY3, due to the installation of a new IT system, Duquesne's IT department did not have sufficient resources to support this effort, and it was discontinued.

3.2 Impact Evaluation Gross Savings

The School Energy Pledge Program is achieving its goals. By the end of PY3, Duquesne has reported gross savings totaling 156% of its 3,375 MWh cumulative estimate projected for PY3 in the EE&C Plan.

Table 3-1: CPITD SEP Reported Results by Sector

Sector	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
Residential	12,860	5,256	0.878	227
CPITD Total	12,860	5,256	0.878	227

In PY3, the SEP program did not have any participation until the second half of the program year. Participation by quarter is shown in Table 3-2.

Table 3-2: SEP Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	0	0	0	0
PY3 Q2	0	0	0	0
PY3 Q3	1,747	723	0.022	0
PY3 Q4	2,017	835	0.025	0
PY3 Total	3,764	1,558	0.046	0
CPITD Total	12,860	5,256	0.878	0

*Sum of quarterly figures may not match PY3 Total due to rounding.

Measurement and Verification Methodology

Consistent with Duquesne Light's EM&V Plan Sections 2.5 and 2.5.1, the basic level of verification rigor will be used for TRM deemed savings measures and measures with rebates less than $2,000. The basic level of verification rigor methods for TRM deemed measures involves two basic steps:

- Survey a random sample of participants to verify installations and estimate verification rates.
- The claimed ex ante gross kWh and kW impacts for each PMRS record in the population from which the sample was drawn are then multiplied by this verification rate.

The verification used for TRM deemed measures consists of the six-step process, described in Section 2.2. SEP program-specific variances from the six-step approach and program-specific information are outlined below.

SEP Measurement and Verification

Step 1 – Verification Checklist: Performed as described in Section 2.2.

Step 2 – Random Sampling: Residential programs generally use the simple ratio estimator. The reasons for using a simple ratio estimator were that the vast majority of the measures installed in this program are expected to be TRM deemed. This means that the savings are subjected to the basic level of rigor that involved only the verification of installations. The only changes to the estimated gross savings in PMRS would be due to clerical errors and installation rates, which were expected to be minor. The resulting verification rate (the ratio of the ex post savings to the ex ante savings) was therefore expected to be very high with a very low variance.

The sample design for the SEP Program involved the use of the simple ratio estimator. In Duquesne's PY3 Sampling Plan approved by the Statewide Evaluator, the annual sample size target for SEP was 40 participants, with a targeted level of confidence and precision of 14.1%. Table 3-3, below, presents the actual sample sizes and the precision of the estimate at 85% confidence for the program.

Table 3-3: SEP Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
SEP	n/a	3,764	0.61		40	70	Telephone verification
Program Total		3,764	0.61	85/15	40	70	

Step 3 – Measure/Project Qualification: The evaluation team reviewed and confirmed relevant documentation for check list criteria item 1 through 4 described under Step 1 from PMRS, or other electronic or hardcopy documentation obtained for each sampled PMRS record.

1. Participant has a valid utility account number: All sampled participants had active Duquesne Light account numbers (these were found to be validated in PMRS via linkage to the Customer Information System).
2. Proof of Participation: Select PY3 sampled SEP applications were requested and reviewed to ensure inclusion in the participant database. In PY3 no exceptions were noted. However, PMRS records for some of the participants showed $25 incentives, while others showed no incentive payments. The utility is in the process of resolving this issue.

Step 4 – Deemed Savings Verification: The evaluation team compared kWh and kW savings in PMRS against estimates based on the 2011 PA TRM for each measure in the School Energy Program kit.

Demand savings for 2,017 SEP kits were revised to be consistent with values calculated using the 2011 PA TRM. The demand savings in PMRS for these PY3Q4 kits did not apply the in-service rate (ISR) for light bulbs from the 2011 PA TRM.

Step 5 – Participation and Installation Verification: Telephone interviews of each sampled customer confirmed participation in the program, receipt of the SEP EE Kit, and installation of the energy saving measures. Telephone surveys are tailored to the product promotion and include questions designed to verify participants obtained the EE products.

Step 6 – Program Realization Rate: As related in M&V methodology in Section 2.2, the program realization rate is calculated using the verified energy and demand savings from telephone interviews, as summarized below:

A realization rate (or ratio estimate) was calculated for the entire SEP sample, which employed a simple random sampling technique. These results, about the same as those calculated in the PY2 evaluation, are shown in Table 3-4 and Table 3-5.

Table 3-4: PY3 SEP Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings (MWh)	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings (MWh)
SEP	1,558	63%	0.52	9.0%	982
Program Total	1,558	63%	0.52	9.0%	982

Table 3-5: PY3 SEP Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction (MW)	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction (MW)
SEP	0.046	67%	0.46	8.0%	0.031
Program Total	0.046	67%	0.46	8.0%	0.031

3.3 Impact Evaluation Net Savings

Free Ridership

The free ridership estimate for the SEP program was determined by evaluating participant's responses to several questions relating to their motivation in participating in the program. The steps taken to evaluate the free ridership for the installation of items received in the efficiency kits through the SEP program are as follows:

1. A free ridership percentage was estimated for each respondent who completed a survey. The percentage was based on the respondent's responses to a series of key survey questions:
    1. Did the respondent have previous plans to purchase any of the items provided in the efficiency kits?
    2. Number and type of items previous planned to purchase?
    3. Likelihood that respondent would have purchased the items in the absence of the program?
    4. When would the participant have purchased the items in the absence of the program?
2. In estimating free ridership for this program, we made the following assumptions regarding survey responses and participant actions:
    1. Respondents who indicated that they did not have plans to purchase any of the equipment prior to participation or individuals who indicated that they would have been not very or not at all likely to purchase the equipment without the program or would have purchased the items more than one year later were assumed to be 0% free riders.
    2. Individuals who indicated that they had previous plans to purchase all of the equipment at the same time and would have been extremely likely to do so in absence of the program were assigned a 100% free ridership.

3. All other respondents were assigned a free ridership between 0 and 100 percent depending on the amount of equipment they planned to purchase and the likelihood that they would have made those purchases in the absence of the program.

The calculated free ridership values were scaled based on the savings achieved by each item individuals indicated they would have been likely to purchase and install without the program. Table 3-6 below shows the algorithm (methodology) applied in the derivation of the free ridership percentages for each respondent.

Table 3-6: SEP Free Ridership Methodology

FR	Previous Plans to purchase any of the items received?	Quantity Planned	Likelihood of purchasing each item in absence of program	When would you have purchased the items?
100%	Y	More or same	Extremely Likely	Same time or 1 month
80%	Y	More or same	Very Likely	Within 6 months
80%	Y	More or same	Extremely	2-6 months
80%	Y	Fewer or Don't Know	Extremely or Very Likely	Same time or 1 month
50%	Y	Fewer or Don't Know	Extremely or Very Likely	2-6 months or Don't Know
50%	Y	More or same	Very or Somewhat Likely	
20%	Y	Fewer or Don't Know	Very Likely	7 to 12 months
20%	Y	Fewer or Don't Know	Somewhat Likely	
0%	Y	Fewer	Not very or not at all Likely	More than 1 year
0%	N or	N/A	N/A	More than 1 year

The overall free ridership was determined to be 14%. The free ridership results by product are illustrated below in Table 3-7. These results indicate that participants would be most likely to purchase the CFLs in the absence of the program and not at all likely to purchase the furnace whistle. The free ridership results on their own suggest that furnace whistles should always been included in the efficiency kits. However, these results have to be considered alongside the realization rates which indicate that installation rates of the furnace whistle are not as high as some of the other efficiency kit components.

Table 3-7: SEP Free Ridership Results

FR	CFL	LED	Weatherstripping	Average
100%	5	0	0	
80%	9	2	0	
80%	1	0	1	
80%	4	1	0	
50%	7	0	4	
20%	13	1	2	

FR	CFL	LED	Weatherstripping	Average
0%	31	66	63	
Total	70	70	70	
FR	32%	4%	5%	14%
NTG	68%	96%	95%	86%

Free ridership is relatively low for this program, but Duquesne might start to consider replacement of CFLs with LEDs at some point, and possibly the addition of Smart Strips or other emerging efficiency measures.

Spillover

In the NTG surveys administered to SEP customers, Navigant also asked whether or not the customer had taken any additional energy saving actions after participating in the Duquesne program. If the respondent had made additional energy efficiency improvements as a result of the program, these would be spillover savings. Of the 70 customers surveyed, 55 had taken any additional energy saving actions, or 79 percent of respondents. The top 6 reported actions for the SEP program are listed in Table 3-8 below, along with their influence rate, and savings attributed to the program.

Table 3-8: Top 6 SEP Rebate Spillover Actions

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Clothes washing machine	5	30%	142.0	42.6	PA 2012 TRM
Installed a programmable thermostat	5	30%	121.3	36.4	PA 2012 TRM
Turned off / reduced use of lights	17	60%	262.8	157.7	OPA Summer Sweepstakes
Installed compact fluorescent lights	9	30%	101.4	30.4	OPA Summer Sweepstakes
Turned off / reduced use of power to electronics	17	60%	21.3	12.8	OPA Summer Sweepstakes
Unplugged devices usually plugged into outlet	11	60%	70.2	42.1	OPA Summer Sweepstakes
Total				**4,030**	
Total Savings per Respondent	**70**			**58**	

The total spillover savings for surveyed SEP participants is 4,030 kWh for the top 6 spillover actions, or 58 kWh per SEP program respondent. These results indicate that the SEP program raises awareness about energy efficiency and encourages customers to make additional efficiency upgrades.

3.4 Process Evaluation

Process evaluations for the SEP program included the following activities:

- Review of 2011 TRM
- Interviews with Duquesne program staff
- Conduct and analysis of results of selected questions included in the program participant surveys conducted during verification activities
- Review of program performance as reported in Duquesne's PMRS (DSM Tracking) system, including review of the tracking system, itself.

The process evaluation found the following:

- The SEP program is exceeding its savings goals.
- Participant satisfaction with the program is quite high.
- 33 percent of SEP participants indicated they had already recommended the program to others.
- In the past, in order to collect feedback and verify that SEP kits have been received by participants, Duquesne has run an auto dial outreach campaign in the past. The call outs were performed by Duquesne's call center personnel and results were fed back to Residential Coordinator. This auto-dial campaign did not happen in PY3. This is due to very limited resources in the IT department to run these campaigns.
- In PY2, Navigant recommended that Duquesne investigate the cost-effectiveness of including furnace whistles in the SEP efficiency kits going forward. In PY3, the furnace whistles were still distributed in the kits, because the students received a presentation about the kit contents, and the benefit of using the furnace whistles.

3.5 Financial Reporting

The SEP Program is cost-effective. It has a TRC ratio of 1.53, indicating that the energy savings benefits the program delivers outweigh the cost of the program. A breakdown of the program finances is presented in Table 3-9.

Table 3-9. Summary of SEP Program Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$0	$0	$164
EDC Incentives to Trade Allies	0	0	92
Subtotal EDC Incentive Costs	**0**	**0**	**256**
Design & Development	0	0	372
Administration[1]	0	0	0
Management[2]	166	351	882
Marketing[3]	6	24	45
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**172**	**375**	**1,299**
EDC Evaluation Costs	6	23	43
SWE Audit Costs	9	22	46
Total EDC Costs[4]	187	420	1,644
Participant Costs[5]	0	168	346
Total TRC Costs[6]	**0**	**566**	**1,688**
Total Lifetime Energy & Capacity Benefits		642	2,515
Total TRC Benefits[7]	**N/A**	**668**	**2,589**
TRC Ratio[8]	**N/A**	**1.18**	**1.53**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent

marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

4 Residential Appliance Recycling Program (RARP)

The Residential Appliance Recycling Program (RARP) seeks to produce cost-effective, long-term, coincident peak demand reduction and annual energy savings in residential market sector by removing operable, inefficient, primary and secondary refrigerators and freezers from the power grid in an environmentally safe manner.

To stimulate participation, RARP offers incentives for eligible refrigerators ($35) and freezers ($35). In addition, the program collaborates with other utility programs such Low Income Energy Efficiency Program, the Public Agency Partnership Program and is implemented in a manner consistent with appliance recycling programs across Pennsylvania by using a common implementation contractor (JACO).

4.1 Program Updates

A new Residential Coordinator took over management of the Residential Appliance Recycling Program in PY3Q3. No other major program updates occurred in PY3. A moderate change in the RARP program in PY3 was an "oldest refrigerator contest" marketing campaign, where several EDCs partnered with JACO to run a contest from April to August. Whenever a customer recycled a refrigerator, JACO tracked the age, and the oldest refrigerator in each EDC's territory received a prize, and the oldest statewide won an additional prize. The oldest refrigerator recycled was a 1937 Frigidaire, and was recycled in the Duquesne territory.

4.2 Impact Evaluation Gross Savings

The Residential Appliance Recycling Program is achieving its goals. By the end of PY3, Duquesne has reported gross savings totaling 123% of its 8,334 MWh cumulative estimate projected for PY3 in the EE&C Plan.

Table 4-1: CPITD RARP Reported Results by Sector

Sector	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
Residential	4,216	10,284	1.426	239
CPITD Total	4,216	10,284	1.426	239

Quarter 3 had the largest participation for the RARP program in the program year, accounting for nearly 40% of PY3 RARP energy savings. Participation by quarter is shown in Table 4-2.

Table 4-2: RARP Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	540	830	0.11	20
PY3 Q2	506	776	0.10	18
PY3 Q3	1,044	1,571	0.21	37
PY3 Q4	682	1,039	0.14	24
PY3 Total	2,772	4,216	0.56	99
CPITD Total	4,216	10,284	1.426	239

*Sum of quarterly figures may not match PY3 Total due to rounding.

Measurement and Verification Methodology

Consistent with Duquesne Light's EM&V Plan Sections 2.5 and 2.5.1, the basic level of verification rigor will be used for TRM deemed savings measures and measures with rebates less than $2,000. The basic level of verification rigor methods for TRM deemed measures involves two basic steps:

- Survey a random sample of participants to verify installations and estimate verification rates.
- The claimed ex ante gross kWh and kW impacts for each PMRS record in the population from which the sample was drawn are then multiplied by this verification rate.

The verification used for TRM deemed measures consists of the six-step process, described in Section 2.2. RARP program-specific variances from the six-step approach and program-specific information are outlined below.

RARP Measurement and Verification

Step 1 – Verification Checklist: Performed as described in Section 2.2.

Step 2 – Random Sampling: Residential programs generally use the simple ratio estimator. The reasons for using a simple ratio estimator were the measure for this program is TRM deemed. This means that the savings are subjected to the basic level of rigor that involved only the verification of installations. The only changes to the estimated gross savings in PMRS would be due to clerical errors and installation rates, which were expected to be minor. The resulting verification rate (the ratio of the ex post savings to the ex ante savings) was therefore expected to be very high with a very low variance.

The sample design for the RARP Program involved the use of the simple ratio estimator. In Duquesne's PY3 Sampling Plan approved by the Statewide Evaluator, the annual sample size target for RARP was 25 participants, with a targeted level of confidence and precision of 12.7%. Table 4-3, below, presents the actual sample sizes and the precision of the estimate at 85% confidence for the program.

Table 4-3: RARP Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
RARP	n/a	2,772	0.50		25	108	Telephone verification
Program Total		2,772	0.50	85/15	25	108	

More samples were achieved because Navigant wanted to refine estimates about the distribution of refrigerators and freezers recycled and replaced with Energy Star units vs. non-Energy Star units for future reporting.

Step 3 – Measure/Project Qualification: The evaluation team reviewed and confirmed relevant documentation for check list criteria item 1 through 4 described under Step 1 from PMRS, or other electronic or hardcopy documentation obtained for each sampled PMRS record.

1. Participant has a valid utility account number: All sampled participants had active Duquesne Light account numbers (these were found to be validated in PMRS via linkage to the Customer Information System).
2. Proof of Participation: Select PY3 sampled RARP applications were requested and reviewed to ensure inclusion in the participant database. In PY3 no exceptions were noted.

Step 4 – Deemed Savings Verification: All energy efficiency measures delivered by the RARP have deemed savings specified in the 2011 TRM. The TRM provides a value of 1,659 kWh for refrigerators/freezers that have been retired and a value of 1,205 kWh for refrigerators/freezers that have been retired and replaced with ENERGY STAR appliances.[23] A separate Interim Measure Resolution specified that the savings to be deemed for recycled refrigerators/freezers replaced with standard (non-Energy Star) refrigerators/freezers should be 1,091 kWh and 0.1353 kW. Under the TRM Refrigerator/Freezer Recycling is treated as the one measure where the number of units is multiplied by specified savings per unit, depending on the type of replacement appliance, if any. Unit savings are defined as below:

Table 4-4: Refrigerator/Freezer Recycling – References

Component	kWh Savings	kW Savings	Coincidence Factor
Retirement	1,659	0.2057	0.62

[23] See pages 91-95 of the 2011 Technical Reference Manual at Commission Docket No. M-00051865, entered February 28, 2011.

Component	kWh Savings	kW Savings	Coincidence Factor
Replaced with Energy Star	1,205	0.1494	0.62
Replaced with Non-Energy Star	1,091	0.1353	0.62

When the refrigerator or freezer is picked up, JACO records whether the appliance is a primary or secondary unit, and whether or not it was replaced. Based on the responses to these two questions, the resulting energy and demand savings are determined. For primary refrigerators, it is assumed that every unit is replaced (100%). For secondary units, if they were not reported as replaced, they are assumed to be retired. For replaced units, data from telephone verification surveys conducted in late summer 2011 (late in PY3Q1) were used to estimate the percentage of refrigerator/freezer replacement participants who replaced their refrigerator/freezer with an Energy Star refrigerator/freezer (87%) versus a non-Energy Star refrigerator/freezer. For replacement refrigerators, Navigant used the weighted average energy savings of replacing with an Energy Star unit or a Standard unit, or (87% x 1,205 + 13% x 1,091) = 1,190 kWh. Table 4-5 shows the energy savings assigned to each participant based on the type of unit recycled and the replacement action.

Table 4-5: Refrigerator/Freezer Recycling – References

Unit	Action	Replacement Type	kWh Savings per unit	kW Savings per Unit
Primary Unit	Replace	Energy Star (87%)	(0.87 * 1,205) + (0.13 * 1,091) = 1,190	(0.87 *0.1494) + (0.13 * 0.1353) = 0.1476
		Standard (13%)		
Secondary Unit	Replace	Energy Star (87%)	1,190	0.1476
		Standard (13%)		
	Retire		1,659	0.2057

If a participant recycled a primary unit, their energy savings is 1,190 kWh and 0.1476 kW. If a participant recycled a secondary unit and said that they replaced it, their energy savings is also 1,190 kWh and 0.1476 kW. If a participant recycled a secondary unit and said that they retired it (did not replace it), their energy savings is 1,659 kWh and 0.2057 kW. A review of the JACO data determined that 997 RARP savings values in PMRS needed to be updated to assign the correct savings, according to the type of unit and its replacement.

Step 5 – Participation and Installation Verification: Telephone surveys are employed for impact verification of measures receiving basic level of rigor verification (i.e., deemed savings measures with rebates less than $2000). RARP telephone interview surveys were performed with sampled customers to confirm participation in the program (i.e., that their refrigerator/freezer was recycled through the program), as well as how many units were so removed.

Step 6 – Program Realization Rate: As related in M&V methodology in Section 2.2, the program realization rate is calculated using the verified energy and demand savings from telephone interviews, as summarized below:

A realization rate (or ratio estimate) was calculated for the entire RARP sample, which employed a simple random sampling technique. These results are shown in Table 4-6 and Table 4-7.

Table 4-6: PY3 RARP Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings (MWh)	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings (MWh)
RARP	4,216	100%	0.0	1.9%	4,216
Program Total	4,216	100%	0.0	1.9%	4,216

Table 4-7: PY3 RARP Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction (MW)	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction (MW)
RARP	0.56	100%	0.0	1.9%	0.56
Program Total	0.56	100%	0.0	1.9%	0.56

4.3 Impact Evaluation Net Savings

Free Ridership

The free ridership for the RARP program was determined by evaluating participant's responses to several questions relating to their motivation in participating in the RARP. The steps taken to evaluate the free ridership for the recycling of a fridge or freezer through the RARP were as follows:

1. A free ridership percentage was estimated for each respondent who completed a survey. The percentage was based on the respondent's responses to a series of key survey questions:
    a. Did the respondent have previous plans to dispose of the appliance?
    b. What was the main reason for disposing of the fridge or freezer?
    c. What would have been done with the appliance in the absence of the program?
    d. Would the appliance have been plugged-in in the absence of the program?
    e. Was the appliance in working condition?
2. In estimating free ridership for this program, we made the following assumptions regarding survey responses and participant actions:
    a. Respondents who indicated that they did not have plans to recycling the appliance prior to participation in the program, or listed the program rebate as their reason for recycling their appliance, or who said they would have otherwise recycled their appliance more than one year later were assumed to be 0% free riders.

b. Respondents who indicated that they had prior plans to recycle their appliance, did not list the program rebate as a reason for recycling, and said they would have recycled at the same time were assumed to be 100% free riders.

c. All other respondents were assigned a free ridership between 0 and 100 percent depending on the indication of program influence in their responses to the other questions.

Table 4-8 below shows the algorithm (methodology) applied in the derivation of the free ridership percentages for each respondent and the calculated overall free ridership for the program.

Table 4-8: RARP Free Ridership Algorithm

FR	Previous Plans to get rid of fridge/freezer	Program Reason?	Main Reason = Program?	When get rid of it?	Program Influence Rating
100%	Y	Not Program Related	Not Program Related	Same time	1
80%	Y	Not Program Related	Not Program Related	Same time	1-5
70%	Y	Not Program Related	Not Program Related	Same time	6-10
50%	Y	Not Program Related	Not Program Related	1-6 months	
20%	Y			7-12 months	
20%	Y			Don't know	6-10
0%	N or			More than one year	

The overall RARP free ridership was found to be 33%. Table 4-9 shows the free ridership by appliance: first refrigerator, second refrigerator, and first freezer.

Table 4-9: RARP Free Ridership Results

FR	First Fridge	First Freezer	Second Fridge	Overall
100%	1	1	0	
80%	5	3	0	
70%	17	7	0	
50%	9	4	0	
20%	3	0	0	
20%	8	7	0	
0%	39	3	1	
Total	**82**	**25**	**1**	
FR	**29%**	**47%**	**0%**	**33%**
NTG	**71%**	**53%**	**100%**	**67%**

The majority of the program free riders were individuals who had previous plans to get rid of their fridge or freezer and who's reason for getting rid of their appliance was not the incentive provided by

Duquesne. A significant proportion of individuals did not have previous plans to dispose of the fridge, indicating that the program is successful in driving these individuals to get rid of their old fridge or freezer. However none of the participants indicated that the main reason for getting rid of their appliance was the incentive provided by Duquesne.

Spillover

In the NTG surveys administered to RARP customers, Navigant also asked whether or not the customer had taken any additional energy saving actions after participating in the Duquesne program. If the respondent had made additional energy efficiency improvements as a result of the program, these would be spillover savings. Of the 101 customers surveyed, 30 had taken any additional energy saving actions, or 30 percent of respondents. The top 6 reported actions for the RARP program are listed in Table 4-10 below, along with their influence rate, and savings attributed to the program.

Table 4-10: Top 6 RARP Rebate Spillover Actions

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Refrigerator	3	0%	85.7	0	PA 2012 TRM
Freezer	3	0%	64.5	0	PA 2012 TRM
Clothes washing machine	3	60%	142	85.2	PA 2012 TRM
Turned off / reduced use of lights	3	80%	263	210.4	OPA Summer Sweepstakes
Installed compact fluorescent lights	8	30%	101	30.4	OPA Summer Sweepstakes
Installed LED lights	5	0%	39	0	OPA Summer Sweepstakes
Total				**1,130**	
Total Savings per Respondent	**101**			**11**	

The total spillover savings for surveyed RARP participants is 1,130 kWh for the top 6 spillover actions, or 11 kWh per program respondent. These results indicate that the RARP program somewhat raises awareness about energy efficiency and encourages customers to make additional efficiency upgrades, although to a lesser degree than other Duquesne residential programs.

4.4 Process Evaluation

Process evaluations for the RARP program included the following activities:

- Review of 2011 TRM
- Interviews with Duquesne program staff

- Conduct and analysis of results of selected questions included in from program participant surveys conducted during verification activities
- Review of program performance as reported in Duquesne's PMRS (DSM Tracking) system, including review of the tracking system, itself.

The process evaluation found the following:

- The program is quite successful and is more than meeting its savings goals.
- According to participant surveys, awareness of the program is being driven mostly by bill inserts (34 percent) or through a friend/relative/neighbor (20 percent).
- The most important reasons for choosing the program to get rid of appliances were reported to be the cash incentive (40 percent) and the convenience of the home pick up (37 percent).
- When asked about likelihood of recommending the program to others, on a scale of 1 to 10 where 1 – "not very likely" and 10 – "extremely likely", RARP participants reported an average likelihood 9.5.
- The program is marketed jointly between Duquesne and JACO. In PY3, JACO held an "oldest refrigerator contest" where several EDCs partnered with JACO to run this contest from April to August. Whenever a customer recycled a refrigerator, JACO tracked the age, and the oldest refrigerator in each EDC's territory received a prize, and the oldest statewide won an additional prize. The oldest refrigerator recycled was a 1937 Frigidaire, and was recycled in the Duquesne territory.

4.5 Financial Reporting

The Residential Appliance Recycling Program is very cost-effective. It has a high TRC ratio of 2.99, indicating that the program is successful in delivering significant energy savings at a low cost. A breakdown of the program finances is presented in Table 4-11.

Table 4-11. Summary of RARP Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$24	$99	$238
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**24**	**99**	**238**
Design & Development	0	0	97
Administration[1]	0	0	0
Management[2]	108	571	971
Marketing[3]	6	23	41
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**114**	**594**	**1,109**
EDC Evaluation Costs	5	21	37
SWE Audit Costs	9	21	40
Total EDC Costs[4]	152	735	1,424
Participant Costs[5]	0	352	699
Total TRC Costs[6]	**0**	**1,066**	**2,083**
Total Lifetime Energy & Capacity Benefits		2,491	6,229
Total TRC Benefits[7]	**N/A**	**2,491**	**6,229**
TRC Ratio[8]	**N/A**	**2.34**	**2.99**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent

marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued *at marginal cost for periods when there is a load reduction.*

[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

5 Residential Low Income Energy Efficiency Program (LIEEP)

The Low-Income Energy Efficiency Program (LIEEP) is designed as an income-qualified program providing services to assist low-income households to conserve energy and reduce electricity costs. The objective of this program is to increase qualifying customers' comfort while reducing their energy consumption, costs, and economic burden.

In PY3, the LIEEP savings by income qualifying customers were delivered by all three Residential programs: the Residential Energy Efficiency Program (REEP), the School Energy Pledge (SEP) program and the Residential Appliance Recycling Program (RARP).

Additionally, a portion of the Upstream Lighting program is allocated to the Low Income sector based on the portion of DLC's households that are low-income, i.e. 7.88% of the PY3 Upstream Lighting program savings.[24]

5.1 Program Updates

A new Residential Coordinator took over management of the Low Income Energy Efficiency Program in PY3Q3. No other major program updates occurred in PY3. A moderate change in the LIEEP program in PY3 is that the Residential Coordinator is encouraging Lowe's and Home Depot to become retail partners with Duquesne, to add an additional incentive on top of the REEP rebate (potentially $10-20 discount at the retailer to make the rebate more enticing to low-income customers). This effort is still in progress.

5.2 Impact Evaluation Gross Savings

The Low Income Energy Efficiency Program is achieving its goals. By the end of PY3, Duquesne has reported gross savings totaling 113% of its 21,468 MWh estimate in the EE&C Plan.

Table 5-1: CPITD LIEEP Reported Results by Sector

Sector	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
Low-Income	7,338	24,267	1.64	673
CPITD Total	7,338	24,267	1.64	673

[24] Act 129 Low-Income Working Group Report. Docket No. M-2009-2146801. March 19, 2010.

Quarter 4 has the largest participation for the LIEEP program in the program year, due to the portion of the Upstream Lighting program that is allocated to the Low Income sector, as discussed above. Participation by quarter is shown in Table 5-2.

Table 5-2: LIEEP Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	546	236	0.02	2
PY3 Q2	650	371	0.03	2
PY3 Q3	1,093	532	0.03	3
PY3 Q4	1,778	6,725	0.34	184
PY3 Total	4,067	7,865	0.42	191
CPITD Total	7,338	24,267	1.64	673

**Sum of quarterly figures may not match PY3 Total due to rounding.*

Measurement and Verification Methodology

Consistent with Duquesne Light's EM&V Plan Sections 2.5 and 2.5.1, the basic level of verification rigor was to be used for TRM deemed savings measures and measures with rebates less than $2,000. The basic level of verification rigor methods for TRM deemed measures involves two basic tasks:

- Survey a random sample of participants to verify installations and estimate verification rates.
- The claimed ex ante gross kWh and kW impacts for each PMRS record in the population from which the sample was drawn are then multiplied by this verification rate.

The verification used for TRM deemed measures consists of the six-step process, described in Section 2.2. LIEEP specific variances from the six-step approach and program specific information are outlined below.

LIEEP Measurement and Verification

Step 1 – Verification Checklist: Performed as described in Section 2.2.

Step 2 – Random Sampling: Because Duquesne's LIEEP was partially defined as low-income participation in the other Act 129 programs, stratification was needed by program type within LIEEP (e.g., low-income REEP rebate participants, low-income REEP kit participants, low-income RARP participants, and low-income SEP participants). The annual sample size target for LIEEP was 70 participants. Table 5-3, below, presents the actual sample sizes and the precision of the estimate at 85% confidence for the program.

Table 5-3: LIEEP Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
LI REEP Kits	Kits	2,438	0.5		20	22	Telephone verification
LI REEP Rebates	Rebates	79	0.5		10	13	Telephone verification
LI SEP	SEP	1,356	0.6		20	20	Telephone verification
LI RARP	RARP	194	0.5		20	20	Telephone verification
Program Total		4,068	n/a	85/15	70	76	

Step 3 – Measure/Project Qualification: The evaluation team reviewed and confirmed relevant documentation for check list criteria item 1 through 4 described under Step 1 from PMRS, or other hardcopy documentation obtained for each sampled PMRS record. This was done for LIEEP participants in the SEP program.

1. Participant has a valid utility account number: All sampled participants had active Duquesne Light account numbers (these were found to be validated in PMRS via linkage to the Customer Information System).
2. Proof of Participation: Select PY3 sampled SEP applications were requested and reviewed to ensure inclusion in the participant database. In PY3 no exceptions were noted.

Step 4 – Deemed Savings Verification: The evaluation team compared kWh and kW savings in PMRS against estimates based on the 2011 PA TRM for the LIEEP program.

Savings for the measures listed below were adjusted to be consistent with deemed values and algorithms from the 2011 PA TRM.

- Energy Star Dehumidifiers
- Programmable Thermostat
- Refrigerator and Freezer Recycling
- School Energy Pledge Program kit

Step 5 – Participation and Installation Verification: Telephone interviews of each sampled customer confirmed participation in the program, receipt of a rebate or EE Kit, and installation of the energy saving measure(s). If the TRM included deemed savings values and/or protocols incorporating in-service rates (ISR), verification surveys confirmed program participation and participant purchase or otherwise receipt of subject energy efficiency products (i.e., in the case of EE kits provided participants at no cost). Telephone surveys were tailored to the product promotion and included questions designed to verify

participants obtained and installed the EE products. For the Upstream Lighting program component, the program administrator's invoices and related detailed documentation were reviewed to ensure that measure counts and reported savings were both accurate (per the TRM) and the same as what the utility's tracking system was reporting.

Step 6 – Program Realization Rate: As related in above in the M&V methodology, the program realization rate is calculated using the verified energy and demand savings from telephone interviews, as summarized below:

A realization rate (or ratio estimate) was calculated for each LIEEP stratum, each of which employed a simple random sampling technique. Final realization rates and relative precision at the program group and residential portfolio level (which aggregate the strata) were calculated using the stratified ratio estimation approach, following the method outline in Lohr (1999)[25]. Aggregation of the variance of each stratum (calculated depending on the assumed distribution type) is also calculated per Lohr (1999).

Note that, per Duquesne's approved EM&V Plan, no customer-based verification efforts were required to estimate in-service/installation rate or product leakage for the Upstream Lighting Program. Verification efforts consisted only of confirming that energy and demand savings reported in Duquesne's PMRS (tracking system) could be documented based on invoicing details provided by the program implementation contractor, ECOVA (formerly ECOS), with respect to numbers of units, wattages and savings claims. As a result of using this approach, a verification of every database line item (a census approach) was conducted for upstream lighting, resulting in effectively zero *sampling uncertainty*[26] for this stratum. As upstream lighting accounts for a large fraction of total residential savings, the result of this approach is such that the relative precision calculated for the residential sector was found to be very low. These results are shown in Table 5-4 and Table 5-5.

[25] Lohr, Sharon. *Sampling: Design and Analysis*. Pacific Grove, CA: Duxbury Press, 1999, 69-101.

[26] Of course, other sources of uncertainty exist beyond *sampling* uncertainty. For instance, uncertainty of actual savings for each CFL exists due to variance in operating hours, assumed baseline wattage, etc. As the approved evaluation technique used *deemed* values for CFL savings, however, that uncertainty is not reflected in the reported relative precision for these measures.

Table 5-4: PY3 LIEEP Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings (MWh)	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings (MWh)
LI REEP Kits	1,072	0.74	0.44	9.8%	793
LI REEP Rebates	17	1.00	0.0	0.0%	17
LI SEP	561	0.55	0.29	9.6%	309
LI RARP	282	1.00	0.0	9.4%	282
LI Upstream Lighting	5,932,324	1.01	0.0	N/A	5,992
Program Total	7,865	0.94	0.34	1.2%	7,393

Table 5-5: PY3 LIEEP Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
LI REEP Kits	0.069	1.04	0.68	13.6%	0.072
LI REEP Rebates	0.003	1.00	0.0	0.0%	0.003
LI SEP	0.017	0.67	0.35	11.2%	0.011
LI RARP	0.038	1.00	0.0	9.4%	0.038
LI Upstream Lighting	0.296	0.99	0.0	N/A	0.293
Program Total	0.422	0.97	0.47	2.5%	0.416

5.3 Impact Evaluation Net Savings

Free Ridership

The free ridership ratios for each part of the LIEEP were determined by evaluating participant's responses to several questions relating to their motivation in participating in the programs. The steps to evaluate the free ridership in individual programs are the same as presented in the sections for each of those programs, and were based on the same surveys but conducted of low-income participants in those programs..

In order to determine the total net-to-gross (NTG) ratio for the total LIEEP, Navigant weighted the individual measure NTG ratios by the total savings achieved by each measure. This result is presented in Table 5-6 below.

Table 5-6: LIEEP Total Net-to-Gross Ratio

LIEEP Sub-program	kWh Savings	Percent of Savings	Individual NTG ratios
Kits	1,071,958	55%	69%
Rebates	17,088	1%	59%
SEP	561,384	29%	87%
RARP	282,051	15%	67%
		LIEEP Total NTG ratio:	**74%**

Spillover

In the NTG surveys administered to LIEEP customers, Navigant also asked whether or not the customer had taken any additional energy saving actions after participating in the Duquesne program. If the respondent had made additional energy efficiency improvements as a result of the program, these would be spillover savings. LIEEP customers were surveyed for the RARP, SEP, Rebate and Kit programs. The number of individuals who indicated they had taken additional actions as a result of the program for each LIEEP stream is summarized below in Table 5-7.

Table 5-7: Number of LIEEP Participants Taking Spillover Actions

LIEEP Program Steam	Number of Surveyed Participants	Number of Surveyed Participants Who Indicated They Took Additional Actions	% of Respondents who Took Additional Actions
RARP	20	9	45%
SEP	20	12	60%
Rebate	5	0	0%
Kit	20	16	80%

Navigant used deemed savings values for the top reported actions for each LIEEP Stream. The top reported actions for the LIEEP RARP, LIEEP SEP and LIEEP Kit programs are listed in Table 5-8, Table 5-9, and Table 5-10 below, along with their influence rate, and savings attributed to the program.

Table 5-8: Top 7 LI RARP Rebate Spillover Actions

	Number of *Respondents*	Average *Influence*	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings *Reference*
Clothes washing machine	1	100%	142.0	142.0	PA 2012 TRM
Dishwasher	1	100%	107.0	107.0	PA 2012 TRM
Added ceiling/attic/wall/basement insulation	1	60%	336.0	201.6	PA 2012 TRM

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Turned off / reduced use of lights	3	60%	262.8	157.7	OPA Summer Sweepstakes
Installed compact fluorescent lights	5	60%	101.4	60.9	OPA Summer Sweepstakes
Turned off / reduced use of power to electronics	3	60%	21.3	12.8	OPA Summer Sweepstakes
Unplugged your secondary refrigerator(s) / freezer	1	100%	1,659.0	1,659.0	PA 2012 TRM
Total				**2,925**	
Total Savings per Respondent	**20**			**146**	

Table 5-9: Top 5 LI SEP Rebate Spillover Actions

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Refrigerator	2	60%	85.7	51.4	PA 2012 TRM
Clothes washing machine	2	80%	142.0	113.6	PA 2012 TRM
Turned off / reduced use of lights	5	60%	262.8	157.7	OPA Summer Sweepstakes
Turned off / reduced use of power to electronics	6	30%	21.3	6.4	OPA Summer Sweepstakes
Unplugged devices usually plugged into outlet	2	60%	70.2	42.1	OPA Summer Sweepstakes
Total				**1,241**	
Total Savings per Respondent	**20**			**62**	

Table 5-10: Top 5 LI REEP Kit Spillover Actions

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Replaced my old central air conditioner with a high efficiency central air conditioner	1	80%	431.0	344.8	PA 2012 TRM
Turned off / reduced use of lights	2	100%	262.8	262.8	OPA Summer Sweepstakes
Installed compact fluorescent lights	3	80%	101.4	81.1	OPA Summer Sweepstakes
Turned off / reduced use of power to electronics	5	80%	21.3	17.0	OPA Summer Sweepstakes

	Number of Respondents	Average Influence	Savings per Respondent (kWh)	Savings Attributed to Program per Respondent (kWh)	Deemed Savings Reference
Unplugged devices usually plugged into outlet	1	80%	70.2	56.1	OPA Summer Sweepstakes
Total				**1,255**	
Total Savings per Respondent	**20**			**63**	

The total spillover savings from the top actions for surveyed LIEEP RARP, LIEEP SEP and LIEEP Kit surveyed participants are 2,925 kWh, 1,241 kWh and 1,255 kWh respectively. The savings per respondent for the LIEEP RARP, LIEEP SEP and LIEEP Kit programs are 146 kWh/respondent, 62 kWh/respondent and 63 kWh/respondent respectively. There were no reported spillover savings for LIEEP Rebate participants. These results indicate that these programs successfully raise awareness about energy efficiency for Low Income customers, and encourages customers to make additional efficiency upgrades. Most notably, LI RARP customers reported a much higher spillover savings than RARP as a whole (146 kWh savings for LI RARP customers compared to only 11 kWh savings for RARP customers), although the sample size was low, at only 20 respondents.

5.4 Process Evaluation

Process evaluations for the LIEEP program included the following activities:

- Review of 2011 TRM
- Interviews with Duquesne program staff
- Conduct and analysis of results of selected questions included in the program participant surveys conducted during verification activities
- Review of program performance as reported in Duquesne's PMRS (DSM Tracking) system, including review of the tracking system, itself.

The process evaluation found the following:

- The program is quite successful and is more than meeting its savings goals.
- The Residential Coordinator does community outreach speaking events to promote Duquesne EE programs, which are sometimes in low-income neighborhoods and senior citizen communities.
- The Residential Coordinator is working with Lowe's and Home Depot to become retail partners with Duquesne, to add an additional incentive on top of the rebate (potentially $10-20 discount at the retailer to make the rebate more enticing to low-income customers).This is still in progress.

- LI REEP participants reported that the most common way of learning about the program was through a retail store (40 percent).
- LI RARP participants reported that the most common ways of learning about the program were from a friend/relative/neighbor (30 percent), from the internet (15 percent) or from the newspaper (15 percent).
- The most important reasons for choosing the program to get rid of appliances were reported to be the convenience of the home pick up (45 percent) and the cash incentive (30 percent).
- When asked about likelihood of recommending the program to others, on a scale of 1 to 10 where 1 – "not very likely" and 10 – "extremely likely", LI RARP participants reported an average likelihood 9.6.
- A very high percentage (95 percent) of LI REEP kit participants reported they were very or extremely satisfied with the information and kit they received from Duquesne.
- LI REEP kit and rebate participants reported an average likelihood of recommending the program to others of more than 9.0 out of 10.

5.5 Financial Reporting

The Low Income Energy Efficiency Program is very cost-effective. It has a high TRC ratio of 5.85, indicating that the program is successful in delivering significant energy savings at a low cost. A breakdown of the program finances is presented in Table 5-11.

Table 5-11. Summary of LIEEP Finances

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$195	$191	$659
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**195**	**191**	**659**
Design & Development	*0*	*0*	153
Administration[1]	0	0	0
Management[2]	122	352	590
Marketing[3]	14	58	103
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	***136***	***410***	***846***
EDC Evaluation Costs	13	54	95
SWE Audit Costs	22	53	103
Total EDC Costs[4]	366	708	1,703
Participant Costs[5]	0	340	1,222
Total TRC Costs[6]	**0**	**804**	**2,163**
Total Lifetime Energy & Capacity Benefits		3,892	11,760
Total TRC Benefits[7]	**N/A**	**4,098**	**12,655**
TRC Ratio[8]	**N/A**	**5.10**	**5.85**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent

marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

6 Commercial Program Group Programs

Duquesne's Act 129 Commercial Program Group include an overall umbrella program and five market segment programs. The umbrella program provides energy efficiency services to smaller customer segments not directly served by specific market segment programs. The market segment programs, including Small Office, Large Office, Public Agency, Retail, and Healthcare, are implemented by specialized contractors or Duquesne staff implementing programs tailored to overcome known segment-specific barriers to program participation. All programs provide the same measures and incentive levels to ensure fair and transparent treatment of customers across all segments.

The commercial programs are designed to help commercial customers assess the potential for energy-efficiency project implementation, cost and energy savings, and, for appropriate customers, provide follow-through by installing measures and verifying savings. The following program services are offered in each sub-program:

- Auditing of building energy use
- Provision of targeted financing and incentives
- Project management and installation of retrofit measures
- Training, and technical assistance

The following organizations are responsible for implementing the commercial sector programs:

- Large Office: Roth Bros, Inc. and Enerlogics Networks, Inc.
- Small Office: AllFacilities Energy Group
- Retail: AllFacilities Energy Group
- Healthcare: Duquesne Light
- Governmental and Non-Profit Programs: Duquesne Light and Governmental Partners including: Allegheny County, Allegheny County Economic Development, Allegheny County Housing Authority, City of Pittsburgh and Beaver County Housing Authority
- Commercial Umbrella: Duquesne Light

6.1 Program Updates

No major program changes occurred in PY3.

6.2 Impact Evaluation Gross Savings

The programs within the Commercial Program Group are on track to achieve their goals. At the end of PY3, Duquesne reported cumulative (CPITD) gross savings totaling 45% of the 212,645 MWh cumulative estimate projected for PY3 in the utility's EE&C Plan.

Table 6-1: CPITD Commercial Reported Results by Sector[27]

Sector	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
Small Commercial	850	22,792	5.06	1,651
Large Commercial	224	43,271	6.02	2,529
Government and Non-Profit	244	30,540	4.15	2,689
CPITD Total	1,318	96,603	15.22	6,869

Table 6-2: Commercial Sector Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	30	589	0.12	56
PY3 Q2	98	9,259	1.01	511
PY3 Q3	386	16,703	3.69	1,135
PY3 Q4	179	10,525	1.47	630
PY3 Total	693	37,076	6.29	2,334
CPITD Total	1,318	96,603	15.22	6,869

*Sum of quarterly figures may not match PY3 Total due to rounding.

The sample design for the Commercial Program Group used the stratified ratio estimator (Lohr 1999)[28]. A stratified ratio estimator is used to adjust the ex ante savings contained in PMRS. The approach is similar to that used for the residential programs except that the sample is stratified by ex ante energy savings (kWh) rather than by sub-program. Additionally, unlike with residential, all strata standard errors are estimated consistent with Lohr (1999) assuming a continuous distribution of the realization rate. The stratified ratio estimation approach takes advantage of information that is reported in the PMRS tracking system for each project in the program. The two key parameters in the stratified ratio estimate are a) the ratio between ex post (denoted as the "Y' variable) and ex ante (denoted as the "X" variable) savings and b) the standard error of the estimate. The ratio between ex post and ex ante savings, which is sometimes referred to as the realization rate, measures the accuracy of the tracking estimates from project to project across the sample of projects. The standard error of the ratio estimate is a measure of the variability in the relationship between the ex post and ex ante estimates. Both estimates help to

[27] Small Commercial is assumed to contain CSUP, Small Retail, and Small Offices. Large Commercial is assumed to contain Healthcare, Large Retail, and Large Offices.

[28] Lohr, Sharon. *Sampling: Design and Analysis*. Pacific Grove, CA: Duxbury Press, 1999, 69-101.

define the relationship (e.g., the ratio as well as the relative precision of the ratio) between the tracking estimates of savings and the actual project savings.

Ratios are calculated within each stratum and strata weights are applied to arrive at a program-level ratio. A stratum is a subset of the projects in the population that are grouped together based on ex ante savings that are known information. In other words, a stratification of the population into strata is a classification of all units in the population into mutually exclusive strata that span the population. Under this design, each stratum is sampled according to simple random sampling protocols and the weighted estimates of parameters are then applied to the entire population.

Per the utility's EM&V Plan and PY3 Sampling Design Memorandum, for the purpose of conducting cost-effective EM&V, certain industrial and commercial programs were grouped based on shared characteristics. Commercial sector retail, healthcare, and large and small office were similar enough in structure to be treated as one evaluation group. The Government, Non-Profit and Institutional (GNI) was treated as its own evaluation group, per the SWE directive to do so if savings exceeded 20% of the non-residential sector savings in the previous year.

In PY3, impact evaluation verification work was completed in two phases: in spring of 2012 for projects reported in the first two quarters of PY3, and in late summer/early fall 2012 for projects completed in the last two quarters of PY3. Commercial Evaluation Group projects completed between 6/1/2011 and 11/30/2011 (Q1 and Q2), and between 12/1/2011 and 5/31/2012 (Q3 and Q4), were extracted from Duquesne Light's program tracking system and broken into strata based on each project's reported kWh savings. Projects with strip curtains or door gaskets were placed into their own stratum. Unlike other projects of their size, the savings protocols used in the verification to assess their savings was not issued until mid-year (as an Interim Protocol). The ratio between verified and reported savings might therefore be quite different from that of projects where CSPs had an existing protocol to use in estimating savings, suggesting that the ratio for the strip curtain/gasket projects might be systematically different from (and therefore less representative of) the ratio for other projects. Finally, for the GNI sector, one group of projects – Allegheny County municipalities – were all similar projects completed under one contract and one CSP, with work initiated prior to the issuance of the first TRM, again increasing the likelihood that the realization rate for these projects might be systematically different from that of other projects. These projects were placed into their own stratum for evaluation. The strata used in calculating the overall realization rate and relative precision are described below in Table 6-3.

Table 6-3: Commercial Sector Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
Commercial – C1	0 < kWh <= 55,000	308	0.5		3	6	Onsite verification*
Commercial – C2	55,000 < kWh <= 200,000	69	0.5		6	6	Onsite verification
Commercial – C3	200,000 < kWh <= 600,000	29	0.5		7	6	Onsite verification
Commercial – C4	600,000 < kWh	9	0.7		7	7	Onsite verification
Commercial – C5	Strip Curtains/Door Gaskets	184	0.5		3	3	Onsite verification
GNI – G1	Allegheny County	58	0.5		13	13	Onsite verification
GNI – G2	Other	35	0.5		8	8	Onsite verification
GNI – G3	Strip Curtains/Door Gaskets	1	0.5		1	1	Onsite verification
Program Total		**693**		85/15	**48**	**50**	

*Included one telephone verification, for efficiency kit provided to multi-family resident.

Per the utility's EM&V Plan[29], for measures with rebates less than $2,000, the basic level of verification rigor (telephone verification) was employed. The enhanced level of rigor verification (on-site verification) was applied when measure rebates were equal to or greater than $2,000. The sampling unit for the commercial program was the project, each project having a project ID in the Duquesne tracking system.

Basic Level of Rigor Verification: For Commercial programs, the basic level of verification rigor included obtaining and analyzing hardcopy and electronic documentation for each sampled participant installation. Interviews were conducted, as needed, with designated customer contacts, as well as facility managers, program implementers, equipment suppliers and installation contractors, to verify project documentation. Where documentation was inadequate, secondary research was conducted to ascertain required pre- and post-equipment definition as well as operating conditions. Project planning documentation was compared with applicable TRM deemed and partially deemed measure values and

[29] Evaluation Measurement and Verification Plan, 2010-2012 Energy Efficiency & Conservation Programs, July 15, 2010 (EM&V Plan), sections 2.5 and 2.5.1, pages 21 and 22.

algorithm inputs. Based upon the review of the aforementioned, reported *ex ante* savings were assessed, corroborated or revised to reflect assessment findings.

Enhanced Level of Rigor Verification: Enhanced rigor verification included all basic level of rigor tasks, plus on- site verification of installed equipment. Building configuration and business operations were researched to confirm key savings determinants such as operating hours and the presence or absence of space cooling or refrigeration. Where documentation was inadequate, secondary research was conducted to ascertain required pre- and post-equipment definition as well as operating conditions.

Results of the Commercial Program group verification effort are shown below.

Table 6-4: Summary of PY3 Energy Savings Evaluation Results for Commercial Program Group

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
Commercial – C1	4,764,689	1.26	0.48	9.7%	6,016,412
Commercial – C2	7,463,713	1.05	0.07	3.2%	7,867,768
Commercial – C3	9,170,275	1.06	0.16	6.9%	9,691,072
Commercial – C4	11,883,297	0.97	0.09	3.7%	11,525,164
Commercial – C5	944,288	1.02	0.33	4.9%	964,414
GNI – G1	1,766,817	1.17	0.14	11.9%	2,067,956
GNI – G2	1,080,824	1.06	0.16	6.0%	1,147,905
GNI – G3	2,240	0.84	0.00	0.0%	1,890
Program Total	**37,076,143**	**1.06**	**0.22**	**2.7%**	**39,282,580**

Table 6-5: Summary of PY3 Demand Savings Evaluation Results for Commercial Program Group

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
Commercial – C1	1,036	1.31	0.49	13.0%	1,360
Commercial – C2	1,625	1.24	0.78	23.1%	2,020
Commercial – C3	1,348	0.97	0.05	2.1%	1,305
Commercial – C4	987	1.39	0.58	18.4%	1,376
Commercial – C5	411	0.78	0.21	1.1%	321
GNI – G1	656	1.20	0.06	5.1%	790
GNI – G2	228	1.07	1.70	16.5%	245
GNI – G3	0.2	1.22	0.00	0.0%	0.2
Program Total	6,290	1.18	1.42	7.6%	7,416

6.3 Impact Evaluation Net Savings

Free Ridership

Net to Gross surveys were administered to each customer where onsite verification was performed. If the proper decision-maker was unavailable, Navigant made several attempts to follow up with the decision-maker to complete the survey. Because some sites were unresponsive, Navigant called decision-makers from other randomly sampled projects within the same stratum to obtain additional survey completions. Responses to these surveys were used to estimate free ridership for the Commercial Program Group. Free ridership for commercial projects installed through the Duquesne program was estimated as follows:

1. A free ridership percentage was estimated for each respondent/project. This percentage was based on the respondent's responses to a series of key survey questions:
    a. Did you or your company have existing plans to install the [measure] before hearing of the program? [If so, how far along had they gotten – had they selected the specific equipment? The contractor who would install it?]
        i. Yes
        ii. No
        iii. Other
    b. Did you or your company have budget set aside to cover the cost of the [measure]? If so, had the expenditure already been approved?
        i. Yes
        ii. No
        iii. Other
    c. Did a contractor have any role in persuading you to install high efficiency?
        i. On a scale of 0 (Not at all important) to 10 (extremely important).

d. How likely do you think you would have been to install the same high efficiency equipment without the assistance of the program?
    i. You definitely would NOT have installed the same equipment.
    ii. You MAY HAVE installed the same equipment.
    iii. You definitely WOULD have installed the same equipment.
e. On a scale of 0 to 10, where 0 is DEFINITELY WOULD NOT have installed and 10 is DEFINITELY WOULD have installed the same equipment, how likely do you think you would have been to install the high-efficiency equipment, if there had been no program?
f. How likely would you have been to install the same number/amount of equipment without the assistance of the program?
    i. *You definitely would NOT have installed the same number.*
    ii. You MAY HAVE installed the same number.
    iii. You definitely WOULD have installed the same number.
g. In absence of the program, When do you think you would have installed the equipment?
    i. Exactly when you did
    ii. Within 3 months of when you did
    iii. Between 3 and 6 months of when you did
    iv. More than 6 months after you did

In addition, prior to answering any of these questions, the respondents were asked to explain in their own terms to describe the process by which they came to install the measure, step by step, starting with when they first thought they wanted to install the measure or replace the existing equipment. This qualitative information was used to resolve conflicts in responses provided to the other questions and as a cross-check on the voracity of those responses.

Table 6-6 shows the free ridership percentages calculated for each participant, based on the possible combinations of responses they might provide for key survey questions. In estimating free ridership for this program, we made the following assumptions regarding survey responses and participant actions:

- Respondents received a 0% free ridership rating under any of the following circumstances:
    - They did not have existing plans to install the measure prior to hearing of the program.
    - They had plans but had no budget set aside for making the efficiency improvements and reported that their contractor had a role in persuading them to install the measure.
    - They had plans, either had or did not have budget set aside for making the efficiency improvements, and said that they either definitely would not have installed the measure without the program or that they didn't know whether they would have or not.
- Respondents received a 100% free ridership rating if they consistently demonstrated that they were free riders, as follows:
    - They had existing plans to install the measure.
    - They had budget set aside to do so.

- They were not persuaded by their contractor to install.
- They reported that they definitely would have installed the measure without the program.
- They reported that they would have installed the same amount/number of the measure.
- They reported that they would have installed the measure at the same time as they did through the program.

- Respondents received different free ridership ratings, between 0% and 100%, based on the particular combination of responses they provided to the question set, as shown in the table below.

Table 6-6: PY3 Commercial Net to Gross Methodology

FR	Question 2a Existing Plans?	Question 2b Sufficient Funding?	Question 2c Contractor Input?	Question 3 Same Efficiency?	Question 3a Same Efficiency?	Question 4 Same Number?	Question 5 Same Timing?
0%	NO						
0%	YES	NO	YES				
0%	YES	NO	NO	Don't Know/Definitely Not			
0%	YES	YES	NO	Don't Know/Definitely Not			
25%	YES		NO	Definitely Would/May Have	YES	Definitely Would/May Have	>6 Months
50%	YES	YES	NO	Definitely Would/May Have	YES	Don't Know/May Have	>6 Months
75%	YES	YES	NO	Definitely Would	YES	Definitely Would/Don't Know	Between now and 6 Months
90%	YES	YES	NO	Definitely Would	YES	Definitely Would	<3 Months
100%	YES	YES		Definitely Would	YES	Definitely Would	Same Time

For Commercial free ridership, respondent responses were weighted by their project savings amount, to better reflect free ridership as it relates to amount of savings rather than number of participants. Table 6-7 below shows the final weighted average NTG for the Commercial sector at 83 percent.

Table 6-7: PY3 Commercial Sector Net to Gross Results

FR	NTG	Count
0%	100%	17
10%	90%	0
25%	75%	3
50%	50%	1

FR	NTG	Count
75%	25%	1
90%	10%	1
100%	0%	5
17%	83%	Weighted Average

The relatively high (83%) net-to-gross results suggest that the Commercial programs in general seem to be paying rebates for projects that would not have occurred in the absence of the program

Spillover

In the NTG surveys administered to Commercial customers, Navigant also asked whether or not the customer had taken any additional energy saving actions for which they have not received a rebate from Duquesne Light. If the respondent had made additional energy efficiency improvements as a result of the program, these would be spillover savings.

Respondents who indicated they had taken additional energy efficiency actions were asked to rate the likelihood that they would have taken the same additional efficiency action in the absence of having participated in the Duquesne program (a 5-point scale, not at all likely to extremely likely), and also to rate how influential the program was in their decision to take the action (1=not at all influential, 10=extremely influential). After converting both ratings to the same scale, the responses to these two questions were averaged. The results are described below for each type of measure.

Of the 29 Commercial sites surveyed, 9 had taken any additional energy saving actions, or 31 percent of sites. Three of these sites reported installing more occupancy sensors, and not applying for a rebate. These sites reported an average program influence of 20% on their decision to install the sensors. Two sites reported water and energy conservation measures: efficient commercial dishwashers and low-flow faucets and toilets. However, both sites reported that their participation in the Duquesne program did not influence these decisions at all. The remaining sites reported LED lighting upgrades, efficient forklift chargers, door gaskets, and new windows. These sites reported an average program influence of 30% on their decision to take these actions. In the absence of a special study it was not possible to obtain sufficient detail to quantify these results, but they suggest that a special effort might prove worthwhile in the future.

6.4 Process Evaluation

The process evaluation for the Commercial Program Group included the following activities:

- Review of 2011 TRM
- Interviews with Duquesne program staff

- Review of program performance as reported in Duquesne's PMRS (DSM Tracking) system, including review of the tracking system, itself.

The process evaluation will first discuss the PMRS Tracking System review (which applies to both the Commercial Program Group and the Industrial Program Group), and then Commercial-specific process findings.

PMRS Tracking System Review

The PMRS is the tracking database and project control system for DLC's programs. The PMRS was built from a data dictionary developed by DLC's planning contractor, MCR, and included in the July 2009 program filing. The data being collected forms a firm foundation for tracking program and project progress through the system. The PMRS was created by DLC in-house primarily by a DLC employee who is now an independent consultant who maintains the database.

In response to the PY2 evaluation report recommendations and ongoing discussions with CSPs, DLC has made a number of changes to enhance the project, application, review and approval process by working both with and around the PMRS system.

- **Project Corrections.** Previously only the PMRS system administrator could unlock projects to make corrections or other necessary changes. The system is now set up in a way that allows DLC staff with administrative rights in PMRS to unlock the system to make changes, which shortens the correction process while still maintaining system integrity. This change has been well received by CSPs because projects are more accurately represented in PMRS and changes are made both quickly and efficiently.
- **Upload Capability.** MCR (consultant to Duquesne) is developing an "auto-upload" capability that will allow CSPs to upload projects in bulk. The upload protocols are still in a testing period, but once they are finalized they will reduce manual data entry, thereby reducing errors, and reducing CSP time commitment and associated cost of excessive data entry. CSPs are highly supportive of this development. DLC still has concerns about maintaining data quality with this protocol and is proceeding carefully in order to ensure PMRS' integrity.
- **IT Resources.** DLC continues to employ the services of a contract system administrator who is not local to the area but who also has a designated group of people in the Duquesne IT Department to provide backup support to the PMRS system administrator.
- **Sharepoint Site.** DLC has established a Sharepoint site that performs a number of useful functions. Program-level documents and procedures are stored and readily available for all CSPs. At the project level, CSPs can upload project details for Duquesne review and response before projects are entered into PMRS. The SharePoint site provides a single point for CSP project submissions and consequent review and discussion by DLC and CSPs. Using this process, CSP submissions are refined until they are ready for formal PMRS submission. Previously, CSPs and DLC transmitted documents via email in individual actions and there was no single space where all parties could find reference documents for review and discussion.
- **Error Checking Routines**. In PY2 Navigant recommended that PMRS be enhanced with quality error checking that produces error messages when inappropriate or out of range

data are entered into the project fields. MCR indicated that such programming requires considerable time and resources and is not being considered for PY4, but would be addressed in Phase 2 of the program. Navigant believes that the combination of SharePoint and instituting the auto-upload protocols may largely resolve the incorrect data problem. This should be watched as auto-upload comes online.

- **System Defined Reports.** There has been no action regarding this recommendation in PMRS. The Sharepoint site provides some capabilities in this area and CSPs can track the progress of their own projects.

PMRS Recommendations

- **Auto Upload.** Continue moving forward with testing and implementing the auto-upload protocols, providing training and technical assistance to CSPs.
- **IT Resources.** Continue this internal resource and ensure that all key existing PMRS programming and protocols are well documented, as well any future changes.
- **Error checking**. Once auto-upload is fully implemented, DLC should review the types of errors, if any, that continually occur and remedy them through training and internal error checking.
- **Pre-Defined PMRS reports.** Navigant continues to believe that regular, system-generated reports that provide views of the program as a whole are desirable, particularly as the *programs move into Phase 2.*

There is logic in locking approved projects, but they should remain accessible to CSPs at least for checking project status throughout. Projects as implemented often have differences from planned measures. The quantities and types of measures may change or a specified piece of equipment may not be available and another efficient alternative, possibly with different cost or savings characteristics may legitimately be substituted. Rather than locking the system throughout, it may make more sense to allow CSPs to make changes with a secure log file recording every project change. A log file could also serve as an audit function.

Commercial Program Group-Specific Findings:

DLC Staffing. DLC's initial staffing plan submitted by MCR proposed that DLC needed seven FTE's to appropriately run their programs. During the 2011 evaluation, DLC had three FTE's and was also employing the services of a contractor for residential programs. Currently, DLC is authorized for four FTE's and expects to add a fifth position for Phase 2. The DLC manager notes that the current staff is meeting all administrative and program requirements, including the direct implementation of institutional and government projects.

Segmentation - Customers with multiple types and sizes of facilities. Navigant made several observations and recommendations concerning Commercial program segmentation in PY2particularly regarding the coordination among CSPs for customers owning or managing portfolios of facilities that have multiple uses or sizes. The current approach of strictly adhering to the SED files allocated to each CSP reduces unnecessary competition among CSPs and reduces market confusion among customers,

and allows the CSPs to focus on market channels, messaging and technical assistance that is most appropriate for the primary use. Interviews with CSPs suggest that there is some cooperation with mixed facilities, but that appears to happen on a case by case basis. Individual instances of cooperative efforts are laudable but it's not clear what opportunities are being missed. Ensuring a process for coordination among CSPs in the case of multi-use facilities may improve the savings realized at a site or from a particular customer.

Clarification of 200-300 kW customers. Ongoing classification in SED files continues to blur lines between 200kW and 300kW customers and appropriate ways to serve them. One approach to small businesses that has been very successful in other jurisdictions is a street or neighborhood blitz, often in cooperation with the local government or business groups. This approach can increase the number of small projects while decreasing the high transaction costs typically associated with small projects. In this type of an approach, some customers may not be in the appropriate SED files, but without this approach they may not participate at all.

SED File Gaps. CSPs have noted inaccurate or outdated SED file information, particularly with regard to ownership, business type, etc. Navigant recommended moving from SIC codes to NAIC codes. DLC expects that this change, along with a few other changes, will be accomplished in the coming CIS system changes in 2013.

Institution/Government Projects. DLC continues to manage the implementation of projects in the government and institutional sector. These projects generally having much longer timelines and complicated decision-making than projects in privately owned properties. DLC has expressed concern that CSPs operating on performance-based projects might not be able to sustain the lead time required for such projects. These projects are also seen as building and maintaining relationships between DLC and its institutional and government customers.

Promotion. CSPs continue to be responsible for marketing the program to their respective segments. DLC reports that it has engaged in regular cooperative advertising with CSPs, trade allies and others, and continues to do so, as appropriate.

Satisfaction. In the Program Year 2 evaluation we noted that several participants had offered suggestions for improving the program, including (1) notification of the specific measures or project for which an incentive check is being sent (customers with multiple applications can find it hard to know which project the incentive is for), (2) speeding up rebate turn-around time (while in the first year of a program one can expect processing times to improve over time, a third reported waiting more than eight weeks for their rebate checks), and (3) reducing the amount of paperwork required in the program. DLC and CSPs all report that rebate processing speed has greatly increased since 2011.

Account Executive Roles. Account Executives were initially considered as key contact points and promotion sources for the Commercial and Industrial programs. However, DLC found a frequent mismatch between the time scale CSPs needed to operate in and Account Executive availability. DLC is

engaging an additional Account Executive as part of an internal reorganization of Customer Services and expects Account Executives to play a larger role in energy efficiency programs going forward.

"Retroactive" Projects. Retroactive projects are a declining factor in the program. CSPs and DLC are closely reviewing such projects and denying them when the documentation is not up to standards. The DLC program manager indicates retroactive projects will not be a feature of Phase 2.

Recommendations

- **Staffing.** Continue to monitor staffing adequacy as Phase 2 is implemented and consider strategic staffing additions if gaps are identified. Navigant recommends an annual review, in concert with goal establishment, introduction of new and revised programs, and so on.
- **Segmentation.** Continue to exam customer-centered offerings for customers who have facilities in multiple segments and for facilities with multiple uses occurring within the facility. Consider an analysis of the extent of these situations within the DLC service territory through customer interviews, reviews of commercial real estate records, and market research.
- **Small Commercial Blitz Initiatives.** Undertake at least one pilot in coordination with local businesses or governmental entities to test the viability of this approach under the current segmentation scheme.
- **Project Documentation**. Continue to closely document all projects, particularly noting locations of installed measures in facilities. While it may be difficult to establish a standard set of location protocols, DLC should press for consistency among the CSPs and monitor all reports of project completions for location information as well as other final measure types, counts, etc.

6.5 Financial Reporting

In general, the Commercial energy efficiency programs are cost-effective. With the exception of one program, all have TRC ratios over 1.0, indicating that the energy savings benefits the programs deliver outweigh the cost of the programs. In PY3, one program – GNI – had a TRC ratio of 0.97. However, the CPITD TRC ratio for this program is well over 1.0, at 2.34, indicating that overall, the GNI program is cost-effective. A breakdown of the program finances is presented in Table 6-8 through Table 6-13.

Table 6-8. Summary of Program Finances – Commercial Umbrella

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$87	$190	$430
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**87**	**190**	**430**
Design & Development	0	0	91
Administration[1]	0	0	0
Management[2]	182	310	427
Marketing	9	30	50
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**191**	**340**	**568**
EDC Evaluation Costs	9	28	37
SWE Audit Costs	14	27	48
Total EDC Costs[3]	301	585	1,083
Participant Costs[4]	0	336	756
Total TRC Costs	**0**	**704**	**1,361**
Total Lifetime Energy & Capacity Benefits		2,453	3,991
Total TRC Benefits[7]	**N/A**	**2,453**	**3,991**
TRC Ratio[8]	**N/A**	**3.48**	**2.93**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 6-9. Summary of Program Finances – Healthcare

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$10	$188	$222
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**10**	**188**	**$222**
Design & Development	0	0	93
Administration[1]	0	0	0
Management[2]	453	543	928
Marketing	13	52	92
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**466**	**595**	**1,113**
EDC Evaluation Costs	12	49	70
SWE Audit Costs	20	48	92
Total EDC Costs[3]	508	880	1,497
Participant Costs[4]	0	1,450	1,890
Total TRC Costs	**0**	**2,094**	**3,073**
Total Lifetime Energy & Capacity Benefits		2,758	3,543
Total TRC Benefits[7]	**N/A**	**2,758**	**3,543**
TRC Ratio[8]	**N/A**	**1.32**	**1.15**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.
[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.
[3] Includes the marketing CSP and marketing costs by program CSPs.
[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.
[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated

with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 6-10. Summary of Program Finances – Large Office

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$378	$1,205	$1,833
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**378**	**1,205**	**1,833**
Design & Development	0	0	343
Administration[1]	0	0	0
Management[2]	198	790	1,207
Marketing	23	94	166
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**221**	**884**	**1,716**
EDC Evaluation Costs	22	89	126
SWE Audit Costs	35	86	164
Total EDC Costs[3]	656	2,264	3,839
Participant Costs[4]	0	1,915	5,264
Total TRC Costs	**0**	**2,888**	**7,106**
Total Lifetime Energy & Capacity Benefits		12,089	26,437
Total TRC Benefits[7]	**N/A**	**12,089**	**26,437**
TRC Ratio[8]	**N/A**	**4.19**	**3.72**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.
[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.
[3] Includes the marketing CSP and marketing costs by program CSPs.
[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits *include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and* natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 6-11. Summary of Program Finances – Small Office

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$88	$277	$343
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**88**	**277**	**343**
Design & Development	0	0	180
Administration[1]	0	0	0
Management[2]	55	205	398
Marketing	11	52	89
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**66**	**257**	**667**
EDC Evaluation Costs	10	49	71
SWE Audit Costs	17	48	88
Total EDC Costs[3]	181	631	1,169
Participant Costs[4]	0	522	965
Total TRC Costs	**0**	**828**	**1,703**
Total Lifetime Energy & Capacity Benefits		3,283	4,712
Total TRC Benefits[7]	**N/A**	**3,283**	**4,712**
TRC Ratio[8]	**N/A**	**3.97**	**2.77**

NOTES

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[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.
[3] Includes the marketing CSP and marketing costs by program CSPs.
[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent

marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 6-12.Summary of Program Finances – Government/Non-Profit/Institutional

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$512	$1,731	$3,190
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**512**	**1,731**	**3,190**
Design & Development	0	0	579
Administration[1]	0	0	0
Management[2]	329	1,373	1,608
Marketing	38	155	276
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**367**	**1,528**	**2,463**
EDC Evaluation Costs	36	147	209
SWE Audit Costs	58	142	274
Total EDC Costs[3]	973	3,548	6,136
Participant Costs[4]	0	1,550	7,428
Total TRC Costs	**0**	**3,225**	**10,100**
Total Lifetime Energy & Capacity Benefits		3,119	23,587
Total TRC Benefits[7]	**N/A**	**3,119**	**23,587**
TRC Ratio[8]	**N/A**	**0.97**	**2.34**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.
[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 6-13. Summary of Program Finances – Retail – Large and Small

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$291	$1,397	$1,588
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**291**	**1,397**	**1,588**
Design & Development	0	0	210
Administration[1]	0	0	0
Management[2]	108	523	1,014
Marketing	14	56	100
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**122**	**579**	**1,324**
EDC Evaluation Costs	13	53	76
SWE Audit Costs	21	51	99
Total EDC Costs[3]	447	2,080	3,087
Participant Costs[4]	0	3,295	5,064
Total TRC Costs	**0**	**3,927**	**6,464**
Total Lifetime Energy & Capacity Benefits		13,246	19,252
Total TRC Benefits[7]	**N/A**	**13,246**	**19,252**
TRC Ratio[8]	**N/A**	**3.37**	**2.98**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.
[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.
[3] Includes the marketing CSP and marketing costs by program CSPs.
[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent

marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

7 Industrial Program Group Programs

The Industrial Program Group includes an overall umbrella program and three specialized programs that address the following market segments: primary metals, chemical products and mixed industrials. Under this approach, specialized programs are designed to promote specific technologies or target specific market segments while incorporating the umbrella program savings impacts and incentive levels. In this manner, all industrial programs present a consistent and common offering.

The industrial programs are intended to provide a comprehensive approach to energy savings and permanent demand reduction, and address a full range of efficiency opportunities from low cost improvements to entire system upgrades. Each program provides the following services:

- Targeted and comprehensive on-site walk-through assessments and professional grade audits to identify energy savings opportunities.
- Efficiency studies/reports that detail process and equipment upgrades that present the greatest potential for energy/cost savings.
- Support to access rebates and incentives available across electric measures designed to help defray upfront costs of installing the equipment.
- Coordination with local chapters of key industry associations to promote energy efficiency improvements through trusted sources and encourage market-transforming practices among equipment vendors and purchasers

Duquesne Light has chosen the following Conservation Service Providers (CSPs) to implement industrial sector programs:

- Primary Metals Program: Roth Bros, Inc. and Enerlogics Networks, Inc.
- Chemical Products: Global Energy Partners, LLC
- Mixed Industrial: Global Energy Partners, LLC

7.1 Program Updates

No major program changes occurred in PY3.

7.2 Impact Evaluation Gross Savings

The programs within the Industrial Program Group are on track to achieve their goals. At the end of PY3, Duquesne reported cumulative (CPITD) gross savings totaling 74% of the 78,601 MWh cumulative estimate projected for PY3 in the EE&C Plan.

Table 7-1: CPITD Industrial Reported Results by Sector

Sector	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
Industrial	136	58,074	8,121	2,835
CPITD Total	136	58,074	8,121	2,835

Table 7-2: Industrial Sector Reported Results by Quarter

Reporting Period	Participants	Reported Gross Energy Savings (MWh/yr)	Reported Gross Demand Reduction (MW)	Incentives ($1,000)
PY3 Q1	1	87	0.01	7
PY3 Q2	36	5,596	0.78	335
PY3 Q3	19	4,115	0.75	261
PY3 Q4	11	4,142	0.84	280
PY3 Total	67	13,938	2.38	884
CPITD Total	136	58,074	8,121	2,835

*Sum of quarterly figures may not match PY3 Total due to rounding.

As with the Commercial Program Group, the sample design for the Industrial Program Group used the stratified ratio estimator (Lohr 1999)[30]. The industrial program group sample design was essentially the same as that used for the commercial program. However, because industrial projects may have very large numbers of measures within a single project, the sampling unit was a project measure[31], rather than an entire project. The level of verification rigor and estimation of realization rates followed the same guidelines as those used for the Commercial Program Group.

In PY3, impact evaluation was completed in two phases: verification of projects completed during the first two quarters of PY3 and verification of projects completed during the last two quarters of PY3. Industrial Program Group projects completed between 6/1/2011 and 11/30/2011 (Q1 and Q2) and between 12/1/2011 and 5/31/2012 (Q3 and Q4) were extracted from Duquesne Light's program tracking system and broken into strata based on measure kWh savings by applying strata boundaries as described below in Table 7-3. One project was placed into its own stratum because it was determined that this project was a new construction project, where the CSP estimated an incorrect building type, and that the realization results were not likely to be indicative of other projects in the stratum of which

[30] Lohr, Sharon. *Sampling: Design and Analysis.* Pacific Grove, CA: Duxbury Press, 1999, 69-101.

[31] Measure here refers to a set of equipment installed for which the savings values are the same, such as for a specific type of lighting retrofit occurring within a location having a specific hours of use.

it had been a member. Navigant post-stratified this measure into its own stratum so that the change in reported savings, and resulting realization rate, would not affect other industrial projects.

Table 7-3: Industrial Sector Sampling Strategy for PY3

Stratum	Strata Boundaries	Population Size	Assumed Coefficient of Variation (C_v) or Proportion in Sample Design	Target Levels of Confidence & Precision	Target Sample Size	Achieved Sample Size	Evaluation Activity
I1	kWh <= 100,000	344	0.5		7	71	Onsite verification
I1	100,000 < kWh <= 500,000	19	0.5		7	8	Onsite verification
I3	500,000 < kWh	7	0.5		5	4	Onsite verification
I4	New construction project	1	0.5		1	1	Onsite verification
Program Total		371		85/15	20	84	

Per the utility's EM&V Plan[32], for measures with rebates less than $2,000, the basic level of verification rigor (telephone verification) was employed. The enhanced level of rigor verification (on-site verification) was applied when measure rebates were equal to or greater than $2,000. Guidelines for determining whether specific projects were assessed at the basic level or enhanced level of rigor were identical to those described earlier for Commercial program Group verifications.

The table below shows the results of the verification process.

[32] Evaluation Measurement and Verification Plan, 2010-2012 Energy Efficiency & Conservation Programs, July 15, 2010 (EM&V Plan), sections 2.5 and 2.5.1, pages 21 and 22.

Table 7-4: PY3 Industrial Sector Summary of Evaluation Results for Energy

Stratum	Reported Gross Energy Savings	Energy Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Energy Savings
I1	3,051,413	1.00	0.08	0.1%	3,049,510
I1	3,640,783	0.82	0.21	12.6%	2,999,728
I3*	6,732,984	0.96	0.05	1.7%	6,493,245
I4	513,135	0.30	0.00	0.0%	153,013
Program Total	13,938,315	0.91	0.13	3.1%	12,695,496

*For one project, data needed for verification are still being collected. Results should be available sometime in spring 2013. A new realization rate and relative precision will be calculated at that time.

Table 7-5: PY3 Industrial Sector Summary of Evaluation Results for Demand

Stratum	Reported Gross Demand Reduction	Demand Realization Rate	Observed Coefficient of Variation (C_v) or Proportion	Relative Precision	Verified Gross Demand Reduction
I1	557	1.00	0.35	0.3%	557
I1	581	0.86	0.22	14.6%	498
I3*	1,032	0.97	0.05	1.1%	998
I4	46	0.36	0.00	0.0%	17
Program Total	2,382	0.79	0.35	9.4%	1,882

*For one project, data needed for verification are still being collected. Results should be available sometime in spring 2013. A new realization rate and relative precision will be calculated at that time.

7.3 Impact Evaluation Net Savings

Free Ridership

Net to Gross surveys were administered to each customer where onsite verification was performed. If the proper decision-maker was unavailable, Navigant made several attempts to follow up with the decision-maker to complete the survey. Because some sites were unresponsive, Navigant called decision-makers from other randomly sampled projects within the same stratum to obtain additional survey completions. Responses to these surveys were used to estimate free ridership for the industrial program. Free ridership for industrial projects installed through the Duquesne program was estimated in the same way it was estimated for commercial projects, using the same survey questions and treating them in the same manner. Table 7-6 below shows the final weighted average NTG for the Industrial sector at 69 percent. This indicates that Industrial projects are less influenced by the program than Commercial projects.

Table 7-6: PY3 Industrial Sector Net to Gross Results

FR	NTG	Count
0%	100%	15

FR	NTG	Count
10%	90%	0
25%	75%	1
50%	50%	1
75%	25%	2
90%	10%	0
100%	0%	0
31%	69%	Weighted Average

Spillover

As with the NTG surveys administered to Commercial customers, Navigant also asked whether or not the customer had taken any additional energy saving actions for which they have not received a rebate from Duquesne Light. If the respondent had made additional energy efficiency improvements as a result of the program, these would be spillover savings. Of the 19 Industrial sites surveyed, no site reported taking any additional energy saving actions after participating in the Duquesne Light program.

7.4 Process Evaluation

The process evaluation for the Industrial Program Group included the following activities:

- Review of 2011 TRM
- Interviews with Duquesne program staff
- Review of program performance as reported in Duquesne's PMRS (DSM Tracking) system, including review of the tracking system, itself.

The PMRS Tracking System review discussed in Section 6.4 presents process evaluation results for both the Commercial and Industrial sectors. Industrial-specific process findings are as follows:

Account Executive Roles. Account Executives (AEs) generally have the best knowledge of customers and their facilities and can advise on short term and long term efficiency improvement paths. A close relationship among AEs and CSPs also shows customers the depth of DLC's buy-in to energy efficiency and assure them these efforts will continue and can be integrated into capital planning over more than one cycle. Some CSPs report that in the current economy larger customers are still focused on immediate capabilities and concerns rather than longer term benefits that accompany installing efficiency measures. Account Executives can continue to play a very strong role in Industrial programs not only for entrée for CSPs but for putting CSP-proposed improvements in context with other needs.

Recommendations:

- **SED File Gaps.** CSPs have noted inaccurate or outdated SED file information, particularly with regard to ownership, business type, etc. Navigant recommended moving from SIC codes to NAIC codes. DLC expects that this change, along with a few other changes, will be accomplished in the coming CIS system changes in 2013.
- **Project Documentation**. Continue to closely document all projects, particularly noting locations of installed measures in facilities. While it may be difficult to establish a standard set of location protocols, DLC should press for consistency among the CSPs and monitor all reports of project completions for location information as well as other final measure types, counts, etc.

7.5 Financial Reporting

In general, the Industrial energy efficiency programs are cost-effective. With the exception of one program, all have TRC ratios over 1.0, indicating that the energy savings benefits the programs deliver outweigh the cost of the programs. In PY3, one program –Chemical Products – had a TRC ratio of 0.7. This was due to a combination of a temporary resource constraint on the part of the CSP, the consequent low number of Chemical Products completed during PY3, and rules for allocating common costs to programs based on program budgets. However, the CPITD TRC ratio for this program is well over 1.0, at 2.52, indicating that overall, the Chemical Products program is cost-effective. A breakdown of the program finances for the programs comprising the Industrial program Group is presented in Table 7-7 through Table 7-10.

Table 7-7. Summary of Program Finances – Industrial Umbrella

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$191	$202	$247
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**191**	**202**	**247**
Design & Development	0	0	39
Administration[1]	0	0	0
Management[2]	16	56	95
Marketing	4	15	27
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**20**	**71**	**161**
EDC Evaluation Costs	4	14	20
SWE Audit Costs	5	13	27
Total EDC Costs[3]	220	300	455
Participant Costs[4]	0	1,325	1,415
Total TRC Costs	**0**	**1,410**	**1,596**
Total Lifetime Energy & Capacity Benefits		2,033	2,539
Total TRC Benefits[7]	**N/A**	**2,033**	**2,539**
TRC Ratio[8]	**N/A**	**1.44**	**1.59**

NOTES

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[3] Includes the marketing CSP and marketing costs by program CSPs.
[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.
[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 7-8. Summary of Program Finances – Chemicals

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$4	$133	$673
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**4**	**133**	**673**
Design & Development	0	0	130
Administration[1]	0	0	0
Management[2]	27	230	1,093
Marketing	9	35	63
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**36**	**265**	**1,286**
EDC Evaluation Costs	8	33	47
SWE Audit Costs	13	32	61
Total EDC Costs[3]	61	463	2,067
Participant Costs[4]	0	82	2,388
Total TRC Costs	**0**	**380**	**3,721**
Total Lifetime Energy & Capacity Benefits		265	9,388
Total TRC Benefits[7]	**N/A**	**265**	**9,388**
TRC Ratio[8]	**N/A**	**0.70**	**2.52**

NOTES

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[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.
[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.
[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 7-9. Summary of Program Finances – Mixed Industrial

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$132	$813	$980
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**132**	**813**	**980**
Design & Development	0	0	39
Administration[1]	0	0	0
Management[2]	97	895	1,200
Marketing	8	31	58
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**105**	**926**	**1,297**
EDC Evaluation Costs	7	29	42
SWE Audit Costs	12	29	59
Total EDC Costs[3]	256	1,797	2,378
Participant Costs[4]	0	957	2,057
Total TRC Costs	**0**	**1,912**	**3,396**
Total Lifetime Energy & Capacity Benefits		6,831	12,591
Total TRC Benefits[7]	**N/A**	**6,831**	**12,591**
TRC Ratio[8]	**N/A**	**3.57**	**3.71**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.
[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.
[3] Includes the marketing CSP and marketing costs by program CSPs.
[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 7-10. Summary of Program Finances – Primary Metals

	IQ ($000)	PYTD ($000)	CPITD ($000)
EDC Incentives to Participants	$95	$477	$1,078
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**95**	**477**	**1,078**
Design & Development	0	0	430
Administration[1]	0	0	0
Management[2]	170	1,388	2,343
Marketing	23	94	175
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**193**	**1,482**	**2,948**
EDC Evaluation Costs	22	89	128
SWE Audit Costs	36	87	179
Total EDC Costs[3]	346	2,135	4,333
Participant Costs[4]	0	515	2,507
Total TRC Costs	**0**	**2,086**	**5,583**
Total Lifetime Energy & Capacity Benefits		2,933	18,524
Total TRC Benefits[7]	**N/A**	**2,933**	**18,524**
TRC Ratio[8]	**N/A**	**1.41**	**3.32**

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.
[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.
[3] Includes the marketing CSP and marketing costs by program CSPs.
[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.
[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

8 Demand Response Programs

Duquesne Light has an agreement with Comverge, Inc. to implement a direct load control program for central air conditioners and electric water heaters for residential homeowners. Comverge is also implementing a direct load control program targeted at small and mid-sized commercial and industrial facilities for air conditioner cycling.

Duquesne's Curtailable Load Program was launched in November 2011 under an agreement with EnerNOC, Inc. The program is targeting 60 megawatts (MW) of curtailable load from large commercial and industrial facilities to be called upon during the summer of 2012. In addition, Duquesne Light has contracted as of May 2012 with ClearChoice to enroll customers under its public agency partnership program to assist in meeting the demand response goal.

8.1 Program Updates

Direct load control program installations as of the end of May 2012 totaled 1,503 air conditioning units, all in residential dwellings. The target is for up to 1,500 units installed by the summer of 2012 for the entire direct load control program.

As of the end of May 2012, EnerNOC had enrolled a total of 64 program MW have been enrolled from fifteen large commercial and industrial facilities in the curtailable load program. For the public agency partnership program, as of May 2012, ClearChoice had contracted with nine customers representing eighteen accounts. They continue to solicit and sign up new customers.

8.2 Impact Evaluation Gross Savings

No program savings are counted in PY3. Impact evaluation for the demand response programs will be conducted in PY4.

8.3 Impact Evaluation Net Savings

No program savings are counted in PY3. Impact evaluation for the demand response programs will be conducted in PY4.

8.4 Process Evaluation

No process evaluation is planned for the demand response programs.

8.5 Financial Reporting

A breakdown of the program finances for the demand response programs is presented in Table 8-1 and Table 8-2.

Table 8-1. Summary of Program Finances – Residential Demand Response

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$0	$26	$26
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**0**	**26**	**26**
Design & Development	0	0	0
Administration[1]	0	0	0
Management[2]	43	999	999
Marketing[3]	0	0	0
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**43**	**999**	**999**
EDC Evaluation Costs	0	0	0
SWE Audit Costs	0	0	0
Total EDC Costs[4]	43	1,025	1,025
Participant Costs[5]	0	0	0
Total TRC Costs[6]	**0**	**0**	**0**
Total Lifetime Energy & Capacity Benefits			
Total TRC Benefits[7]	**N/A**		
TRC Ratio[8]	**N/A**		

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.

[2] Includes EDC program management, CSP program management, general management oversight, and major accounts.

[3] Includes the marketing CSP and marketing costs by program CSPs.

[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.

[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.

[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.
[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

Table 8-2. Summary of Program Finances – Large Curtailable Demand Response

	IQ ($1,000)	PYTD ($1,000)	CPITD ($1,000)
EDC Incentives to Participants	$0	$0	$0
EDC Incentives to Trade Allies	0	0	0
Subtotal EDC Incentive Costs	**0**	0	0
Design & Development	0	0	0
Administration[1]	0	0	0
Management[2]	66	109	109
Marketing[3]	2	7	7
Technical Assistance	0	0	0
Subtotal EDC Implementation Costs	**68**	**116**	**116**
EDC Evaluation Costs	1	7	7
SWE Audit Costs	2	7	7
Total EDC Costs[4]	71	130	130
Participant Costs[5]	0	0	0
Total TRC Costs[6]	**0**	**0**	**0**
Total Lifetime Energy & Capacity Benefits			
Total TRC Benefits[7]	**N/A**		
TRC Ratio[8]	**N/A**		

NOTES

Per PUC direction, TRC inputs and calculations are required in the Annual Report only and should comply with the 2011 Total Resource Cost Test Order approved July 28, 2011. Please see the "Report Definitions" section of this report for more details.

[1] Includes the administrative CSP (rebate processing), tracking system, and general administration and clerical cost.
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[3] Includes the marketing CSP and marketing costs by program CSPs.
[4] Per the 2011 Total Resource Cost Test Order, the Total EDC Costs refer to EDC incurred expenses only.
[5] Per the 2011 Total Resource Cost Test Order, the net Participant Costs are the costs for the end-use customer.
[6] Total TRC Costs includes EDC Evaluation Costs, Total EDC Costs, Participant Costs and incentive costs for appliance recycling that represent

marketing costs as per the July 2011 TRC Order.

[7] Total TRC Benefits equals the sum of Total Lifetime Energy Benefits and Total Lifetime Capacity Benefits as well as the benefits associated with avoided incandescent bulb purchases. The energy and capacity savings are based upon verified gross kWh and kW savings. Benefits include: avoided supply costs, including the reduction in costs of electric energy, generation, transmission, and distribution capacity, and natural gas valued at marginal cost for periods when there is a load reduction.

[8] TRC Ratio equals Total TRC Benefits divided by Total TRC Costs.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of Duquesne Light Company's Energy Efficiency and Conservation Program Phase II Plan Filing has been served upon the following persons, in the manner indicated, in accordance with the requirements of § 1.54 (relating to service by a participant):

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