NAVIGANT

Smart Ideas for Your Business
Standard Program
PY6 Evaluation Report

Final

Energy Efficiency / Demand Response Plan:
Plan Year 6
(6/1/2013-5/31/2014)

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E. Executive Summary

This report presents a summary of the findings and results from the impact and process evaluation of the ComEd PY6[1] Smart Ideas for Your Business® Standard Incentives Program (Standard Program, named Prescriptive through PY4). ComEd offers prescriptive incentives for common energy efficiency measures under the Standard Program to facilitate the implementation of cost-effective energy efficiency improvements for non-residential (commercial and industrial) customers. Eligible measures include energy-efficient indoor and outdoor lighting, HVAC equipment, refrigeration, commercial kitchen equipment, variable speed drives, compressed air equipment and other qualifying products. DNV GL[2] is the program implementation contractor, responsible for day-to-day operations of the program.

The PY6 gross impact evaluation approach reflects the continued reliance on the Statewide Technical Reference Manual (TRM) for deemed gross savings of most program measures; program measures will continue to be researched and recommendations will be made for additions or amendments to the TRM as appropriate. Navigant assigned projects into lighting and non-lighting end-use categories for sampling, analysis and reporting. Verified net energy savings were calculated by multiplying the Verified Gross Savings estimates by a net-to-gross ratio (NTGR). In PY6, the NTGR estimates used to calculate the Net Verified Savings were based on past evaluation research (PY4) and established by a consensus process with the Illinois Statewide Advisory Group (SAG).[3] The evaluation also conducted quantitative free ridership research with PY6 participants for potential deeming in future program years. In PY6, trade allies and business customers were interviewed in a separate study to estimate spillover broadly across the C&I market. The results of that cross-cutting C&I spillover study are reported separately from this report.

E.1. Program Savings

Table E-1 summarizes the electric savings from the Standard Program.

Table E-1. PY6 Total Program Electric Savings

Savings Category	Energy Savings (MWh)	Total Demand Savings (MW)	Peak Demand Savings (MW)
Ex Ante Gross Savings	271,269	NA	43.84
Verified Gross Savings	268,982	79.57	46.89
Verified Net Savings	184,696	53.75	31.97

Source: ComEd tracking data (September 28, 2014) and Navigant analysis.

[1] The PY6 program year began June 1, 2013 and ended May 31, 2014.
[2] Formerly KEMA Services, Inc.
[3] ComEd PY5-PY6 Proposal Comparisons with SAG.xls, which is to be found on the IL SAG web site here: http://ilsag.info/net-to-gross-framework.html

E.2. Program Savings by End-use Grouping

Table E-2 below summarizes program savings by end-use category assigned by Navigant to each project, based on the predominant energy savings measure types. If project energy savings were more than half lighting or entirely lighting, it was defined as a "Lighting" project. All other projects were defined as "Non-lighting" in the evaluation.

Table E-2. PY6 Program Savings Results by End-Use Category

Savings Category	Lighting End-use	Non-Lighting End-use	Overall Program
Energy Savings (MWh)			
Ex Ante Gross Savings	212,649	58,620	271,269
Ex Ante Gross Savings (%)	78%	22%	100%
Verified Gross Realization Rate	1.02‡	0.88‡	0.99‡
Verified Gross Savings	217,668	51,314	268,982
Net to Gross Ratio (NTGR)	0.70†	0.63†	NA
Verified Net Savings	152,368	32,328	184,696
Verified Net Savings (%)	82%	18%	100%
Confidence Level/Rel Precision (± %)	90/4	90/13	90/4
Coincident Peak Demand Savings (MW)			
Ex Ante Gross Savings	32.63	11.21	43.84
Ex Ante Gross Savings (%)	74%	26%	100%
Verified Gross Realization Rate	1.06‡	1.10‡	1.07‡
Verified Gross Savings	34.61	12.28	46.89
Net to Gross Ratio (NTGR)	0.70†	0.63†	NA
Verified Net Savings	24.23	7.74	31.97
Verified Net Savings (%)	76%	24%	100%
Confidence Level/Rel Precision (± %)	90/6	90/16	90/8

Source: ComEd tracking data (September 28, 2014) and Navigant analysis.

† NTGR is a deemed value. ComEd PY5-PY6 Proposal Comparisons with SAG.xls, which is to be found on the IL SAG web site here: http://ilsag.info/net-to-gross-framework.html

‡ Realization rate is based on PY6 evaluation research findings. Reported program gross savings results have been rounded.

E.3. Impact Estimate Parameters For Future Use

The evaluation team conducted research into parameters used in impact calculations including those in the Illinois TRM. Some of those parameters are eligible for deeming for future program years or for inclusion in future versions of the Illinois TRM. Table E-3 below includes the evaluation team's recommended free ridership and spillover parameters for future use.

Table E-3. Impact Estimate Parameters for Future Use

Parameter	Value	Data Source
Lighting Measures		
Free-ridership	0.27	PY6 Evaluation Research
Spillover	TBD	PY6 Evaluation Research
Non-Lighting Measures		
Free-ridership	0.38	PY6 Evaluation Research
Spillover	TBD	PY6 Evaluation Research
Other Measures		
Cycling Refrigerated Compressed Air Dryers	NA	Recommend for TRM (V5) deeming

Source: Navigant analysis.

E.4. Participation Information

Evaluation review of the PY6 Standard Program tracking data found that a total of 2,263 customer participants completed 3,736 projects. Participants installed a total of 7,126 measures, with lighting end-use projects exceeding non-lighting end-use projects by a margin of nearly three to one. Program participation detail is presented in Table E-4 below.

Table E-4. PY6 Standard Program Participation Overview

Participants	Lighting End-Use	Non-Lighting End-Use	Total
Customer Participants			2,263
Participation*	2,590 (73%)	970 (27%)	3,560
Installed Projects	2,739 (73%)	997 (27%)	3,736
Total Measures**	5,491 (77%)	1,635 (23%)	7,126

Source: ComEd tracking data (September 28, 2014) and Navigant analysis.
* This is unique site address and end-use category.
** This is a project-level measure count based on type of measure, not quantities installed.

E.5. Results Summary

The following table summarizes the key metrics from PY6.

Table E-5. PY6 Results Summary

Participation	Units	PY6
Net Energy Savings	MWh	184,696
Net Peak Demand Reduction	MW	31.97
Net Demand Reduction	MW	53.75
Gross Energy Savings	MWh	268,982
Gross Peak Demand Reduction	MW	46.89
Gross Demand Reduction	MW	79.57
Program Energy Realization Rate (Lighting)‡	%	102%
Program Energy Realization Rate (Non-Lighting)‡	%	88%
Program NTG Ratio (Lighting)†	%	70%
Program NTG Ratio (Non-Lighting)†	%	63%
Total Measures Installed	#'s	7,126
Ex Ante Lighting Savings	%	78%
Ex Ante VSD Savings	%	14%
Ex Ante Refrigeration Savings	%	3%
Ex Ante Other Savings	%	5%
Projects Completed	#'s	3,736
Customer Participants	#'s	2,263

Source: ComEd tracking data (September 28, 2014) and Navigant analysis.
†A deemed value from the IL SAG consensus process, "ComEd PY5-PY6 Proposal Comparisons with SAG.xls," available on the IL SAG website here: http://ilsag.info/net-to-gross-framework.html
‡Based on evaluation research findings

E.6. Key Findings and Recommendations

The following provides insight into key program findings and recommendations.[4]

Impact Evaluation

Finding 1. Although the energy and peak demand savings verification realization rates were, respectively, 0.99 and 1.07 for the overall program, there were upward gross adjustments on lighting that balanced out downward savings adjustments on non-lighting measures. For energy savings, a gross realization rate of 1.02 for lighting balanced out the 0.88 gross realization rate for non-lighting. For demand, both lighting (1.06) and non-lighting (1.10) had gross realization rates above one. The largest category of changes made (approximately one third of the total number of adjustments) from the ex-ante to verified

[4] Finding and Recommendation numbering is sequential in Section 6, Findings and Recommendations. The same numbering used in Section 6 is carried over in the Executive Summary so that readers can identify results presented in both sections.

savings were due to changing from a blended average of TRM assumptions used by ComEd to equipment-specific values found through savings verification. Most often, adjusting the blended averages to verified values resulted in an upwards correction, however, for occupancy sensor measures, this more often resulted in a downwards correction. Although using blended averages has resulted in evaluation adjustment, an alternative approach of selecting fixtures from a TRM list during the application process could also lead to evaluation adjustments. We do not recommend one of the methods over the other.

Recommendation 1. Navigant recommends that ComEd review the assumptions for occupancy sensors. Specifically, the energy savings factor used should be weighted towards fixture mounted occupancy sensors; approximately 87% of ex-ante occupancy sensor savings in the sample were fixture mounted.

Finding 2. The largest decrease in non-lighting savings was identified through on-site visits where it was found that a measure was redundant or did not have a qualifying control strategy. The VSD installations which did not result in partial loading account for much of the lower realization rate for non-lighting measures.

Recommendation 2. ComEd should consider working with evaluation to review current pre-qualification requirements and post-installation verification approach on large chiller and variable speed drive projects to identify enhancements to the procedures that might reduce the likelihood of paying incentives on ineligible redundant units and a non-qualifying control strategy, without becoming overly burdensome for the program and participants

Process Evaluation

Finding 3. Awareness among bonus incentive recipients that their incentive included a bonus was high, and participants were satisfied with the application process. However, the bonus incentive did not appear to be a major driver of *additional* energy efficiency measure installations within a project for the PY6 Standard Program: A majority (69 percent) of those who were aware of the bonus before implementing the project reported a high likelihood of implementing the exact same project if they had only received the regular incentive amount (a rating of 7 to 10, on a scale from 0 to 10).

Recommendation 3. If bonus incentives are going to be offered in the future, conduct further research to more fully explore their effectiveness in expanding the scope within projects and to provide information to support the design of effective bonus options.

Finding 4. While overall satisfaction and customer experience was positive, participants who worked with a trade ally who participated in the Performance Reward Program tend to report even higher satisfaction and a more positive participation experience than those who did not.

1 Introduction

1.1 Program Description

ComEd offers standard incentives for common energy efficiency measures under the ComEd Smart Ideas for Your Business® Standard Program (i.e. Standard Program) to facilitate the implementation of cost-effective energy efficiency improvements for non-residential (commercial and industrial) customers. Eligible measures include energy-efficient indoor and outdoor lighting, HVAC equipment, refrigeration, commercial kitchen equipment, variable speed drives, compressed air equipment and other qualifying products.

To participate, an eligible customer submits an application with project documentation, including project specification sheets and copies of dated invoices for the purchase and installation of the measures. The Standard Program offers pre-determined incentives and a streamlined application to help facilitate participation. Lighting retrofit projects make up the largest percentage of ex ante gross energy savings for this program, although the percentage of non-lighting savings has increased from a low of six percent in PY2 to 22 percent in PY6.

In PY6, ComEd continued the marketing strategy of presenting its overall portfolio to customers in the marketplace under the Smart Ideas for Your Business program. This marketing and delivery strategy targets specific non-residential customers and market segments with a network of trade allies and service providers and financial incentives. Trade allies and service providers are a key strategy to promote the program to customers. The Standard Program's design and structure remained largely unchanged from PY5, though key updates were made to some the program's internal processes while increasing efforts to coordinate between program elements behind-the-scenes. Application forms were revised to make them more consistent across measure types and programs.

1.2 Evaluation Objectives

The Evaluation Team identified the following key researchable questions for PY6:

1.2.1 Impact Questions

1. What are the verified gross savings for Standard Program projects installed during EPY6, applying the Illinois TRM to estimate savings where applicable? What are the verified gross savings from lighting measures? What are verified gross savings from non-lighting measures?

2. What is the research estimate of gross savings for Standard Program projects installed during EPY6, using field measurement and verification (M&V) and engineering research to estimate savings? What is the research estimate for gross savings from lighting measures? What is the research estimate for gross savings from non-lighting measures?

3. Are the ex-ante per-unit gross impact savings correctly implemented by the tracking system and reasonable for this program?

4. What updates to the Illinois TRM are recommended based on evaluation research? What are the results of field data collection?

5. What are the research findings for net impacts in this program? What is the estimated free-ridership and spillover for PY6 participating customers?

6. Did the program meet its energy savings goals?

1.2.2 Process Questions

The process evaluation in PY6 involved cross cutting process research on overall business program delivery. There was limited process research specific to the Standard Program, addressing the following questions:

1. What has been the customer experience with ComEd's EPY6 Standard Program bonus offerings (Energy Efficiency Expo bonus, HVAC winter bonus, Zero T12 bonus)?

2. How does the customer experience and satisfaction for customers that work with a trade ally in the ComEd Performance Reward Program compare with customers that do not?

2 Evaluation Approach

The evaluation approach for the PY6 Standard Program continued the gross impact, net impact, and process evaluation activities that were conducted from PY1 through PY5. For deemed measures, Navigant verified ex ante gross savings against the values and algorithms provided in the Illinois Statewide Technical Reference Manual (TRM).[5] For non-deemed measures with custom variable inputs, Navigant conducted evaluation research to verify gross impacts. In PY6, Navigant assigned projects into lighting and non-lighting end-use categories for sampling, analysis and reporting of gross and net impacts. Sampling was designed to achieve a 90/10 level of confidence and relative precision separately for lighting and non-lighting, for gross and net research.

The Net-to-Gross Ratio (NTGR) estimates used to calculate net verified savings were deemed through a consensus process by the Illinois Stakeholder Advisory Group[6] based on PY4 evaluation research. The evaluation team conducted free-ridership and spillover research with participating PY6 Standard Program customers described in Appendix 7.1. In PY6, trade allies and business customers were interviewed in a separate study to estimate spillover broadly across the C&I market. The results of the cross-cutting C&I spillover study are reported separately.

The evaluation team conducted a targeted process evaluation specific to the Standard Program focusing on customer experiences and satisfaction with bonuses and trade allies.

2.1 Primary Data Collection

2.1.1 Overview of Data Collection Activities

The core data collection activities included verification of the program tracking data, on-site measurement and verification (M&V) of sampled projects, engineering file review of sampled projects, and a telephone survey of participating customers.

The full set of data collection activities is shown in Table 2-1 below.

[5] State of Illinois Technical Reference Manual. Final as of June 7, 2013, effective June 1, 2013. http://ilsagfiles.org/SAG_files/Technical Reference Manual/Illinois Statewide_TRM_Version_1.0.pdf

[6] Document provided by ComEd to the SAG summarizing the SAG-approved NTGR for ComEd for PY5-PY6 as agreed to through a consensus process in March-August 2013. Distributed in the SAG meeting on August 5-6, 2013. http://ilsagfiles.org/SAG_files/Meeting_Materials/2013/August 5-6, 2013 Meeting/ComEd PY5-PY6 Proposal Comparisons with SAG.xls

Table 2-1. Core Data Collection Activities

What	Who	Target Completes	Completes Achieved	When	Comments
Onsite M&V Audit	Participating Customers	34	34[7]	July – September 2014	Comprised of 12 lighting and 22 non-lighting projects for gross impact analysis
Engineering Review	Participating Customers	86	86	June – September 2014	Comprised of 55 lighting and 31 non-lighting projects for gross impact analysis
Telephone Survey	Participating Customers	120	120	September-October 2014	Data collection for NTG and process research in same instrument.
Telephone Interviews	Influential Trade Allies Triggered by Customer Responses	2	2	September-October 2014	Data collection supporting NTG analysis.
Telephone Survey	Participating Customers	40	40	September-October 2014	Data collection for process-only research.
In Depth Interviews	Program Management	4	4	March 2014	Follow-up conducted as needed

Source: Navigant and Opinion Dynamics Corporation

2.1.2 Verified Savings Parameters

Table 2-2 below presents the sources for parameters that were used in the verified gross and net savings calculations and indicate which were examined through PY6 evaluation research and which were deemed.

[7] One project was eventually removed from the sample in the gross impact analysis. The evaluation team concluded that the project savings was unverifiable and an outlier – not representative of the population given that it was closed by a flooding disaster.

Table 2-2. Verified Gross and Net Savings Parameter Data Sources

Input Parameters	Data Source(s)	Deemed or Evaluated?
Installed Quantities	Program tracking data analysis (September 28, 2014 extract); PY6 evaluation on-site M&V.	Evaluated
Deemed Lighting Measure Savings Parameters: Hours of Use (HOU), Peak Load Coincidence Factor, Energy and Demand Interactive Effects	Illinois TRM v2.0	Deemed‡
Lighting Measure Delta Watts (where deemed by the Illinois TRM)	Illinois TRM v2.0	Deemed‡
Lighting Measure Delta Watts not deemed by the Illinois TRM	Program documentation and PY6 M&V	Evaluated
Deemed HVAC, Food Service/Other, and Refrigeration Measures, principally: Electric Chillers, PTAC/PTHP, Guest Room Energy Management Controls, HVAC Variable Speed Drives, Air Compressor with Integrated VSD, EC Motors, Anti-Sweat Heater Controls	Illinois TRM v2.0	Deemed‡
Non-deemed Non-lighting Measures, principally: Industrial Variable Speed Drives, Energy Management Control Systems, Refrigeration Display Case/Doors; Refrigerated Cycling Dryers, Transformers, Demand Control Ventilation, Laboratory measures	Program documentation and PY6 M&V	Evaluated
Gross Realization Rate	PY6 evaluation M&V and Program tracking data analysis	Evaluated
Lighting and Non-Lighting NTG Ratios	Illinois Stakeholder Advisory Group process	Deemed†

† ComEd PY5-PY6 Proposal Comparisons with SAG.xls, which is to be found on the IL SAG web site here: http://ilsag.info/net-to-gross-framework.html

‡ State of Illinois Technical Reference Manual. Final as of June 7, 2013, effective June 1, 2013 (http://ilsagfiles.org/SAG_files/Technical Reference Manual/Illinois Statewide_TRM_Version_1.0.pdf)

2.1.3 Gross Program Savings Verification Analysis Approach

The verified gross savings analysis approach involved reviewing the ex-ante measure type to determine whether it is covered by the Illinois TRM or whether it is a non-deemed measure that is subject to retrospective per unit savings adjustment of custom variables. The measure type (deemed or non-deemed) dictated the verification approach.

- The savings verification process independently verifies program savings achieved through prescriptive measures defined in the Illinois TRM. This process verifies that the TRM was applied correctly and consistently by the program, that the measure level inputs to the algorithm were correct, and that the quantity of measures claimed through the program are correct and in place and operating. The results of savings verification are expressed as a verified gross savings realization rate (verified ex post savings / ex ante savings). Savings

verification may also result in recommendations for further evaluation research and/or field (metering) studies to increase the accuracy of the TRM savings estimate going forward.

- Measures with fully custom or partially-deemed ex-ante savings were subject to retrospective evaluation adjustments to gross savings on custom variables. For fully custom measures in the Standard Program, Navigant considered all algorithm and parameter values to be open to evaluation adjustment. For partially-deemed measures, we applied TRM algorithms and deemed parameter values where specified by the TRM, and used evaluation research to verify custom variables. For measures with custom variables, ComEd provided work paper documentation of savings, but verified savings were based on engineering review, billing data review, and on-site M&V (including metering) of sampled measures to determine eligibility and per unit savings.

The evaluation activities to verify gross energy savings of the Standard Program were conducted in these steps:

1. Used the Illinois TRM and engineering review of tracking data to assess correct implementation of deemed values, and reasonableness of non-deemed values in the ex-ante gross savings estimates. We categorized ex ante measures as lighting or non-lighting, and defined lighting projects as those with a predominance of lighting energy savings, and all others as non-lighting projects. Navigant found that nearly all projects contained either all lighting or all non-lighting measures. Projects with a mix of lighting and non-lighting measures provided only about one percent of program ex ante gross savings.

2. Implemented a stratified random sampling design of lighting and non-lighting measures to select 120 projects (consisting of 67 lighting and 53 non-lighting projects)[8] from the population of 3,736 Standard project applications and 7,126 Standard measures. Sampling was done in two waves with three sub-strata based on size. Sample sizes were designed provide a 90/10 confidence/relative precision level for program-level savings separately for lighting and non-lighting gross savings verification.

3. Conducted on-site visits and measurement and verification (M&V) activities on a sample of 34 Standard projects (12 lighting and 22 non-lighting)[9] selected from the 120 projects to support deemed and non-deemed measure savings verification and measure-level research. Lighting projects selected for on-site verification tended to be very large or complex projects. The selection of non-lighting projects for on-site verification was driven by project size and the need to site-verify non-deemed, non-lighting measures.

4. Conducted an engineering review of project files and energy savings estimates on the remaining 86 projects from the sample of 120 projects to support deemed and non-deemed measure savings verification and program-level research.

[8] The PY6 impact analysis was based on a total of 119 sample points. One non-lighting project was removed from the initial sample of 120, after the M&V on-site verification exercise. Navigant concluded the projects was unverifiable and an outlier – not representative of the population given that it was closed by a flooding disaster.
[9] ibid

5. The verified gross savings are the product of verified per unit savings and verified measure quantities.

2.1.4 Net Program Savings Analysis Approach

Verified net energy savings for lighting and non-lighting projects was calculated by multiplying the verified gross savings by a deemed net-to-gross ratio (NTGR). In PY6, the NTGR estimates used to calculate the net verified savings were deemed through a consensus process by the Illinois Stakeholder Advisory Group (SAG)[10] based on PY4 evaluation research. The SAG process assigned separate NTG values for lighting and non-lighting savings.

The evaluation team conducted free-ridership and spillover research with participating PY6 Standard Program customers described in Appendix 7.1. Survey instruments are included in Appendix 7.4. In PY6, trade allies and business customers were interviewed in a separate study to estimate spillover broadly across the C&I market. The results of the cross-cutting C&I spillover study are reported separately.

2.1.5 Process Evaluation Methods

In PY6, the Navigant team conducted a limited process evaluation for the Standard Program, focusing on two topics: 1) the Standard Program bonus incentive and 2) customer experience with trade allies in ComEd's Performance Reward Program. We conducted a computer assisted telephone interviewing (CATI) survey with participating customers to inform these research questions.

We completed a total of 160 interviews with Standard Program participants. The original survey sample was designed to support the net impact analysis and targeted 120 completes. These 120 respondents were asked questions to estimate free-ridership and participant spillover as well as questions to support the process evaluation. Because the original sampling approach did not yield enough completes with customers who received a bonus incentive or worked with a trade ally in ComEd's Performance Reward Program, we conducted an additional 40 interviews with these customers that only included process questions. All interviews were completed in September and October, 2014.

The CATI survey instruments used for this evaluation are included in Appendix 7.4.

[10] Document provided by ComEd to the SAG summarizing the SAG-approved NTGR for ComEd for PY5-PY6 agreed to through a consensus process in March-August 2013. Distributed in the SAG meeting on August 5-6, 2013. http://ilsagfiles.org/SAG_files/Meeting_Materials/2013/August 5-6, 2013 Meeting/ComEd PY5-PY6 Proposal Comparisons with SAG.xls

3 Gross Impact Evaluation

The Standard Program in PY6 achieved overall verified gross savings of 268,982 MWh. The verified gross savings for lighting end-use measures is 217,668 MWh at a gross realization rate of 1.02. The verified gross savings for non-lighting measures is 51,314MWh at a gross realization rate of 0.88. Results of our PY6 evaluation activities to verify the Standard Program savings are presented in this section.

3.1 Tracking System Review

Navigant conducted a consistency check on the September 28, 2014 Standard Program tracking system extract to confirm whether the PY6 data in the Frontier tracking system[11] – its stored lookup values for per unit energy and demand savings and reported ex-ante energy and demand savings – were consistent with the Illinois TRM deemed values[12], and with per unit savings values produced by DNV GL[13] in the ComEd Work papers for non-deemed measures and custom variables in the Standard Program. We examined values for per unit energy savings and coincident peak demand at the measure level in the following manner:

- Does the applicable TRM deemed unit value match the lookup table value in the tracking system?
- Does the TRM deemed unit savings value match a per unit savings value we derived from measure-level ex ante savings and quantities reported in the tracking system? That is, we divided the reported energy and demand savings for each installation of a measure by the reported quantities to catch inappropriate data.
- Do the deemed per unit savings values found in the PY6 Standard work papers (May 29, 2013 version) match the per unit savings values we derived from measure-level ex ante savings reported in the tracking system?
- When applicable, do the deemed per unit savings values found in the ComEd PY6 work papers match with what is expected in the TRM?

Navigant found that majority of PY6 Frontier tracking system energy and demand savings are consistent with the ComEd's PY6 measure lookup values and DNV GL PY6 Standard work papers, and with the Illinois TRM. The specific measures that we found with discrepancies and recommend to be examined further by ComEd and DNV GL are the IS_VSD measures, Energy Management System, and DLC (Design Lights Consortium) qualified LED measures. Most of the tracking system savings for new non-lighting measures introduced in PY6 (e.g. agriculture, transformers, and laboratory end-use measures) are either partially deemed or based on custom assumptions. Where tracking system review findings indicated the need for an adjustment to ex ante savings, we applied

[11] PY6 tracking database extract dated 3/30/2014 downloaded from the ComEd SharePoint.
[12] Illinois TRM (Version 2.0, effective 6/01/2013) deemed savings values that provided the basis for a comparison check with deemed values stored in the extract of the Frontier database system for specific measure categories.
[13] ComEd PY6 Measure Lookup Tables with Unit Qty Estimates 5-29-13_for PY6 eval.xlsx, including *ComEd PY6 Measure Work papers 5-29-13_for PY6 eval.docx*

adjustments only to sampled projects. Evaluation adjustments for tracking system discrepancies had a minimal impact on the verified gross savings for the Standard Program.

Lighting End-use Measures

The majority of the Standard Program lighting measure savings values match the TRM assumptions and are generally consistent within the tracking database. We found the savings in the tracking system to be at the fixture level instead of per watt reduced for the following non-deemed DLC LED lighting measures (the work papers and measure lookup table for other DLC qualified LED measures are calculated in savings per watt reduced):

1. DLC Qualified Canopy LED Luminaires,
2. DLC Qualified Outdoor Pole/Arm-Mounted Decorative LED Luminaires, 251-400W HID Base
3. DLC Qualified Outdoor Pole/Arm-Mounted Area LED Luminaires, 176-250W HID Base
4. DLC Qualified Outdoor Wall-Mounted Area LED Luminaires =175W
5. HID Base DLC Qualified Parking Garage LED Luminaires =175W HID Base - Garage/Non-24-7

On a minor note, DNV GL can correct the work paper savings for Garage DLC Qualified LED Equipment - listed 3.54 kWh in ComEd lookup and tracking system, however work paper value is 3.45 kWh. Also, LED Exit Signs did not calculate kW correctly in all sampled instances (ex ante demand was underestimated); we were unable to determine a cause for observed discrepancies.

The implementer has noted the above discrepancies and has addressed in tracking system.

HVAC_VSD and IS_VSD End-use Measures

Most of the tracking system savings from HVAC_VSD and IS_VSD end-use measures are consistent with the TRM, although some measures have custom assumptions built into the default savings.

The tracking savings for Energy Management Systems (EMS, tracked within the HVAC_VSD end-use category) have not changed from 3.23 kWh/sf since PY5, although the PY6 lookup table and the PY6 Standard work papers have a value of 3.67 kWh/sf.

IS_VSD – The assumptions around the savings for IS_VSD measures were not immediately clear. Installed VFDs on "other" fans or pumps had default values of 721 kWh/hp and 0.160 KW/hp, however the tracking savings are 860 kWh/hp (0.16 KW) for fans and 800 kWh/hp (0.03 KW) for pumps. For Industrial Systems VSDs on Cooling Tower Fans, it appears that ComEd work papers intended default savings from light industry to be 257 kWh/hp and 0.1185 KW/hp, but the tracking system reported higher savings (e.g. project #18453 with 40HP should yield 10,280 kWh and 4.74 KW savings; instead it yields 55,200 kWh and 5.6 KW). This is also the case for project #21270 (75hp should yield 34,875 kWh and 4.74 KW savings but not 103,500 kWh and 8.89KW). We were not able to find a source for the tracked ex ante per unit savings. These discrepancies are likely due to project calculations being completed by the previous implementer.

Compressed Air

With the exception of compressed air with integrated VSD, the compressed air end-use measures are not deemed in the TRM for PY6. Lookup default values are not provided in the PY6 Standard work papers for verification of the Low Pressure Drop Filters, No-Loss Condensate Drains, and the savings for Refrigerated Cycling Dryers. No-Loss Condensate Drains have been added to the Version 3.0 TRM. The implementer is including measure work papers for compressed air measures in PY7.

Other Measures

In PY6, DNV GL/ComEd used a non-deemed electric saving factor of 400 kWh/sf to calculate savings for Demand Control Ventilation for conditioned spaces. This value will need to be revised in PY7 to match the TRM values for respective building types. This will increase the measure savings for most building types. On a minor note, the tracking unit demand savings for Ice Makers (e.g. 1001-1500 lbs/day) and the ENERGY STAR Glass Door Refrigerator should be rounded to four digits for consistency with the default values.

3.2 Program Volumetric Findings

Table 3-1 provides the Standard Program participation detail in PY6. Participants installed a total of 7,126 measures from 3,736 projects, with lighting end-use projects exceeding non-lighting end-use projects by a margin of three to one. Breakdown of the installed measures by end-use category are provided in Figure 3-1.

Table 3-1. PY6 Standard Program Participation Overview

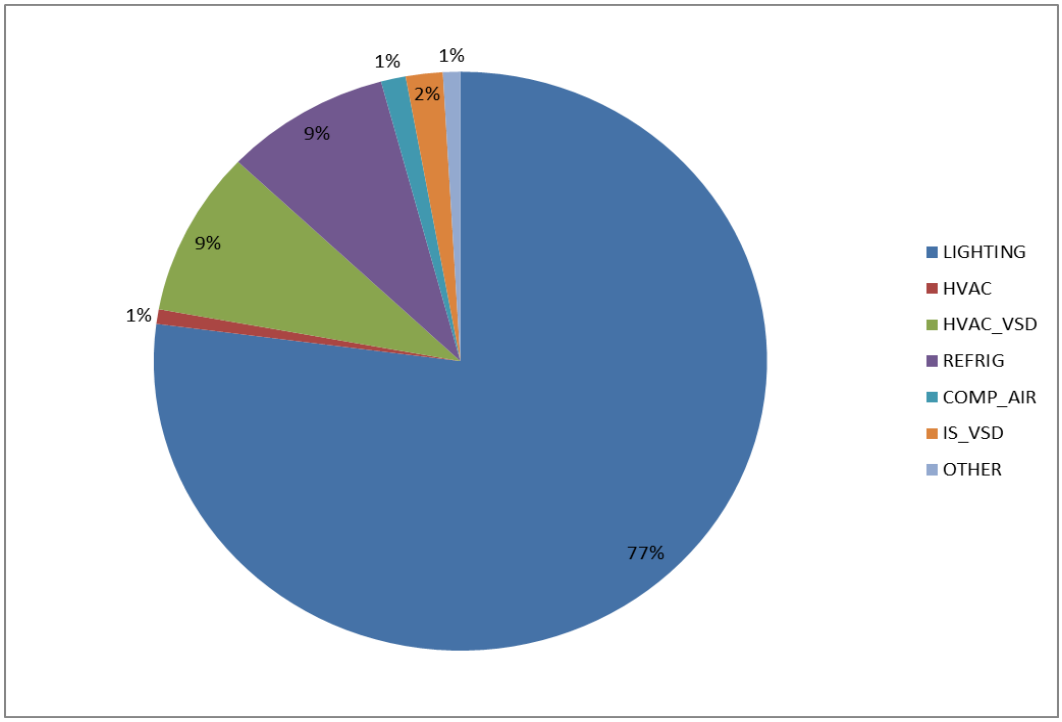
Participants	Lighting End-Use	Non-Lighting End-Use	Total
Unique Participants			2,263
Participation*	2,590 (73%)	970 (27%)	3,560
Installed Projects	2,739 (73%)	997 (27%)	3,736
Total Measures**	5,491 (77%)	1,635 (23%)	7,126

Source: ComEd tracking data (September 28, 2014) and Navigant analysis.

* This is unique site address and end-use category.

** This is a project-level measure count based on type of measure, not quantities installed.

Figure 3-1. Number of Measures Installed by End-use Type



Source: Evaluation Analysis

3.3 *Gross Program Impact Parameter Estimates*

The gross impact parameters are presented in Table 3-2 below.

Table 3-2. Verified Gross Savings Parameters

Gross Savings Input Parameters	Value	Deemed or Evaluated? ‡
Quantity	Varies	Evaluated
Measure Type and Eligibility	Varies	Evaluated
Gross Savings per Unit, Sampled Deemed Measures	Varies	Deemed
Gross Savings per Unit, Sampled Non-Deemed Measures	Varies	Custom Variables Evaluated
Verified Realization Rate on Ex-Ante Gross Savings (Lighting)	102% (kWh), 106% (kW)	Evaluated
Lighting RR Confidence Level/Rel Precision (± %)	90/4 (kWh), 90/6 (KW)	Evaluated
Verified Realization Rate on Ex-Ante Gross Savings (Non-Lighting)	88% (kWh), 110% (kW)	Evaluated
Lighting RR Confidence Level/Rel Precision (± %)	90/13 (kWh), 90/16 (KW)	Evaluated

‡ State of Illinois Technical Reference Manual. Final as of effective June 1, 2013. http://ilsagfiles.org/SAG_files/Technical Reference Manual/Illinois Statewide_TRM_Version_2.0.pdf;
Source: ComEd Tracking data (9-28-2013) extract.

The verified gross energy realization rate (defined as the ratio of the verified gross energy savings to ex-ante gross energy savings as reported in the tracking system) was estimated as 102% for the

lighting sample projects (at 90 confidence level and 4% relative precision for energy) and 88% for the non-lighting sample projects (at 90 confidence level and 13% relative precision for energy).

A discussion on the savings verification research findings is presented in Appendix 7.1.1.

3.4 Verified Gross Program Impact Results

The resulting total program verified gross energy savings is 268,982MWh (217,668 MWh for lighting measures and 51,314MWh for non-lighting measures) and coincident peak demand savings of 46.89MW (34.61 MW for lighting measures and 12.28 MW for non-lighting measures). Table 3-3 shows verified gross savings in groupings where the evaluation research supports estimates at 90/10 confidence or better.

Table 3-3. PY6 Verified Gross Impact Savings Estimates

	Sample Size	Gross Energy Savings (MWh)	90/10 Significance	Gross Peak Demand Savings (MW)	90/10 Significance
Lighting Measures					
Ex-Ante Gross Savings	67	212,649	Yes	32.63	Yes
Verified Gross Realization Rate		102%		106%	
Verified Gross Savings		217,668		34.61	
Non-Lighting Measures					
Ex-Ante Gross Savings	52	58,620	No	11.21	No
Verified Gross Realization Rate		88%		110%	
Verified Gross Savings		51,314		12.28	
Program Total					
Ex-Ante Gross Savings	119	271,269	Yes	43.84	Yes
Verified Gross Realization Rate		99%		107%	
Verified Gross Savings		268,982		46.89	

Source: Evaluation Team analysis.

Although the energy and peak demand savings verification realization rates were 99% for the overall program, there were upward gross adjustments on lighting that balanced out downward savings adjustments on non-lighting measures. The program tracking ex ante estimates of lighting gross energy savings are conservative overall, but savings for non-lighting measures have inconsistent realization rate results across end-use and measures types, and evaluation adjustments were both higher and lower but overall combining for realization rates less than one. A significant factor in the lower realization rate for non-lighting measures were findings of ineligible variable speed drive projects. Research findings are presented in Appendix 7.1.1.

4 Net Impact Evaluation

Verified net energy savings for PY6 Standard Program was calculated separately for lighting and non-lighting end-use categories by multiplying the PY6 verified gross savings by a deemed Net-to-Gross Ratio (NTGR). The NTG values of 0.70 for lighting and 0.63 for non-lighting used to calculate PY6 verified net savings were deemed through a consensus process by the Illinois Stakeholder Advisory Group (SAG)[14] based on PY4 evaluation research. The lighting PY4 NTGR was statistically significant at the 90/10 level, but the PY4 non-lighting NTGR did not meet 90/10. As shown in Table 4-1 below, the Standard Program achieved verified net savings of 184,696MWh and verified net peak demand savings of 31.97MW.

Participating customer free ridership research was conducted in PY6 for potential future application. The research methods and results are presented in Appendix 7.1.2.

Table 4-1. PY6 Standard Verified Net Impact Savings Estimates by Measure Category

	Sample Size	Gross Energy Savings (MWh)	90/10 Significance	Gross Peak Demand Savings (MW)	90/10 Significance
Lighting Measures					
Ex-Ante Gross Savings		212,649		32.63	
Verified Gross Realization Rate	67	102%	Yes	106%	Yes
Verified Gross Savings		217,668		34.61	
NTGR		0.70	Yes	0.70	Yes
Verified Net Savings		152,368		24.23	
Non-Lighting Measures					
Ex-Ante Gross Savings		58,620		11.21	
Verified Gross Realization Rate	52	88%	No	110%	No
Verified Gross Savings		51,314		12.28	
NTGR	Yes	0.63	No	0.63	No
Verified Net Savings		32,328		7.74	
Program Total					
Ex-Ante Gross Savings		271,269		43.84	
Verified Gross Realization Rate	119	99%	Yes	107%	Yes
Verified Gross Savings		268,982		46.89	
Verified Net Savings		184,696		31.97	

Source: Evaluation Team analysis.

[14] Document provided by ComEd to the SAG summarizing the SAG-approved NTGR for ComEd for EPY5-EPY6 as negotiated in March-August 2013. Distributed in the SAG meeting on August 5-6, 2013. ComEd PY5-PY6 Proposal Comparisons with SAG.xls Found on the IL SAG web site here: http://ilsag.info/net-to-gross-framework.html

5 Process Evaluation

5.1 Process Evaluation Results

The PY6 process evaluation focused on two key areas: 1) customer experience with ComEd's PY6 Standard Program bonus offerings and 2) the impact of contractor participation in the Performance Reward Program on customer participation experience and satisfaction. We conducted a computer assisted telephone interviewing (CATI) survey with participating customers to inform these research questions.[15]

Overall, we found the following:

- Awareness among bonus incentive recipients that their incentive included a bonus was high, and participants were satisfied with the application process. However, the bonus incentive did not appear to be a major driver of *additional* energy efficiency measure installations within a project for the PY6 Standard Program: A majority of those who were aware of the bonus before implementing the project reported a high likelihood of implementing the exact same project if they had only received the regular incentive amount.
- Participants who worked with a trade ally who participated in the Performance Reward Program tend to report a more positive participation experience than those who did not (although satisfaction and customer experience was positive among all groups of participants).

5.2 Bonus Offerings

In PY6, ComEd offered three types of bonus incentives as part of the Standard Program:

- **Energy Efficiency Expo (E3) Bonus**: A 10% bonus coupon that was sent to customers who attended the 2013 Energy Efficiency Expo, to be used on any future Smart Ideas Standard project.
- **Zero T12 Bonus:** An incentive available to customers who replace or retrofit and remove all T12 fixtures and lamps in their building.
- **HVAC Winter Bonus:** An incentive offered between December 2013 and May 16, 2014 which doubled the incentive on projects that included at least one of nine Standard HVAC measures.

According to the participant database, a total of 542 PY6 projects, which is 14.5% of all projects, received a bonus incentive. Of these, 83% received a Zero T-12 Bonus, 9% received an HVAC Winter bonus, and 8% received an E3 bonus.

The participant survey explored a range of topics surrounding the bonus incentives, including awareness of receiving the bonus at the time of the survey and prior to project implementation, how

[15] Frequencies for all process-related survey questions can be found in Section 7.2 of the appendix.

participants heard about the bonus, likelihood to install exactly the same equipment absent the bonus, and satisfaction with the bonus incentive application process.

Overall, awareness that the incentive included a bonus amount was high: Most respondents (85%) were aware, at the time of the survey, that they had received a bonus incentive. Of these, almost three-quarters (72%) were aware of the bonus incentive *before* implementing the project. Awareness of the bonus incentive was equally high for the different types of bonus incentives (See Table 5-1; note the small sample sizes for the HVAC Winter Bonus and the E3 Coupon).

Table 5-1. Recall of Bonus Incentive by Bonus Type

	Overall (n=41)	Zero T-12 Bonus (n=29)	HVAC Winter Bonus (n=7)	E3 Coupon (n=5)
Aware of Bonus	85%	85%	71%	100%
Aware before implementing project	*72%*	*71%*	*61%*	*90%*
Aware after implementing project	*20%*	*20%*	*39%*	*0%*
Don't know	*8%*	*9%*	*0%*	*9%*
Not Aware of Bonus	15%	15%	29%	0%

Source: PY6 Participant survey

Not surprisingly, contractors and trade allies (66%) were the most common way that participants learned about the bonus incentive. Another 20% of bonus incentive recipients learned about the bonus through Smart Ideas program sources, including seminars, mail, and e-mail (10%) or the ComEd website (10%).

Table 5-2. How Bonus Recipients Heard about Bonus Offering

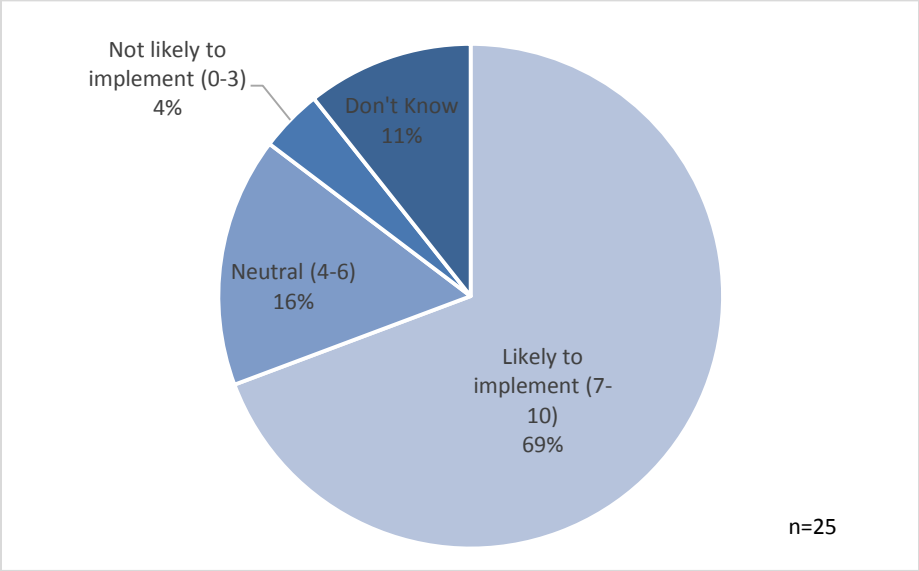
Source	% (n=25)
Contractor/Trade Ally	66%
Program Outreach †	10%
ComEd Website	10%
Word of mouth	1%
Other	5%
Don't Know	8%

† Includes seminar, mail, and e-mail.
Source: PY6 Participant survey

Among those who recalled receiving a bonus incentive, the customer (42%), the contractor (32%), or the distributor (10%) most often filled out the bonus application form. Customers who filled out the application themselves were generally satisfied with the application process, providing a mean satisfaction score of 9.3 (on a scale from 0 to 10).

Overall, it does not appear that the bonus incentive was a major driver of *additional* energy efficiency measure installations within a project for the PY6 Standard Program. Of those who were aware of the bonus before implementing the project, over two-thirds (69%) reported that they would have been likely to implement the exact same project if they had only received the regular incentive amount (a rating of 7 to 10, on a scale from 0 to 10); only 4% would have been unlikely to have installed the same equipment had the bonus incentive not been available (a rating of 0 to 3 on the same 11-point scale). The mean likelihood rating of all respondents to this question was 7.7.

Figure 5-1 Likelihood to Have Installed the Same Equipment without Bonus



Source: PY6 Participant survey

5.3 TA Performance Reward Program

In PY6, the Smart Ideas Program sought to encourage trade ally efforts to promote the program by offering trade allies performance rewards. Successful participants could earn cash rewards by submitting complete Final Applications on behalf of their customers. According to program tracking data, 85 contractors participated in the Performance Reward Program, earning a total of $384,500 in performance rewards. Program tracking data further indicates that the 85 contractors participating in the Performance Reward Program implemented approximately 34% of the 3,737 PY6 projects.

The participant survey explored a few general topics (how participants heard about the Smart Ideas Program, the application process, intentions for future participation) and asked a series of questions about the customer's experience and satisfaction with their contractors. To assess if trade ally participation in the Performance Reward Program had a positive effect on customer experience and satisfaction, we compared survey responses from customers who worked with a contractor in the Performance Reward Program (n=50) with those who worked with a contractor who did not participate in the program (n=63).

Overall, survey responses suggest that customers who worked with a Performance Reward Program trade ally tend to have a more positive experience with their contractor compared to those who worked with a contractor who is not part of the Performance Reward Program.

Specifically, survey responses show that participants who worked with a contractor in the Performance Reward Program are:[16]

- More likely to be completely satisfied with their contractor's ability to meet their needs (a rating of 10, on a scale from 0 to 10).
- Significantly more likely to consider working with their contractor on future projects.
- More likely to recommend their contractor to others.
- Significantly less likely to have worked with that contractor before the incented project, suggesting that Performance Reward Program contractors were more successful than other contractors in reaching out to new customers.
- Better informed about their contractor's affiliation with the Smart Ideas Program and place significantly more importance on the fact that their contractor is trained in the Smart Ideas application process and program incentives.
- Significantly more likely to have first heard about the program from their contractor.

Participants who worked with a Performance Reward Program contractor also report higher program influence on their decision to implement the energy efficient measure, i.e., they have slightly lower free-ridership scores compared to participants who worked with a contractor who is not part of the Performance Reward Program. Interestingly, participants who worked with a Non-Performance Reward Program contractor are more likely to report that they plan to participate in the program in the future.[17]

Table 5-3, below, summarizes these responses for 1) all respondents to these survey questions, including those who worked with a contractor for whom we could not verify participation in the Performance Reward Program; 2) participants who worked with a contractor who participated in the Performance Reward Program; and 3) participants who worked with a contractor who did not participate in the Performance Reward Program.

[16] In this section, we explicitly note when differences are statistically significant at the 90% level or better, using a 1-tailed test (t-test for means, z-test for percentages). We also report on results that are not statistically significant at these levels, as responses to all questions trend in the direction of higher satisfaction among those who worked with a contractor in the Performance Reward Program. Because customer experience was very positive across all types of participants, differences between those who worked with a contractor in the Performance Reward Program and those who did not are often too small to be detected by statistical tests, given our final sample sizes.

[17] The survey did not further explore likely future participation (or past participation) so the drivers of this result are not known. However, intention to participate again appears to be positively correlated with having previously worked with the contractor.

Table 5-3. Participant Experience with Contractors

	All Respondents (n=113)	Worked with Performance Reward Contractor (n=34)	Worked with Non-Performance Reward Contractor (n=62)
Contractor's ability to meet your needs			
% Rating 10	55%	61%	51%
Mean	9.2	9.2	9.2
Would work with contractor on future projects			
Yes	94%	98%*	90%
Would recommend contractor to others			
Yes	96%	97%	94%
Have worked with contractor before			
No	35%	50%*	23%
Correctly identified contractor's association with the Smart Ideas Program			
Yes	n/a	46%	40%†
Importance of contractor trained in Smart Ideas application process and incentives			
% Rating 10	40%	48%‡	33%
Mean	7.0	7.6	6.6
First heard about the program from…			
Contractor	22%	31%*	12%
Plans to participate in the program again			
Yes	82%	79%	87%

Source: PY6 Participant Survey

‡Indicates statistically significant difference at the 90% level of better, relative to comparison group

† Only includes trade allies not in the Performance Reward Program (n=13); does not include contractors who are not trade allies.

6 Findings and Recommendations

This section summarizes the key impact and process findings and recommendations.

Gross Realization Rates

Finding 1. Although the energy and peak demand savings verification realization rates were, respectively, 0.99 and 1.07 for the overall program, there were upward gross adjustments on lighting that balanced out downward savings adjustments on non-lighting measures. For energy savings, a gross realization rate of 1.02 for lighting balanced out the 0.88 gross realization rate for non-lighting. For demand, both lighting (1.06) and non-lighting (1.10) had gross realization rates above one. The largest category of changes made (approximately one third of the total number of adjustments) from the ex-ante to verified savings were due to change from a blended average of TRM assumptions used by ComEd to equipment-specific values found through savings verification. Most often, adjusting the blended averages to verified values resulted in an upwards correction, however, for occupancy sensor measures, this more often resulted in a downwards correction. Although using blended averages has resulted in evaluation adjustment, an alternative approach of selecting fixtures from a TRM list during the application process could also lead to evaluation adjustments. We do not recommend one of the methods over the other.

Recommendation 1. Navigant recommends that ComEd review the assumptions for occupancy sensors. Specifically, the energy savings factor used should be weighted towards fixture mounted occupancy sensors; approximately 87% of ex-ante occupancy sensor savings in the sample were fixture mounted.

Finding 2. The largest decrease in non-lighting savings was identified through on-site visits where it was found that a measure was redundant or did not have a qualifying control strategy. The VSD installations which did not result in partial loading account for much of the lower realization rate for non-lighting measures.

Recommendation 2. ComEd should consider working with evaluation to review current pre-qualification requirements and post-installation verification approach on large chiller and variable speed drive projects to identify enhancements to the procedures that might reduce the likelihood of paying incentives on ineligible redundant units and a non-qualifying control strategy, without becoming overly burdensome for the program and participants

Process Evaluation

Finding 3. Awareness among bonus incentive recipients that their incentive included a bonus was high, and participants were satisfied with the application process. However, the bonus incentive did not appear to be a major driver of *additional* energy efficiency measure installations within a project for the PY6 Standard Program: A majority (69 percent) of those who were aware of the bonus before implementing the project reported a high likelihood of implementing the exact same project if they had only received the regular incentive amount (a rating of 7 to 10, on a scale from 0 to 10).

Recommendation 3. If bonus incentives are going to be offered in the future, conduct further research to more fully explore their effectiveness in expanding the scope within projects and to provide information to support the design of effective bonus options.

Finding 4. While overall satisfaction and customer experience was positive, participants who worked with a trade ally who participated in the Performance Reward Program tend to report even higher satisfaction and a more positive participation experience than those who did not.

TRM Updates

Finding 5. Site M&V verified that two sampled projects (#19986 and #20856) involved facilities that had closed prior to or after the end of PY6. Navigant determined that project #19986 (a TRM-defined GREMs project at a motel that was closed due to flooding) should be removed from the impact sample because it was unverifiable and an outlier, but was adequately documented to remain in the population. Project #20856 (a TRM-defined refrigeration project at a grocery that later closed and the equipment appeared to be removed) was retained in the sample and credited with TRM-defined full first year savings based on evaluation review of ComEd's post installation verification that took place during PY6. We concluded that the equipment was verified "in place and operating" at the time ComEd had completed its post inspection responsibilities on the project during PY6. The TRM provides the full first year savings for verified savings on this measure, and the business closure is an issue of persistence.

Recommendation 4. Evaluation will recommend to the TRM Technical Advisory Committee that the savings verification issues brought up through business closures and equipment removal be clarified as an update to TRM version 5.

Finding 6. The ComEd Standard Program offers prescriptive incentives on many measures that are not in the Illinois TRM, but most lack the program volume to make the case for adding as new measures to the Illinois TRM.

Recommendation 5. One measure that should be considered for adding to the version 5 TRM is Cycling Refrigerated Compressed Air Dryers. Evaluation will submit the measure to the TRM Technical Advisory Committee for consideration in the Version 5 TRM update.

Program Participation

Finding 7. Program participation (number of installed projects) in the Standard Program increased by 5.4% from PY5 to PY6 which resulted in a 3.4% increase in ex ante energy savings over the same period. Ex ante non-lighting energy savings decreased from 64,302 in PY5 to 58,620 MWh in PY6, a 9% reduction. The ex ante lighting energy savings grew from 197,993 MWh in PY5 to 212,649 in PY6, a 7.4% increase. Savings are still lower than historically due to measures moving from Standard to Multi-Family, BILD, and Small Business Programs. Gross energy savings was dominated by lighting (78% of ex ante) and VSDs (14% of ex ante) and refrigeration (3% of ex ante). The remaining 5% of PY6 gross ex ante energy savings were supplied by a large number of non-lighting measures, with relatively few or no installations.

Recommendation 6. ComEd should consider that expanding the volume of savings from the last 5% is likely to need the assistance of dedicated champions to build awareness around specific equipment and research barriers that may be limiting volume.

Net-to-Gross Estimates

Finding 8. Evaluation research of free-ridership conducted on PY6 participants found a value of 27%for lighting (90/6) and 38% for non-lighting (90/6). The free-ridership rates have been stable within the bounds of relative precision for the Standard Program over several years of evaluation. Although the phase out of T12 lighting continues to completion, this has not had a significant effect on the free-ridership through PY6. Research in PY6 will estimate C&I spillover at the portfolio level.

Recommendation 7. The PY6 research findings for free-ridership for lighting (27%) and non-lighting (38%) should be considered for future deeming. Although the Illinois TRM institutes a phase-out of the T12 lighting baseline in the middle of PY8, we recommend the PY6 lighting free-ridership research be considered in the consensus process to set PY8 NTG values.

Finding 9. Navigant observed that 19 out of 55 non-lighting NTG interview results for Strata 2 and 3 returned a NTG value of 0.50 or less. Of the 19, seven were based on the measure "Air Compressor with Integrated VSD" and 6 were VSDs on fans (four) and pumps (one) and a chiller (one). The average NTG for respondents with the "Air Compressor with Integrated VSD" measure (eight respondents in total) was 0.38.

Recommendation 8. ComEd may want to explore whether air compressors with integrated VSDs have become standard practice for a majority of purchasers.

Tracking System

Finding 10. We found that majority of PY6 Frontier tracking system energy and demand per unit savings are consistent with the ComEd's PY6 measure lookup values and DNV GL PY6 Standard work papers, and with the Illinois TRM. Most of the tracking system savings for new non-lighting measures introduced in PY6 (e.g. agriculture, transformers, and laboratory end-use measures) are either partially deemed or based on custom assumptions. Where tracking system review findings indicated the need for an adjustment to ex ante savings, we applied adjustments only to sampled projects. Evaluation adjustments for tracking system discrepancies had a minimal impact on the verified gross savings for the Standard Program.

Recommendation 9. The specific measures that we found with discrepancies and recommend to be examined further by ComEd and DNV GL are the IS_VSD measures, Energy Management System, and DLC qualified LED measures. We acknowledge that ComEd and DNV GL have produced a revision of the work papers that address the findings in the tracking system review section of this report. We will review the work papers as part of the PY7 evaluation exercise.

7 Appendix

7.1 Impact Evaluation Research Findings and Approaches

7.1.1 Gross Impact Results

The gross impact evaluation results presented in Section 3 differentiated between savings verification of deemed measures and input values and site-specific engineering research estimates of non-deemed measure savings. Savings verification sought to verify eligibility, quantity, and compliance with claimed deemed per unit savings values defined in the Illinois TRM. Gross impact evaluation of non-deemed measures involved collecting data from supporting project documentation and on-site measurement and verification (M&V) to estimate site-specific measure savings for custom variables.

Two separate evaluation estimates of gross savings are presented in this report: a savings verification estimate presented in the body of the report that uses the TRM approach for measures covered by the TRM, and a research estimate that applies all evaluation research without regard to the TRM status of measures. The research estimate is presented only in Appendix.

The evaluation activities to verify gross energy savings and produce a research estimate of the Standard Program were conducted in these steps:

1. Used the Illinois TRM and engineering review of tracking data to assess correct implementation of deemed values, and reasonableness of non-deemed values in the ex-ante gross savings estimates. We categorized ex ante measures as lighting or non-lighting, and defined lighting projects as those with a predominance of lighting energy savings, and all others as non-lighting projects. Navigant found that nearly all projects contained either all lighting or all non-lighting measures. Projects with a mix of lighting and non-lighting measures provided only about one percent of program ex ante gross savings.

2. Implemented a stratified random sampling design of lighting and non-lighting measures to select 120 projects (consisting of 67 lighting and 53 non-lighting projects)[18] from the population of 3,736 Standard project applications and 7,126 Standard measures. Sampling was done in two waves with three sub-strata based on size. Sample sizes were designed provide a 90/10 confidence/relative precision level for program-level savings separately for lighting and non-lighting gross savings verification.

3. Conducted on-site visits and measurement and verification (M&V) activities on a sample of 34 Standard projects (12 lighting and 22 non-lighting) selected from the 120 projects[19] to support deemed and non-deemed measure savings verification and measure-level research. Lighting projects selected for on-site verification tended to be very large or complex projects.

[18] The PY6 impact analysis was based on a total of 119 sample points. One non-lighting project was removed from the initial sample of 120, after the M&V on-site verification exercise. Navigant concluded the projects is unverifiable and an outlier – not representative of the population given that it was closed by a flooding disaster.
[19] ibid

The selection of non-lighting projects for on-site verification was driven by project size and the need to site-verify non-deemed, non-lighting measures. On-site data collection occurred primarily during the June 1 through August 31 summer peak period. Performance measurements included spot measurements and run-time hour data logging for selected measures.

4. Conducted an engineering review of project files and energy savings estimates on the remaining 86 projects from the sample of 120 projects to support deemed and non-deemed measure savings verification and program-level research.

5. Conducted a quality control review of the research findings impact estimates and the associated draft site reports and implement any necessary revisions.

6. Produced an estimate of verified gross savings (kWh and kW) using the TRM for savings verification.

7. Produced a research estimate of gross savings (kWh and kW) using all evaluation findings.

8. Produced a gross realization rate (which is the ratio of the evaluated gross savings to ex-ante gross savings as reported in the tracking system) for the sample and applied to the total program ex-ante gross savings, using sampling-based approaches that are described in greater detail below. Gross realization rates were produced for savings verification and the research estimate.

The product of the ex ante gross savings times the gross realization rate is an evaluation estimate of gross savings for the Standard Program.

Research Findings Gross Program Impact Summary Results

Table 7-1 summarizes the evaluation research findings gross program impacts derived for the PY6 Standard Program.

Table 7-1. Summary of Research Findings Gross Realization Rates and Savings Estimates

End-Use Segment	kWh, Ex Ante Gross Savings	kWh, Research Finding Gross Savings	kWh RR	kW, Ex Ante Gross Savings	kW, Research Finding Gross Savings	kW RR
Lighting	212,649,056	242,721,344	114%	32,628	34,671	106%
Non-Lighting	58,619,717	57,028,334	97%	11,209	13,920	124%
Total	**271,268,774**	**299,749,678**	**110%**	**43,837**	**48,590**	**111%**

Source: Evaluation analysis

Sampling Design (Savings Verification and Research Estimate)

The sample draw for PY6 gross impact evaluation was designed to provide a 90/10 level confidence and relative precision for gross impact realization rate results for lighting measures, non-lighting measures, and the overall program. Strata were defined by project size (separately for lighting and

non-lighting projects), based on ex-ante gross energy savings boundaries that placed about one-third of program-level savings into each stratum.

For lighting projects, Stratum 1 consisted of large projects with project-level ex-ante energy savings greater than 345,000 kWh, stratum 3 consisted of small projects with ex-ante gross energy savings less than 110,000 kWh, and stratum 2 consisted of the medium sized projects in between. Similarly, for non-lighting projects, Stratum 1 consisted of large projects greater than 370,000 kWh, stratum 3 consisted of small projects less than 89,000 kWh, and stratum 2 consisted of the medium sized projects in between.

Sampling was done in two waves that were roughly proportional to the populations they represented. The first wave of sampling was conducted on projects with a status of paid in a March 30, 2014 database extract. The second and final wave of sample projects was drawn from a July 20, 2014 tracking system extract of projects paid after the March 30 extract.

Table 7-2 below provides the sample selection by end-use category and stratification. Overall the sample represented 14 percent (37,899 MWh) of the population ex ante savings of 271,269 MWh.

Table 7-2. Profile of the PY6 Population and Gross Savings Verification Sample by End-Use Strata

Population Group	Population Summary			Sample		
	Sampling Strata	Number of Projects (N)	Ex Ante Claimed Gross Savings, MWh	MWh Weights	Number of Project (n)	Ex Ante MWh
Lighting Wave 1	1	70	42,994	20%	15	11,380
	2	229	43,169	20%	16	3,053
	3	1,434	42,931	20%	15	276
Lighting Wave 2	1	53	31,154	15%	7	5,737
	2	138	27,018	13%	7	1,483
	3	815	25,384	12%	7	188
Lighting Subtotal		***2,739***	***212,649***	***100%***	***67***	***22,118***
Non-Lighting Wave 1	1	10	8,836	15%	7	7,258
	2	71	10,610	18%	12	1,901
	3	620	9,935	17%	10	113
Non-Lighting Wave 2	1	19	12,685	22%	8	5,227
	2	64	10,210	17%	8	1,074
	3	213	6,344	11%	8	208
Non-Lighting Subtotal		***997***	***58,620***	***100%***	***53***	***15,781***
Program Total		**3,736**	**271,269**	**100%**	**120**	**37,899**

Source: ComEd tracking data (September 28, 2014) and Navigant analysis.

Table 7-3 below provides a comparison of the population profile to the sample, analyzed by measure technology types for sampled projects that align with end uses. The project count of the sample provides an indication of the end-use distribution of sampled projects due to the weighting approach of sampled projects to develop the population mean for the realization rate. The sample reflects the dominance of lighting.

Table 7-3. Profile of the PY6 Population and Gross Savings Verification Sample by End-use Type

Population Group	Population Summary		Sample				
	Number of Project (N)	Ex Ante Claimed Gross Savings, MWh	MWh Weights	Number of Project (n)	Ex Ante MWh	Sample MWh Weights	Sampled MWh % of Population
LIGHTING	2,739	212,649	78%	67	22,118	58%	10%
HVAC	48	7,855	3%	5	1,238	3%	16%
HVAC_VSD	268	27,375	10%	21	11,397	30%	42%
REFRIG	458	8,859	3%	13	1,338	4%	15%
COMP_AIR	39	1,373	1%	2	104	0%	8%
IS_VSD	126	9,774	4%	7	872	2%	9%
OTHER	58	3,384	1%	5	832	2%	25%
TOTAL	**3,736**	**271,269**	**100%**	**120**	**37,899**	**100%**	**14%**

Source: Utility tracking data and Navigant analysis.

To capture the representation of building type distribution, the sample building type distribution was compared against the program population to check if the sample reasonably represents the population distribution. An iterative approach was used to draw a sample until a reasonable representation of building type distribution was captured at the conclusion of wave 2. This approach did not support 90/10 gross impact realization rate results at the business type level, but nonetheless provided useful information for the most prominent building types. Details are shown in Table 7-4 below.

Table 7-4. Profile of the PY6 Population and Gross Savings Sample by Business Type

Business Type	Gross MWh, Population		Project Count, Sample		Gross MWh, Sample	
Retail/Service	48,056	18%	20	17%	2,132	6%
Office	33,344	12%	16	13%	4,135	11%
Light Industry	34,143	13%	18	15%	3,558	9%
Warehouse	56,072	21%	14	12%	8,500	22%
Grocery	11,543	4%	8	7%	2,816	7%
Heavy Industry	20,401	8%	5	4%	4,149	11%
Medical	19,480	7%	10	8%	4,879	13%
Restaurant	641	0%	1	1%	4	0%
College / University	1,768	1%	-	0%	-	0%
Hotel/Motel	5,433	2%	6	5%	1,179	3%
K-12 School	2,309	1%	2	2%	715	2%
Miscellaneous	38,079	14%	20	17%	5,832	15%
Total	**271,269**	**100%**	**120**	**100%**	**37,899**	**100%**

Source: Utility tracking data and Navigant analysis.

Engineering Review of Project Files

For each selected project, an in-depth application review is performed to assess the engineering methods, parameters and assumptions used to generate all ex-ante impact estimates. For each measure in the sampled project, engineers estimated ex post gross savings based on their review of documentation and engineering analysis.

To support this review, ComEd provided project documentation in electronic format for each sampled project. Documentation included some or all of scanned files of hardcopy application forms and supporting documentation from the applicant (invoices, measure specification sheets, and vendor proposals), pre-inspection reports and photos (when required), post inspection reports and photos (when conducted), calculation spreadsheets, a project summary report, and important email and memoranda.

On-Site Data Collection

On-site surveys were completed for a subset of 34 of the 120 customer applications sampled. For most projects on-site sources include interviews that are completed at the time of the on-site, visual inspection of the systems and equipment, EMS data downloads, spot measurements, and short-term monitoring (e.g., less than four weeks).

An analysis plan is developed for each project selected for on-site data collection. Each plan explains the general gross impact approach used (including monitoring plans), provides an analysis of the current inputs (based on the application and other available sources at that time), and identifies

sources that will be used to verify data or obtain newly identified inputs for the ex post gross impact approach.

The engineer assigned to each project first calls to set up an appointment with the customer. During the on-site audit, data identified in the analysis plan is collected, including monitoring records (such as instantaneous spot watt measurements for relevant equipment, measured temperatures, data from equipment logs and EMS/SCADA system downloads), equipment nameplate data, system operation sequences and operating schedules, and, of course, a careful description of site conditions that might contribute to baseline selection.

All engineers who conduct audits are trained and experienced in completing inspections for related types of projects. Each carries properly calibrated equipment required to conduct the planned activities. They check in with the site contact upon arrival at the business, and check out with that same site contact, or a designated alternate, on departure. The on-site audit consists of a combination of interviewing and taking measurements. During the interview, the engineer meets with a business representative who is knowledgeable about the facility's equipment and operation, and asks a series of questions regarding operating schedules, location of equipment, and equipment operating practices. Following this interview, the engineer makes a series of detailed observations and measurements of the business and equipment. All information is recorded and checked for completeness before leaving the site.

Site-Specific Impact Estimates

After all of the field data is collected, including any monitoring data, annual energy and demand impacts are developed based on the on-site data, monitoring data, application information, and, in some cases, billing or interval data. Each program engineering analysis is based on calibrated engineering models that make use of hard copy application review and on-site gathered information surrounding the equipment installed through the program (and the operation of those systems).

Energy and demand savings calculations are accomplished using methods that include short-term monitoring-based assessments, simulation modeling (e.g., DOE-2), bin models, application of ASHRAE methods and algorithms, analysis of pre- and post-installation billing and interval data, and other specialized algorithms and models.

For this study, peak hours are defined as non-holiday weekdays between 1:00 PM and 5:00 PM Central Prevailing Time (CPT) from June 1 to August 31. This is in accordance with the PJM manual 18, *Energy Efficiency and Verification,* of March 1, 2010.

Peak demand savings for both baseline and post retrofit conditions are the average demand kW savings for the 1 pm to 5 pm weekday time period. If this energy savings measure is determined to have weather dependency then the peak kW savings are based on the zonal weighted temperature humidity index (WTHI) standard posted by PJM. The zonal WTHI is the mean of the zonal WTHI values on the days in which PJM peak load occurred in the past ten years. This mean WTHI value is 80.4. Demand savings is the difference in kW between the baseline and post retrofit conditions.

After completion of the engineering analysis, a site-specific draft impact evaluation report is prepared that summarizes the M&V plan, the data collected at the site, and all of the calculations and parameters used to estimate savings. Each draft site report underwent engineering review and

comment, providing feedback to each assigned engineer for revisions or other improvements. Each assigned engineer then revised the draft reports as necessary to produce the final site reports.

Evaluation Findings for the Gross Impact Sample

The results of the on-site M&V and engineering file reviews determined the measure-level verified gross savings for the sampled projects. The findings for adjustments to quantities made to estimate the verified gross savings are summarized below and presented in Table 7-5.

1. Navigant verified that six of 283 sampled measures (2%) had some or all units of the measure to be ineligible, resulting in an evaluation verified gross savings realization rate of zero for ineligible quantities. There were fewer of these types of adjustments than in PY5 (2% of measures vs 5% of measures). Adjustments are shown in Table 7-5 below.
2. The largest decrease in non-lighting savings was identified through on-site visits where it was found that a measure was redundant or did not have a qualifying control strategy. The VSD installations which did not result in partial loading account for much of the lower realization rate for non-lighting measures
3. The on-site verification process observed two projects (#19986 and #20856) were closed facilities at the time of evaluation inspection after the program year end in PY6.
    a. Navigant determined that project #19986 (a TRM-defined GREMs project for a motel) should be removed from the impact sample because it was unverifiable and an outlier – not representative of the population given that it was observed to be closed due to a flooding disaster. Evaluators could not obtain access to the site and were unable to reach the owner to verify that the GREMs were in place and operating (or capable of operating). The project had an invoice for equipment purchase and a signed application, but was not selected for post-inspection by ComEd (evaluation agrees ComEd followed acceptable procedure on this project). The project was removed from the impact sample but had sufficient documentation to remain in the population with no changes made to the ex ante claimed savings.
    b. Project #20856 involved a TRM-defined freezer display case with doors measure in a grocery store that was installed early in PY6 and post-inspected by ComEd in September 2013. Evaluation inspected the project site after PY6 ended and found that the store was closed and observed to be empty. We learned the grocery store had closed during program year 6. Although evaluation did not observe equipment that was in-place and operating, we concluded that the equipment was verified as "in place and operating" at the time ComEd had completed its verification responsibilities on the project in September of 2013, which was during program year 6. Evaluation included in the project in the sample and credited it with verified savings defined in the TRM for the measure installed based on evaluation review of ComEd's post installation verification documentation. With savings verified, the TRM credits the project with the full first year savings, and the business closure becomes an issue of persistence. Even though evidence suggests that the facility had closed during the program year, the TRM provides full first year savings for verified installations and does not define a policy for handling business closures or awarding partial savings other than through in-service rates, which did not apply in this case. Evaluation will recommend to the TRM Technical Advisory Committee that the savings verification issues brought up through business closures and equipment removal be clarified as an update to TRM version 5.

4. On 10 projects, the verified business type was changed and these adjustments result in evaluation verified gross realization rates both higher and lower than 1.0.
5. There were adjustments made to delta watts on some lighting measures that were either not deemed in PY6 or the tracking system did not match the deemed delta watts in the Illinois TRM as noted in the tracking system review. This type of adjustment affected demand and energy savings.
6. The majority of the changes made (approximately one third of the total number of adjustments) from the ex-ante to verified savings were due to change from a blended average used in the work paper assumptions (for example, assumption of an average baseline wattage of incandescent and fluorescent fixtures). Most often correction to this blended average resulted in an upwards correction, however, for the occupancy sensor measure, this more often resulted in a downwards correction.
7. There were changes made to custom engineering calculations in those cases where the measures were not deemed by the TRM.

Table 7-5. Projects with Adjustments due to Measure Ineligibility, PY6 Standard Program

Project ID	Measure Description	Summary of Adjustment
14475	VSD - Cooling Tower Fan, w/All Types	(3) Power meters were installed on the (3) VSDs controlling the fan motors on cooling towers 2, 4, and 5. An analysis of the power consumption of each bank of fans operated at full load all of the time. Occasional partial loads were recorded approximately one percent of the time, but were due to fan motors starting and stopping part way through the logger integration period. There are no savings associated with the operation of these units.
18233	Energy Mgt System	The site contact indicated that the HVAC system at the site was pneumatically driven which does not meet program requirements.
19986	Hotel Guest Room Energy Management System (Electric Heat/AC)	Evaluation was unable to verify that the equipment was in place and operating at the location identified on the application and equipment purchase invoice. Navigant determined that the project should be removed from the sample because it was unverifiable and an outlier – not representative of the population given that it was closed due to a flooding disaster.
20856	New or Retrofit Freezer Display Case w/Doors	The equipment is not in operation at the location where the installation occurred and it is not clear if the equipment has been removed and installed elsewhere in the ComEd service territory. Navigant included the project in the sample and credited TRM-defined verified savings based on evaluation review of ComEd's post installation verification. We concluded that the equipment was verified as "in place and operating" during PY6 at the time ComEd had completed its savings verification responsibilities on the project. The TRM provides the full first year savings for verified savings on this measure, and the business closure is an issue of persistence.
23042	Pumping Eff. Improvements	This project does not include the efficiency improvement of an existing pump and no documentation was provided to suggest that the pump efficiency was increased by 15% or more. Therefore, the measure is disqualified and the savings are set to zero.
21683	Pool Pump	There are no verified savings for this project. The VSDs do not have automatic scheduling and capacity controls as required by the ComEd Work papers. In addition the pumps the VSDs are installed on are not pool or spa pumps as required but rather they are pumps to provide water to water slides.
24207	Efficient Refrigeration Condenser	Based on the ComEd work papers for this measure, the installed condenser must have a heat rejection efficiency of at least 85 BTU/hr per watt. The installed condenser was claimed to have a capacity of 31.69 tons. However, based on the manufacturer specifications, the installed condenser has a capacity of 640.92 MBH (53.41 tons). Even with this increased capacity, the unit does not meet the efficiency requirement based on the manufacturer's specification sheet, which indicates a full load demand of 11.5 kW. At this demand, the efficiency is only 56 BTU/hr per watt.

Source: Savings verification and analysis

Research Findings for the Gross Impact Sample

In Table 7-6 below we present the research findings results by end-use for sampled projects. Un-weighted realization rates are provided in the table, but since the results shown are not weighted by strata, they are not representative of the realization rate for the population.

Table 7-6. Research Findings for the Gross Impact Sample – By End-Use

End Use	Measure Count	Sample-Based Ex Ante Gross kWh	Sample-Based Ex Ante Gross kW	Sample-Based Research Finding Gross kWh	Sample-Based Research Finding Gross kW	Sample-Based Research Finding Gross kWh Realization Rate	Sample-Based Research Finding Gross kW Realization Rate
LIGHTING	159	22,118,255	3,569	26,895,872	3,869	122%	108%
HVAC (VSD/IS_VSD)/ AIR_COMP/HVAC EQUIPMENT	96	13,611,123	2,011	14,948,697	2,246	110%	112%
REFRIG	23	1,337,718	158	1,986,673	220	149%	139%
OTHER	4	719,508	419	224,559	386	31%	92%
TOTAL	282	37,786,604	6,157	44,055,800	6,720	117%	109%

Source: Evaluation analysis

Note: Energy and demand realization rates shown are un-weighted, and do not reflect population estimates of realization rates.
Note: Site with project #19986 was removed from the sample, and remaining gross impact calculations are based on a sample of 119 projects.

CATI Survey Responses to Impact Questions

A brief set of questions in the CATI survey was asked for those who received a "Zero T12 Reward". Table 7-7 identifies the survey question or issue that was addressed, the participant responses, and conclusions. Overall, 31 customers responded to one or more of the questions.

Table 7-7. Participant Reponses to CATI T12 Lighting Impact Questions

Survey Question	Participant Responses	EM&V Conclusion
Are you aware of the fact that federal standards for lighting equipment recently changed so that there are now restrictions on the production of T12 lamps for sale in the U.S?	19 responded "Yes" and 11 said "No".	In PY5, approximately one-third of those surveyed were considered to have low awareness of the federal T12 standard and in PY6 that proportion remained similar. Although this is a very small sample, it suggests some customers continue to be unfamiliar with recent changes in Federal standards on fluorescent lighting, and there is still a role for independent third-parties (associations, non-profits, ComEd) to provide customer education on this issue, and not rely solely on trade allies to get the word out.
What are lighting contractors and suppliers telling you about these changes in federal standards?	12 respondents answered the question "Never mentioned Federal standard" or similar; 8 mentioned the TA said T12s are being phased out; 3 others mentioned the TA said T12s are less efficient; 2 said contractor has not provided direction; and 1 said already upgraded all lighting.	
Prior to participating in the program, did you consider trying to maintain your T12 system with spare or compliant T12 lamps and electronic T12 ballasts?	14 respondents said "Yes" and 10 said "No".	This suggests the T12 market is transitioning but not transformed to HP T8s. It is notable that more than three-quarters of the respondents noted they did not have trouble finding replacement T12 lamps. More than half the respondents were noticing failures due to either lamp or ballast. Some customers are experiencing failures and anticipating near-term replacements, while others are not seeing failures and are not having trouble replacing T12 lamps.
Were you experiencing a noticeable amount of failures in the T12 system due to aging T12 lamps or ballast?	18 respondents said "Yes" and 13 said "No" on T12 lamps.	
Did you have any troubles finding replacement T12 lamps?	20 respondents said "No" and 6 said "Yes".	
If you had not participated in the program, when would you have replaced your T12 lighting?	5 respondents said within one year; 2 said within 1 and 2 years; 3 respondents said 2 or more years later; and 21 respondents didn't know or refused.	

Source: Participant survey

Based on the responses, we conclude that the barriers to immediate T12 phase out are still present in the ComEd service territory, and Standard incentives for T12 retrofits and the Zero T12 Bonus address those barriers.

Research Findings Realization Rate for the PY6 Standard Program

A stratified ratio estimation technique was used to estimate evaluation research findings gross energy savings for the Standard Program. The research findings use all available data collected through M&V to make a gross savings estimate, without being constrained by algorithms or assumptions defined in the Illinois TRM. The stratified ratio estimation technique follows the steps outlined in the

California Evaluation Framework[20]. These steps are matched to the stratified random sampling method that was used to create the sample for the program savings verification effort. The standard error was used to estimate the error bound around the estimate of evaluation research findings gross energy savings realization rate. The research findings gross realization rates and relative precision at 90% confidence interval for lighting and non-lighting end-uses are summarized in Table 7-8 and Table 7-9 below.

Table 7-8. Research Findings Realization Rates and Relative Precision for Lighting End-use

Population Group	Sampling Strata	Mean kWh RR	kWh Relative Precision at 90% Level of Confidence ± %	Mean KW RR	KW Relative Precision at 90% Level of Confidence ± %
Lighting Wave 1	1	1.25	12%	1.11	10%
	2	1.01	14%	1.02	24%
	3	1.16	13%	1.00	24%
Lighting Wave 2	1	1.35	30%	1.11	7%
	2	0.97	6%	0.99	11%
	3	1.09	11%	1.19	27%
Lighting Subtotal		***1.14***	***7%***	***1.06***	***6%***

Source: Evaluation analysis

Table 7-9. Research Findings Realization Rates and Relative Precision for Non-Lighting End-use

Population Group	Sampling Strata	Mean kWh RR	kWh Relative Precision at 90% Level of Confidence ± %	Mean KW RR	KW Relative Precision at 90% Level of Confidence ± %
Non-Lighting Wave 1	1	1.40	34%	1.16	20%
	2	0.94	38%	1.27	64%
	3	0.95	55%	1.92	69%
Non-Lighting Wave 2	1	0.73	36%	0.98	27%
	2	1.00	4%	1.00	2%
	3	0.90	40%	1.33	36%
Non-Lighting Subtotal		***0.97***	***14%***	***1.24***	***13%***

Source: Evaluation analysis

[20] TecMarket Works, et al., *The California Evaluation Framework*, Chapter 13, Sampling. June 2004

Research findings:

1. The savings verification and research findings results share the same evaluation adjustments on the following parameters: eligibility, quantities, business type, and measure type. They differ on these evaluation adjustments: savings per eligible unit installed. Where the verification savings per unit relies on deemed values and ComEd savings documentation, the research findings incorporate all available site-specific data gathered and evaluation engineering judgments to estimate the actual savings at each site evaluated. This research data includes customer interviews, spot measurements, analysis of equipment trend data, short term metering and data logging, and engineering review of equipment specifications. On some measures where site data was not collected (generally the file review sample), the research findings often concluded the deemed value or DNV GL PY6 Work papers provided the best available assumptions.
2. The research findings estimate a higher gross realization rate on energy savings for lighting end-use (1.14) when compared with savings verification (1.02) for the following reasons: Lighting hours of use on some projects were substantially higher than the deemed assumption, based on metering from on-site visits. Other adjustments were made to baseline assumptions based on additional information found on-site or in the project files. This research-based adjustment was not applied in the savings verification estimate of TRM measures.
3. The research findings estimate a higher realization rate on energy savings for the non-lighting end-use (0.97) when compared with savings verification (0.88) for reasons including using trend data analysis for some eligible HVAC variable speed drive measures increased energy savings above deemed estimates.
4. Our estimate of the research findings realization rate estimate on peak demand reduction for lighting (1.06) was nearly identical to the savings verification realization rate (1.06).
5. We estimated a higher research realization rate on peak demand reduction for non-lighting (1.24) when compared with savings verification peak demand reduction realization rate (1.10) due to the net sum of lower evaluation research adjustments on several measures, primarily HVAC variable speed drives and chillers.
6. While in some cases deemed HVAC VSD savings over-estimate our research findings, we found a number of VSD projects that had deemed energy savings that were less than our research findings. Navigant has recommended an update to the Illinois TRM algorithm for HVAC VSDs for version 4.

7.1.2 Recommendations for Illinois TRM Updates

The ComEd Standard Program offers prescriptive incentives on many measures that are not in the Illinois TRM, but most lack the program volume to make the case for adding as new measures to the Illinois TRM. One measure that should be considered for adding to the version 5 TRM is Cycling Refrigerated Compressed Air Dryers.

The approach for handling in-service rates and business closure for non-residential TRM measures merits further consideration for the next TRM update. Some measures have deemed in-service rates based on quantity of rebated measures, often set at 100 percent for lighting, while other measures do not address in-service rate. The savings verification process, as defined in the TRM Policy Document, requires that the quantity of measures claimed through the program are correct and in place and operating.

7.1.3 Research Findings Net Program Impact Results

The primary objective of the evaluation research net savings analysis for the Standard Program was to determine the program's net effect on customers' electricity usage. After gross program impacts have been assessed, net program impacts are derived by estimating a Net-to-Gross (NTG) ratio that quantifies the percentage of the gross program impacts that can be reliably attributed to the program.

For PY6 participants, we conducted evaluation research to estimate the level of free-ridership and participant spillover. Quantifying free-ridership requires estimating what would have happened in the absence of the program. A customer self-report method, based on data gathered during participant telephone interviews, was used to estimate the free-ridership for this evaluation. The existence of spillover in PY6 participants was quantitatively examined by identifying spillover candidates through questions asked in the participant telephone interviews. A more comprehensive effort to estimate participant spillover was conducted through interviews with trade allies in PY5. For the PY6 evaluation effort, we are conducting interviews with trade allies and business customers in a separate study to estimate portfolio level spillover for the C&I market. The results of the cross-cutting C&I spillover study are reported separately.

7.1.3.1 Free-Ridership

Basic Rigor Free-Ridership Assessment
Free ridership was assessed using a customer self-report approach following a framework that was developed for evaluating net savings of California's 2006-2008 nonresidential energy efficiency programs. This method calculates free-ridership using data collected during participant telephone interviews concerning the following three items:

- A **Timing and Selection** score that reflected the influence of the most important of various program and program-related elements in the customer's decision to select the specific program measure at this time.
- A **Program Influence** score that captured the perceived importance of the program (whether rebate, recommendation, or other program intervention) relative to non-program factors in the decision to implement the specific measure that was eventually adopted or installed. This score is cut in half if they learned about the program after they decided to implement the measures.
- A **No-Program** score that captures the likelihood of various actions the customer might have taken at this time and in the future if the program had not been available. This score accounts for deferred free ridership by incorporating the likelihood that the customer would have installed program-qualifying measures at a later date if the program had not been available.

Each of these scores represents the highest response or the average of several responses given to one or more questions about the decision to install a program measure. The rationale for using the maximum value is to capture the most important element in the participant's decision making. This approach and scoring algorithm were identical to that used for the Ameren Illinois C&I rebate program, and similar to that used for gas C&I programs.

Standard Rigor Free-Ridership Assessment
For projects that receive greater program funding levels in excess of $50,000, an effort is made during the customer telephone interview to more completely examine project influence sources in order to

allow for any analyst-determined adjustments to customer self-reported score calculations using the Basic approach outlined above. Additional survey batteries examine other project decision-making influences including the vendor, ComEd Account Manager, corporate policy for efficiency improvements and so on. Any adjustments made on this basis are carefully documented and the rationale for any adjustments is provided, to ensure their transparency to the reviewer.

In a Standard Rigor Free-Ridership Assessment, program influence through vendor or ComEd Account Manager recommendations is incorporated into the Timing and Selection score, if a follow-up interview has been triggered. The purpose of this additional component is to assess the influence of the program on vendors for programs that are vendor-driven, where the utility has specific outreach and assistance efforts targeting vendors. The vendor or account manager interviews provide insight into multiple points of program influence exerted into large and often complex participating customer organizations. Follow-up interviews are triggered only where the customer had not already assigned a maximum program influence score to one of the other program components, and the interview result may affect the final NTG score.

The calculation of free-ridership for the Standard Program is a multi-step process. The survey covers a battery of questions used to assess net-to-gross ratio for a specific end-use and site. Responses are used to calculate a Timing and Selection score, a Program Influence score and a No-Program score for each project covered through the survey. These three scores can take values of 0 to 10 where a lower score indicates a higher level of free-ridership. The calculation then averages those three scores to come up with a project-level free-ridership level. If the customer has additional projects at other sites covering the same end-use, the survey asks whether the responses also apply to the other projects. If that is the case, the additional projects are given the same score. The net-to-gross scoring approach is summarized in Table 7-10.

Table 7-10. Net-to-Gross Scoring Algorithm (Free-Ridership only) for the PY6 Standard Program

Scoring Element	Calculation
Timing and Selection score. The maximum score (scale of 0 to 10 where 0 equals not at all influential and 10 equals very influential) among the self-reported influence level the program had for: A. Availability of the program incentive B. Recommendation from utility program staff person C. Information from utility or program marketing materials D. Endorsement or recommendation by utility account manager E. Other factors (recorded verbatim) F. Information provided through technical assistance received from utility or KEMA field staff G. Vendor Score (when triggered) H. Account Manager Score (when triggered)	Basic Rigor: Maximum of A, B, C, D, and E Standard Rigor: Maximum of A, B, C, D, E, F, and participant score on vendor or account manager when confirmed as program influenced by interview with G or H
Program Influence score. "If you were given a TOTAL of 100 points that reflect the importance in your decision to implement the <ENDUSE>, and you had to divide those 100 points between: 1) the program and 2) other factors, how many points would you give to the importance of the PROGRAM?"	Points awarded to the program (divided by 10). Divide by 2 if the customer learned about the program AFTER deciding to implement the measure that was installed
No-Program score. "Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely," if the utility program had not been available, what is the likelihood that you would have installed exactly the same equipment?" The NTG algorithm computes the Likelihood Score as 10 minus the respondent's answer (e.g., the likelihood score will be 0 if extremely likely to install exactly the same equipment if the program had not been available). Adjustments to "Likelihood score" are made for timing: "Without the program, when do you think you would have installed this equipment?" Free-ridership diminishes as the timing of the installation without the program moves further into the future.	Interpolate between Likelihood Score and 10 to obtain the No-Program score, where If "At the same time" or within 6 months then the No Program score equals the Likelihood Score, and if 48 months later then the No Program Score equals 10 (no free-ridership)
Project-level Free-ridership (ranges from 0.00 to 1.00)	1 – Sum of scores (Timing & Selection, Program Influence, No-Program)/30
"Our records show that <COMPANY> also received an incentive from <UTILITY> for a <different end use> project at <same ADDRESS>. Was the decision making process for the <different end use> project the same as for the <ENDUSE> project we have been talking about?"	If participant responds "same decision," assign free-ridership score to other end-uses of the same project
"Our records show that <COMPANY> also received an incentive from <UTILITY> for <number> other <ENDUSE> project(s). Was it a single decision to complete all of those <ENDUSE> projects for which you received an incentive from <UTILITY> or did each project go through its own decision process?"	If participant responds "single decision," assign free-ridership score to same end-use of the additional projects (projects with separate project ID's)
PY6 Project level Net-to-Gross Ratio (free-ridership only)	1 – Project level Free-ridership

Source: Evaluation team

In PY6, 25 of 120 respondents in our sample went through the standard rigor approach. Two projects triggered follow-up interviews. Non-program influences were weighed against program influences in the Timing & Selection score on a project-by-project basis. No adjustments were made to increase or decrease free-ridership for non-program influences, based on a qualitative review of participant responses.

In PY6, the evaluation team examined NTG ratios accounting for free-ridership only (FR-only) for two subgroups of the overall population: Lighting and Non-lighting. The additional NTG ratio subgroup tables were requested in previous program years based on review of evaluation reports. The NTG (without spillover) for lighting decreased from 0.74 in PY5 to 0.73 in PY6, and for non-lighting projects from 0.69 to 0.62. The PY6 sample design produced a ± 6% relative precision for lighting and also ± 6% relative precision for non-lighting projects at a 90% confidence level.

The NTG ratio and relative precision at a 90% confidence level for projects with lighting energy savings, based only on the lighting portion of project-level savings, is provided in Table 7-11.

Table 7-11. NTG Ratio (FR-only) and Relative Precision at 90% Confidence Level – Lighting

Sample Strata	Population (N=2739)	NTG Interviews (n=59)	NTG Sample (n=67)	Sample kWh Wgts.	Relative Precision ± %	Low	NTGR Mean	High
1	123	19	20	0.35	7%	0.67	0.73	0.78
2	367	20	20	0.33	13%	0.60	0.70	0.79
3	2,249	20	27	0.32	9%	0.71	0.78	0.85
Total	2,739	59	67	1.00	6%	0.69	0.73	0.77

Source: Evaluation analysis. The NTG in this table does not include spillover.

The NTG ratio and relative precision at a 90% confidence level for projects with non-lighting energy savings, based on the variable speed drive, HVAC equipment, IS_VSD, Air Compressors, Other, or Refrigeration portion of project-level savings, is provided in Table 7-12. Based on these results, we recommend applying the NTG findings to non-lighting measures.

Table 7-12. NTG Ratio (FR-only) and Relative Precision at 90% Confidence Level – Non-Lighting

Sample Strata	Population (N=997)	NTG Interviews (n=60)	NTG Sample (n=65)	Sample kWh Wgts.	Relative Precision ± %	Low	NTGR Mean	High
1	29	5	5	0.37	9%	0.65	0.72	0.78
2	135	26	26	0.36	12%	0.52	0.59	0.66
3	833	29	34	0.28	17%	0.43	0.53	0.62
Total	997	60	65	1.00	6%	0.58	0.62	0.66

Source: Evaluation analysis. The NTG in this table does not include trade ally spillover.

Navigant observed that 19 out of 55 non-lighting NTG interview results for Strata 2 and 3 returned a NTG value of 0.50 or less. Of the 19, seven were based on the measure "Air Compressor with Integrated VSD" and 6 were VSDs on fans (four) and pumps (one) and a chiller (one). The average NTG for respondents with the "Air Compressor with Integrated VSD" measure (eight respondents in total) was 0.38.

7.1.3.2 Spillover

The evidence of spillover from the CATI participant survey for the Standard Program is presented in Table 7-13 below.

Table 7-13. PY6 Standard Program Spillover Evidence from the Participant Telephone Survey

Spillover Question	Evidence of Spillover
Since your participation in the ComEd program, did you implement any additional energy efficiency measures at this facility that did NOT receive incentives through any utility or government program?	Of the 120 survey respondents, 25 (21%) said "Yes" 13 of the 25 did not plan to apply for a utility incentive in the future and were asked further questions
On a scale of 0-10, where 0 means "no influence" and 10 means "greatly influenced," how much did your experience with the Smart Ideas program influence your decision to install high efficiency equipment on your own?	Scoring for the 13 remaining candidates is as follows: (1) "Don't Know" (5) Rating of 0 to 3 (2) Rating of 4 to 7 (5) Rating of 8 to 10s
PY6 Spillover Candidates (influence 8 or higher)	5 participants from 120 survey respondents (4%)
Of the 5 spillover candidates, how many remain after evaluation review of additional responses to confirm they understood the question and may have had electric energy saving spillover projects in ComEd territory.	3 candidates remained after preliminary evaluation review. In one case, the measure did not qualify as an energy savings measure. In the remaining two cases, there was potential for spillover, however, in both cases the contractor was a ComEd trade ally. To avoid double counting participant-reported spillover with more comprehensive spillover research conducted on trade allies, no further effort was made to contact the customers and assess the projects.
PY5 Spillover Candidates (influence 8 or higher)	13 participants from 127 survey respondents (10%)

Source: Evaluation analysis

Among the reasons that spillover candidates do not participate in the program (paraphrased):

- The equipment did not qualify
- Equipment was at the end of its life and needed to be replaced
- Project was very small

These findings suggested that participant spillover effects for PY6 are evident, similar to PY5 and PY4. In PY4, participant spillover of one percent was estimated based on follow-up interviews conducted by an engineer to quantify spillover savings. Because the number of PY6 spillover candidates and their responses are similar to PY4 and PY5, we expect the PY6 interviews would return a similar spillover estimate. In PY6, trade allies and business customers were interviewed in a separate, more comprehensive study to estimate spillover broadly across the C&I market. The results of the cross-cutting C&I spillover study are reported separately.

Other NTG Findings

The NTG ratios from PY1 through PY6 evaluation research on Standard Program participants are summarized in Table 7-14.

Table 7-14. NTG Ratio and Relative Precision at a 90% Confidence Level – Overall

Program Year	Relative Precision ± %	Low	NTGR Mean	High
PY1	9%	0.62	0.67	0.74
PY2	6%	0.69	0.74	0.78
PY3	5%	0.69	0.72	0.76
PY4	5%	0.67	0.70	0.73
PY5 (Adjusted for Free-ridership Only) †				
Lighting	5%	0.70	0.74	0.78
Non-Lighting	8%	0.63	0.69	0.74
PY6 (Adjusted for Free-ridership Only) †				
Lighting	6%	0.69	0.73	0.77
Non-Lighting	6%	0.58	0.62	0.66

Source: Evaluation analysis
† When quantified, the spillover rate is added to this mean result.

7.2 Detailed Process Results

In PY6, the evaluation team conducted a targeted process evaluation for the Standard Program, focusing on two topics: 1) the Standard Program bonus incentive and 2) customer experience with trade allies in ComEd's Performance Reward Program. We conducted a computer assisted telephone interviewing (CATI) survey with participating customers to inform these research questions.

7.2.1 Telephone Survey with Standard Program Participating Customers

We completed a total of 160 interviews with Standard Program participants. The original survey sample was designed to support the net impact analysis and targeted 120 completes. These 120 respondents were asked questions to estimate free-ridership and participant spillover as well as questions to support the process evaluation. Because the original sampling approach did not yield enough completes with customers who received a bonus incentive or worked with a trade ally in ComEd's Performance Reward Program, we conducted an additional 40 interviews with these customers that only included process questions. All interviews were completed in September and October, 2014.

The sampling unit for the telephone survey was the unique program participant. The initial survey sample frame included 3,736 projects, completed by 2,263 unique program participants. Participants who completed a Standard project and a Custom project were removed from the sample for the

Standard Program survey.[21] Projects were classified by end-use (lighting or non-lighting) and energy savings (large, medium, and small), using ex-ante energy impacts reported in the tracking database. Each project was placed into one of six end-use/size strata. For participants that completed multiple projects, we designated one project as the interview project (to support the free ridership analysis, we then asked if the other projects were part of the same decision process). The final sample frame for the CATI survey consisted of 2,192 participants.

For the process analysis, survey weights were developed by three dimensions, reflecting our sampling approach: impact size stratum, presence of contractor in ComEd's Performance Reward Program, and presence of a bonus incentive. These weights reflect the fact that not all strata were surveyed in proportion to their representation in the population. Specifically, projects with larger savings and projects with a bonus incentive and with a contractor in the Performance Reward Program were oversampled.

The following weights were applied to responses to the process questions. For each stratum, we estimated the weight by dividing the stratum's share of the overall population by its share of survey responses.

Table 7-15. Process Weights

Process Stratum†	Impact Size Stratum	Contractor in Reward Program	Bonus Incentive Received	Number of Contacts in Population	Number of Completes	Weight
1.Y.Y	1	Y	Y	18	6	0.212
1.Y.N	1	Y	N	41	5	0.580
1.N.Y	1	N	Y	12	3	0.283
1.N.N	1	N	N	56	12	0.330
2.Y.Y	2	Y	Y	45	5	0.636
2.Y.N	2	Y	N	134	17	0.557
2.N.Y	2	N	Y	31	2	1.096
2.N.N	2	N	N	184	29	0.449
3.Y.Y	3	Y	Y	109	9	0.856
3.Y.N	3	Y	N	593	28	1.497
3.N.Y	3	N	Y	173	19	0.644
3.N.N	3	N	N	867	25	2.452
TOTAL				2,263	160	

Source: Evaluation analysis

† Process strata are named as follows: Number represents the impact stratum (1,2,and 3); the first letter represents whether the project was implemented with a contractor in the Performance Reward Program (Y,N); the second letter represents whether the project received a bonus incentive (Y,N).

[21] Given the smaller population of Custom projects, the Custom Program was given priority for calling overlapping project contacts.

7.2.2 Survey Disposition

Table 7-16 below shows the final dispositions for the participant survey. We show the dispositions separately for 1) the original 120 interviews that included both net impact and process questions and 2) the total of 160 interviews, which are comprised of the original 120 interviews plus the additional 40 process-only interviews.

Table 7-16. Sample Dispositions for NTG and Process Analysis

Sample Dispositions	NTG	Process
Completed Interviews (I)	120	160
Refusal and break off (R)	87	102
Non-Contact (NC)	390	485
Other (O)	2	5
Unknown Eligibility Non-Interview (U)	47	83
Non-eligible (e)	42	51
Total Phone Numbers Used	688	889
Response Rate†	**19%**	**19%**
Cooperation Rate‡	**58%**	**60%**

Source: Evaluation analysis

† The following formulas were used to calculate the AAPOR Response Rate 3 (RR3):
RR3 = I/(I+R+NC+O+(E*U)) where E=(I+R+NC)/(I+R+NC+e)

‡ The following formula was used to calculate cooperation rate: I/(I +R)

7.2.3 Process Responses and Frequencies

This section provides weighted response frequencies for the process-related questions in the participant survey, including sources of program awareness, the application process, and experience with the contractor, and plans to participate in the program again in the future.

Performance Reward Program

For questions regarding the participant's experience with their contractors, responses are provided for 1) all respondents, 2) respondents who worked with a contractor who participated in ComEd's Performance Reward Program, and 3) respondents who worked with a contractor who did not participate in ComEd's Performance Reward Program.[22]

[22] This third categories includes respondents that worked with a contractor who is not part of the Performance Reward Program. For some respondents, we could not confirm whether the project was completed with a trade ally in the rewards program. As a result, the total number of responses (column 1) is greater than the sum of responses for the two comparison groups (columns 2 and 3).

QSO1. How did you first hear about the Smart Ideas Program?	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
ComEd Account Manager	14%	10%	15%
ComEd Website	4%	1%	5%
Contractor/Trade Ally	22%	31%	12%
Email	2%	0%	1%
Friend/colleague/word of mouth	12%	16%	9%
Supplier/Distributor/Vendor	23%	24%	30%
General Marketing	4%	2%	6%
Other, specify	5%	5%	8%
Don't know	14%	12%	14%
Refused	<1%	0%	0%
n	129	42	47

Source: Evaluation analysis

S1a. Did YOU fill out the application forms for the project? (Either the initial or the final program application)	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
Yes	57%	52%	62%
No	38%	45%	36%
Don't know	5%	3%	1%
Refused	<1%	0%	0%
n	160	50	63

Source: Evaluation analysis

S1b. Did the application forms clearly explain the program requirements and how to participate?	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
Yes	93%	100%	92%
No	2%	0%	2%
Somewhat	0%	0%	0%
Don't know	5%	0%	6%
Refused	0%	0%	0%
n	84	27	34

Source: Evaluation analysis

S1c. How would you rate the application process? Please use a scale of 0 to 10 where 0 is "very difficult" and 10 is "very easy".			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
0	0%	0%	0%
1	0%	0%	0%
2	<1%	0%	0%
3	5%	6%	7%
4	4%	0%	2%
5	5%	10%	4%
6	5%	2%	9%
7	15%	17%	23%
8	19%	17%	12%
9	10%	9%	7%
10	37%	39%	37%
Don't Know	<1%	0%	0%
Mean	8.0	8.0	7.9
n	84	27	34

Source: Evaluation analysis

S1e. Who filled out the application forms for the project?			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
Someone else at the facility	7%	7%	3%
Someone else at the company	3%	3%	0%
Contractor/Trade Ally	35%	28%	60%
Supplier/Distributor/Vendor	15%	18%	10%
Engineer	5%	0%	0%
Consultant	16%	25%	13%
Other, specify	4%	7%	0%
Don't know	15%	12%	13%
Refused	0%	0%	0%
n	68	22	27

Source: Evaluation analysis

S4b. Was the contractor you used associated with ComEd's Smart Ideas for Your Business Program? (IF NEEDED: Was the contractor REGISTERED with the Smart Ideas for Your Business Program?)			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
Yes	39%	46%	34%
No	31%	21%	39%
Don't know	28%	29%	27%
Refused	1%	3%	0%
n	113	50	63

Source: Evaluation analysis

S7. How important is it to you that the contractor is trained in ComEd's Smart Ideas for Your Business application process and program incentives? Please use a scale from 0 to 10, where 0 is "not at all important" and 10 is "very important"?			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
0	12%	9%	15%
1	2%	3%	1%
2	3%	0%	4%
3	1%	1%	0%
4	0%	0%	0%
5	11%	9%	13%
6	7%	3%	9%
7	4%	9%	1%
8	7%	3%	9%
9	7%	4%	10%
10	40%	48%	33%
Don't Know	7%	10%	5%
Mean	7.0	7.6	6.6
n	113	50	63

Source: Evaluation analysis

S5. How would you rate the contractor's ability to meet your needs in terms of implementing your project? Please use a scale from 0 to 10, where 0 is "not at all able to meet needs" and 10 is "completely able to meet needs"?			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
1	0%	0%	0%
2	0%	0%	0%
3	0%	0%	0%
4	0%	0%	0%
5	0%	0%	0%
6	3%	3%	2%
7	1%	2%	1%
8	3%	6%	1%
9	14%	6%	21%
10	19%	22%	17%
Don't Know	55%	61%	51%
Mean	5%	<1%	8%
n	9.2	9.2	9.2

Source: Evaluation analysis

S5b. Have you worked with this contractor before this project?			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
Yes	61%	50%	68%
No	35%	50%	23%
Don't know	5%	0%	8%
Refused	0%	0%	0%
n	113	50	63

Source: Evaluation analysis

S5c. Would you work with this contractor on any future projects?			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
Yes	94%	98%	90%
No	1%	1%	1%
Don't know	6%	1%	9%
Refused	0%	0%	0%
n	113	50	63

Source: Evaluation analysis

S6a. Would you recommend the contractor you worked with to other people or companies?			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
Yes	96%	97%	94%
No	2%	3%	2%
Don't know	2%	0%	4%
Refused	0%	0%	0%
n	113	50	63

Source: Evaluation analysis

R1. Do you plan to participate in the program again in the future?			
	All Respondents	Worked with Performance Reward Contractor	Worked with Non-Performance Reward Contractor
Yes	82%	79%	87%
No	6%	6%	3%
Maybe	10%	12%	7%
Don't know	2%	3%	3%
Refused	<1%	0%	0%
n	160	50	63

Source: Evaluation analysis

Bonus Incentive

B1. Are you aware that you received a bonus incentive for the project you completed?	
Yes	82%
No	10%
Don't know	5%
Refused	3%
n	43

Source: Evaluation analysis

B2. (ASK IF B1="YES") Were you aware of the bonus incentive before you implemented the <ENDUSE> project?	
Yes	72%
No	20%
Don't know	8%
n	35

Source: Evaluation analysis

B3. (ASK IF B2="YES")How did you find out about the bonus incentive?	
Contractor/Trade Ally	66%
ComEd Website	10%
Phone Call	5%
Mail	4%
Seminar	4%
Email	2%
Friend/colleague/word of mouth	1%
Don't know	8%
n	25

Source: Evaluation analysis

B4. (ASK IF B2="YES") If you had only received the regular incentive amount for installing the <ENDUSE> equipment, how likely would you have been to install the exact same equipment? Please use a scale from 0 to 10 where 0 means "not at all likely" and 10 means "extremely likely".	
1	0%
2	4%
3	0%
4	0%
5	11%
6	5%
7	14%
8	28%
9	0%
10	28%
Don't Know	11%
Mean	8.7
n	25

Source: Evaluation analysis

B5a. (ASK IF B2="YES") Did YOU fill out the application for the bonus incentive?	
Yes	36%
No	54%
Don't know	10%
N	35

Source: Evaluation analysis

B5b. (ASK IF B5A="YES") On a scale of 0 to 10, where 0 is "not at all satisfied" and 10 is "very satisfied", how satisfied were you with the process for applying for the bonus?	
1	0%
2	0%
3	0%
4	0%
5	0%
6	0%
7	8%
8	22%
9	0%
10	70%
Mean	9.7
N	13

Source: Evaluation analysis

B5d. (ASK IF B5A="NO") Who filled out the application for the bonus incentive?	
Someone else at the company	5%
Contractor/Trade Ally	52%
Supplier/Distributor/Vendor	16%
Engineer	5%
Consultant	14%
Don't know	7%
N	17

Source: Evaluation analysis

7.3 PJM Data and Findings

Program Name and ComEd Program Year
Standard Program, ComEd Program Year 2013 (EPY6)

Ex-Post Gross Demand (kW) Savings
The ex-post gross coincident peak demand savings was 48,590 kW.

List parameters included in the ex-post gross demand calculation.

- ***(a)*** **Non-coincident kW reduction**
- ***(b)*** **kW of baseline equipment**
- ***(c)*** **kW of replacement equipment**
- ***(d)*** **Coincidence Factor**
- ***(e)*** **Demand interactive effect**
- ***(f)*** **kW of baseline equipment during Performance Hours**
- ***(g)*** **kW of replacement equipment during Performance Hours**

For lighting measures, the algorithms used to calculate demand savings were:

(a) *Non-coincident kW reduction = kW of baseline equipment - kW of replacement equipment*
(b) *PJM Coincident kW reduction = non-coincident kW savings * Coincidence Factor * Demand interactive effect*

For non-lighting measures, the algorithms used to calculate demand savings were:

(c) *PJM Coincident kW reduction = kW of baseline equipment during Performance Hours - kW of replacement equipment during Performance Hours*

Include a brief explanation of the evaluation methodology used to derive ex-post gross demand savings for your program.
The Standard Program evaluation approach for demand savings verification followed the International Performance Measurement and Verification Protocol (IPMVP) Options (as referenced in PJM Manual 18B, Section 7) including *Option A: Partially Measured Retrofit Isolation/Stipulated Measurement*, *Option B: Retrofit Isolation / Metered Equipment* and other acceptable measurement and verification methodologies.

For lighting measures, Option A was employed, supplemented by other acceptable M&V methodologies, as described below. For non-lighting measures, Options A and B were employed.

The savings calculations are accomplished using methods that include short-term monitoring-based assessments, simulation modeling (e.g., DOE-2), bin models, application of ASHRAE methods and algorithms, analysis of pre- and post-installation billing and interval data, and other specialized algorithms and models. Customer-supplied data from energy management systems (EMS) or supervisory control and data acquisition (SCADA) systems are often used when available for onsite measurements.

Generally, the ex post impact evaluation incorporates the following methodologies:

a. Selection of a sample from the population of projects that meets the PJM requirements for statistical accuracy and precision as detailed in Manual 18B, Section 9 (the evaluation conducted on-site M&V at 34 sites in the program year 2013 (12 lighting and 22 non-lighting sites).

b. Develop a site-specific M&V plan for the representative sample of program projects. Each M&V plan details the data collection and analysis approach to be undertaken, following a careful review of relevant documents stored in ComEd's online tracking system.
c. Implement a site-specific data collection approach for each sampled project including verification that measures are installed and operational, and whether or not the as-built condition will generate the predicted level of savings.
d. Observed post-installation operating schedule and system loading conditions.
e. A thorough validation of baseline selection, including appropriateness of a retrofit baseline versus standard replacement on failure, to justify the use of the PJM "Current Load" baseline versus a "Standard Baseline".
f. Development of stipulated and measured engineering parameters that contribute to the impact calculations. Complete ex post engineering-based estimates of summer peak demand (kW) impact for each sampled project.
g. Prepare a detailed, site-specific impact evaluation report for each sampled site.
h. Carry out a quality control review of the ex post impact estimates and the associated draft site reports and implement any necessary revisions.

A verified gross realization rate (which is the ratio of the ex post demand gross savings-to-reported tracking savings) is then estimated for the sample, by sampling stratum, and applied to the population of reported tracking savings, using sampling-based approaches. The result is an ex post estimate of gross savings for the program.

Realization Rate on Demand Savings:
Overall program realization rate on coincident peak demand savings: 1.11
Realization rate on coincident peak demand savings for lighting measures: 1.06
Realization rate on coincident peak demand savings for non-lighting measures: 1.24

Precision Estimate on Demand Savings:
Overall program precision estimate on coincident peak demand savings: 5% at 90% confidence, one tail.
Precision estimate on coincident peak demand savings for lighting measures: 5% at 90% confidence, one tail.
Precision estimate on coincident peak demand savings for non-lighting measures: 10% at 90% confidence, one tail.

List parameters included in the precision estimate calculation – i.e., what are researched values, what are deemed values?

(a) Sample mean peak demand savings
(b) T-distribution score of samples
(c) Error bound around the sample mean

The precision estimate is based on researched values of ex post coincident peak demand savings for the sample, the t-distribution values are based on research sample sizes, and the error bound is a calculated value.

Peak Demand or Coincident Peak Demand:
Does your data track demand savings during a "peak" period, in addition to year-round? If so, please report the "peak" or "coincident-peak" demand savings.
ComEd's program tracking database tracks the ex ante gross coincident peak demand savings. The ex-post gross coincident peak demand savings for the program year 2013 was 48,590 kW

How is "peak demand" defined in your program or program tracking data?
If your data includes "peak" demand, please indicate how your program tracking data defines the program's "peak demand period" and the source of this data (i.e. program tracking database).
ComEd's coincident peak demand savings for both baseline and post retrofit conditions are defined as the average demand kW savings for the EE Performance Hours (between the hour ending 15:00 Eastern Prevailing Time (EPT) and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year, that is not a weekend or federal holiday.

If this savings measure is determined to have weather dependency then the coincident peak demand savings are based on the zonal weighted temperature humidity index (WTHI) standard posted by PJM. The zonal WTHI is the mean of the zonal WTHI values on the days in which PJM peak load occurred in the past ten years.

What are the hours, days and months associated with the program tracking system's "peak demand period?" Is the peak demand period in your program's tracking data defined in the same way as PJM's peak demand period? PJM's peak demand period is 1-5 pm CT, non-holiday weekdays during June, July and August.
The coincident peak demand period in the ComEd tracking database is defined between the hour ending 15:00 Eastern Prevailing Time (EPT) and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year, that is not a weekend or federal holiday. This period is consistent with PJM peak demand period.

Non-Peak Demand or Non-Coincident Peak Demand:
Does your data track demand savings throughout the year, regardless of whether the demand occurs during a "peak" period? If so, then it is "non-peak" demand or "non-coincident" peak demand savings.
ComEd tracking data for demand savings reports the coincident peak demand reduction consistent with the PJM conditions as shown above.

7.4 Data Collection Instruments

7.4.1 Survey Instrument – NTG and Process

COMED SMART IDEAS FOR YOUR BUSINESS PROGRAM
PARTICIPATING CUSTOMER SURVEY – STANDARD PROJECTS
PY6 FINAL

INTRODUCTION

[READ IF CONTACT=1]

Hello, this is _____ from Opinion Dynamics calling on behalf of ComEd. This is not a sales call. May I please speak with <PROGRAM CONTACT>?

Our records show that <COMPANY> recently installed <ENDUSE>, that received an incentive from ComEd. When signing the application form, you also agreed to support evaluation efforts of the ComEd Smart Ideas for Your Business Program which includes participating in surveys like this one. I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 20 minutes. Is now a good time? [If no, schedule call-back]

[READ IF CONTACT=0]

Hello, this is _____ from Opinion Dynamics calling on behalf of ComEd. I would like to speak with the person most knowledgeable about recent changes in cooling, lighting or other energy-related equipment for your firm at this location.

[IF NEEDED] Our records show that <COMPANY> recently installed <ENDUSE> that received an incentive from ComEd. When signing the application form, you also agreed to support evaluation efforts of the ComEd Smart Ideas for Your Business Program which includes participating in surveys like this one. I was told you're the person most knowledgeable about this project. Is that correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take about 20 minutes. Is now a good time? [If no, schedule call-back]

SCREENING QUESTIONS

S1 Which of the following statements best characterizes your relation to <COMPANY>?

1. (I am an employee of <COMPANY> (THIS CATEGORY SHOULD INCLUDE THE OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY.))
2. (My company provides energy-related services to <COMPANY>)
3. (I am a contractor and was involved in the installation of energy efficient equipment for this project)
00. (Other, specify) (PUT OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY IN 1)
98. (Don't know)
99. (Refused)

[READ if S1<>1] This survey asks questions about the energy efficiency upgrades for which <COMPANY> received an incentive at <ADDRESS>. Please answer the questions from the perspective of <COMPANY>. For example, when I refer to "YOUR COMPANY", I am referring to <COMPANY>. If you are not familiar with certain aspects of the project, please just say so and I will skip to the next question.

A1. Just to confirm, between June 1, 2013 and May 31, 2014 did <COMPANY> participate in ComEd's Smart Ideas for Your Business Program at <ADDRESS>? (IF NEEDED: This is a program where your business received an incentive for installing one or more energy-efficient products.)
1 (Yes, participated as described)
2 (Yes, participated but at another location)
3 (NO, did NOT participate in program)
00 (Other, specify)
98 (Don't know)
99 (Refused)

[SKIP A2 IF A1=1,2]
A2. Is it possible that someone else dealt with the energy-efficient product installation?
1 (Yes, someone else dealt with it)
2 (No)
00 (Other, specify)
98 (Don't know)
99 (Refused)

[IF A2=1, ask to be transferred to that person. If not available, thank and terminate. If available, go back to A1]

[IF A1=2,3,00,98,99: Thank and terminate. Record dispo as "Could not confirm participation".]

Before we begin, I want to emphasize that this survey will be primarily about the <END USE> you installed through the Smart Ideas for Your Business Program at <ADDRESS>.

[ASK IF zero_t12 =1, ELSE SKIP TO NTG MODULE]
T12 Lighting
My first few questions are about T12 lamps.
L8a1 Are you aware that federal standards for lighting equipment recently changed so that there are now restrictions on the production of T12 lamps for sale in the U.S?
1 Yes
2 No
00 (Other, specify)
98 (Don't know)
99 (Refused)

[Note: Energy Independence and Security Act (EISA) of 2007 raised standards for a variety of lamp types. For linear fluorescent lamps, new standards restrict the production of T12 lamps. New standards went into effect July 2012.]

L8b1 What are lighting contractors and suppliers telling you about these changes in federal standards?
1 Never mentioned Federal standard
00 Other (RECORD VERBATIM)
98 (Don't know)
99 (Refused)

L8c1 Prior to participating in the program, did you consider trying to maintain your T12 system with spare or compliant T12 lamps and electronic T12 ballasts?
1 Yes
2 No
8 (Don't know)
9 (Refused)

L8d1 Were you experiencing a noticeable amount of failures in the T12 system due to aging T12 lamps?
1 Yes
2 No
8 (Don't know)
9 (Refused)

L8e1 Were you experiencing a noticeable amount of failures in the T12 system due to aging T12 ballasts?
1 Yes
2 No
8 (Don't know)
9 (Refused)

L8f1 Did you have any troubles finding replacement T12 lamps?
01 Yes
02 No
96 Not applicable
98 (Don't know)
99 (Refused)

L8g1 If you had not participated in the program, when would you have replaced your T12 lighting?
1 (Within one year)
2 (Between 1 and 2 years)
3 (2 or more years later)
8 (Don't know)
9 (Refused)

PY6 NET-TO-GROSS FREE-RIDERSHIP MODULE

Variables for the net-to-gross free-ridership module:
<NTG> (B=Basic rigor level, S= Standard rigor level. All questions here are asked if the standard rigor level is designated. Basic rigor level is designated through skip patterns)
<UTILITY> (ComEd)
<PROGRAM> (Name of energy efficiency program)
<ENDUSE> (Type of measure installed; from program tracking dataset) The ENDUSE read-ins note the higher efficiency or energy efficient nature of upgrade equipment that was installed instead of the less efficient standard practice equipment in pre-planned upgrades and replace-on-failure scenarios.

This responds to a comment from ComEd on the EPY5 survey that the survey make this distinction clear to respondent.
<VEND1> (Contractor who installed new equipment, from program tracking dataset)
<TECH_ASSIST> (If participant conducted Feasibility Study, Audit, or received Technical Assistance through the program; from program tracking database)
<OTHERPTS> (Variable to be calculated based on responses. Equals 1- minus response to N3p.)
<MSAME> (Equals 1 if same customer had more than one project of the same measure type; from program tracking database)
<NSAME> (Number of additional projects of the same measure type implemented by the same customer; from program tracking database)
<FSAME> (Equals 1 if same customer also had a project of a different measure type at the same facility; from program tracking database)
<FDESC> (Type of project of a different measure type at the same facility; from program tracking database)

P1 Who was the most influential in identifying and recommending that you install the <ENDUSE>?
1. (me/respondent)
2. (contractor)
3. (engineer)
4. (architect)
5. (manufacturer)
6. (distributor)
7. (Owner)
8 (Project manager)
9. (ComEd Representative/Program Staff)
00. (Other, specify)
98. (Don't know)
99. (Refused)

P2 And who informed you about the availability of an incentive through ComEd's Smart Ideas Program?
1. (me/respondent)
2. (contractor)
3. (engineer)
4. (architect)
5. (manufacturer)
6. (distributor)
7. (ComEd Account Manager)
8. (owner/developer)
9. (project manager)
11. (ComEd Representative/Program Staff)
00. (Other, specify)
98. (Don't know)
99. (Refused)

VENDOR INFORMATION
I would like to get some information on the VENDORS that may have helped you with the installation of this equipment.

V1 Did you work with a contractor or vendor that helped you with the CHOICE of this equipment?

1 Yes
2 No
8 (Don't Know)
9 (Refused)

[IF V1=1 ASK V2, IF NOT SKIP]
V2 Who was the contractor or vendor you worked with? [OPEN END]

[ASK IF V1<>1, IF NOT SKIP]
V2a Did you work with a contractor or vendor that helped you with the INSTALLATION of this equipment?

1 Yes
2 No
8 (Don't Know)
9 (Refused)

[IF V2a=1 ASK V2b, IF NOT SKIP]
V2b Who was the contractor or vendor you worked with? [OPEN END]

[SKIP TO V4 IF V1=2, 8, or 9]

V3 Did you also use a DESIGN or CONSULTING Engineer?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[IF V3=1 ASK V3a, ELSE SKIP]

V3a Who was the DESIGN or CONSULTING Engineer you worked with? [OPEN END]

V4 Did your utility account manager assist you with the project that you implemented through the <UTILITY> <PROGRAM>?
1 (Yes)
2 (No, don't have a utility account manager)
3 (No, have a utility account manager but they weren't involved)
8 (Don't know)
9 (Refused)

NET-TO-GROSS FREE-RIDERSHIP BATTERY

I'd now like to ask a few questions about the <ENDUSE> you installed through the program.

A2aa. Did this new energy efficiency equipment that you installed through the program replace existing equipment, was it added to control or work directly with existing equipment, or was it additional stand-alone equipment?

1 Replaced existing equipment
2 Added to control or work directly with existing equipment
3 Additional stand-alone equipment
00 Other (record VERBATIM)
98 (Don't know)
99 (Refused)

[SKIP ER1 IF A2aa=2,3,98,99]

ER1. Which of the following statements best describes the performance and operating condition of the equipment you replaced through the program?

1 Existing equipment was functioning without significant problems
2 Existing equipment was functioning, but it was obsolete
3 Existing equipment was functioning, but with significant problems
4 Existing equipment had failed or did not function
96 Not applicable, ancillary equipment (VSD, EMS, controls, etc.) or additional stand-alone equipment
00 Other (RECORD VERBATIM)
98 (Don't know)
99 (Refused)

N00 In deciding to do a project of this type, there are usually a number of reasons why it may be undertaken. In your own words, can you tell me why you decided to install this equipment? Were there any other reasons?

DO NOT READ

1 (To replace old or outdated equipment)
2 (As part of a planned remodeling, build-out, or expansion)
3 (To gain more control over how the equipment was used)
4 (The maintenance downtime and associated expenses for the old equipment were too high)
5 (Had process problems and were seeking a solution)
6 (To improve equipment performance)
7 (To improve the product quality)
8 (To comply with codes set by regulatory agencies)
9 (To comply with company policies regarding regular/normal maintenance/replacement policy)
10 (To get an incentive from the program)
11 (To protect the environment)
12 (To reduce energy costs)
13 (To reduce energy use/power outages)
14 (To update to the latest technology)
15 (To meet corporate goals or mandates)

00 (Other (RECORD VERBATIM))
98 (Don't know)
99 (Refused)

N1 When did you first learn about ComEd's Smart Ideas for your Business Program? Was it BEFORE or AFTER you first began to THINK about installing the <ENDUSE> that qualified for the incentive? (NOTE TO INTERVIEWER: "<ENDUSE>" refers to the specific energy efficient equipment installed through the program.)
1 (Before)
2 (After)
8 (Don't know)
9 (Refused)

[ASK N2 IF N1=2, 8, 9]
N2 Did you learn about ComEd's Program BEFORE or AFTER the decision was made to install the <ENDUSE> that qualified for the incentive? (NOTE TO INTERVIEWER: the "<ENDUSE>" refers to the specific energy efficient equipment installed through the program.)
1 (Before)
2 (After)
8 (Don't know)
9 (Refused)

N3 Next, I'm going to ask you to rate the importance of ComEd's Smart Ideas for your Business Program as well as other factors that might have influenced your decision to install the <ENDUSE>. Please use a scale from 0 to 10, where 0 means not at all important and 10 means extremely import. [FOR N3a-n, RECORD 0 to 10; 96=Not Applicable; 98=Don't Know; 99=Refused]

(If needed: How important in your DECISION to install the equipment was…)
N3b. Availability of the PROGRAM incentive
[ASK IF N3b=8, 9, 10]
N3bb. Why do you give it this rating? [OPEN END; 98=Don't know; 99=Refused]

[SKIP TO N3f IF NTG=B]
[ASK IF <TECH_ASSIST>=1, ELSE SKIP TO N3d]
N3c. Information provided through the technical assistance you received from ComEd or KEMA field staff
[ASK IF N3c=8, 9, 10]
N3cc. Why do you give it this rating? [OPEN END; 98=Don't know; 99=Refused]

[ASK N3d IF V1=1]
N3d. Recommendation from an equipment vendor or contractor that helped you with the choice of the equipment
N3e. Previous experience with this type of equipment
N3f. Recommendation from a ComEd or KEMA program staff person
[SKIP N3ff IF NTG=B]
[ASK N3ff IF N3f=8, 9, 10]
N3ff. Why do you give it this rating?

N3h. Information from Smart Ideas or ComEd marketing materials
[SKIP N3hh IF NTG=B]
[ASK IF N3h=8, 9, 10]
N3hh. Why do you give it this rating?

[SKIP TO N3k IF NTG=B]
[ASK N3i IF V3=1]
N3i. A recommendation from a design or consulting engineer

N3j. Standard practice in your business/industry
[SKIP N3k IF V4>1]
N3k. Endorsement or recommendation by a ComEd account manager
[SKIP N3kk IF NTG=B]
[ASK IF N3k=8, 9, 10]
N3kk. Why do you say that?

[SKIP TO N3n IF NTG=B]
N3l. Corporate policy or guidelines
N3m. Payback on the investment
N3n. Were there any other factors we haven't discussed that were influential in your decision to install the <ENDUSE>?
00 [Record verbatim]
96 (Nothing else influential)
98 (Don't Know)
99 (Refused)

[ASK N3nn IF N3n=00]
N3nn. Using the same zero to 10 scale, where 0 means not at all important and 10 means extremely important, how would you rate the influence of this factor? [RECORD 0 to 10; 98=Don't Know; 99=Refused]

[ASK IF N3e=8,9,10]
N3ee. You indicated that previous experience with this type of equipment was important in your decision to install the <ENDUSE> that qualified for the ComEd incentive. Was this previous experience associated with equipment you installed with an earlier ComEd incentive, or did you install that equipment on your own?
1. (With ComEd incentive)
2. (On my own/No ComEd incentive)
3. (Both)
8. (DK)
9. (Refused)
Thinking about this differently, I would like you to compare the importance of the ComEd Smart Ideas for Your Business Program with the importance of other factors in installing the <ENDUSE>.

[SKIP TO N3p IF NTG=B]

[READ IF (N3D, N3I, N3J, N3L)=8,9,10 OR (N3EE=2,8,9); ELSE SKIP TO N3p]

You just told me that the following other factors were important:
[READ IN ONLY ITEMS WHERE THEY GAVE A RATING OF 8 or higher]

[READ IF N3D=8,9,10 and TA_fl<>1] (N3D) Equipment Vendor recommendation
[READ IF N3E=8,9,10 and N3EE=2,8,9(N3E) Previous experience with this measure
[READ IF N3I=8,9,10 and TA_fl<>1] (N3I) Recommendation from a design or consulting engineer
(N3J) Standard practice in your business/industry
(N3L) Corporate policy or guidelines

N3p If you were given a TOTAL of 100 points that reflect the importance in your decision to install the <ENDUSE>that qualified for the incentive, and you had to divide those 100 points between: 1) the program and 2) other factors, how many points would you give to the importance of the PROGRAM?
Points given to program: [RECORD 0 to 100; 998=Don't Know; 999=Refused]

[CALCULATE VARIABLE "OTHERPTS" AS: 100 MINUS N3p RESPONSE; IF N3p=998, 999, SET OTHERPTS=BLANK]

N3o And how many points would you give to other factors? [RECORD 0 to 100; 998=Don't Know; 999=Refused] [The response should be <OTHERPTS> because both numbers should equal 100. If response is not <OTHERPTS> ask INC1]

INC1 The last question asked you to divide a TOTAL of 100 points between the program and other factors. You just noted that you would give <N3p RESPONSE> points to the program. Does that mean you would give <OTHERPTS> points to other factors?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[READ IF INC1=2] "The points you gave to the program and to other factors should add up to 100, but they currently add up to <SUM OF N3p and N3o RESPONSE>. Let's go back to the points you would give to the program." THEN GO BACK TO N3p]

CONSISTENCY CHECK ON PROGRAM IMPORTANCE SCORE

[ASK IF (N3p>69 AND ALL OF (N3b, N3c, N3f, N3h, AND N3k)=0,1,2,3), ELSE SKIP TO N4aa]
N4 You just gave <N3p RESPONSE> points to the importance of the program, I would interpret that to mean that the program was quite important to your decision to install the <ENDUSE>. Earlier, when I asked about the importance of individual elements of the program I recorded some answers that would imply that they were not that important to you. Just to make sure I have recorded this properly, I have a couple questions to ask you.

N4a When asked about THE AVAILABILITY OF THE PROGRAM INCENTIVE, you gave a rating of ...<N3B RESPONSE> ... out of ten, indicating that the program incentive was not that important to you. Can you tell me why the incentive was not that important?

00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

[SKIP N4b IF NTG=B OR<TECH ASSIST>=0]
N4b When I asked you about THE INFORMATION PROVIDED THROUGH THE TECHNICAL ASSISTANCE, you gave a rating of ...<N3C RESPONSE> ... out of ten, indicating that the information provided was not that important to you. Can you tell me why the information provided was not that important?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

N4c When I asked you about THE RECOMMENDATION FROM A <UTILITY> PROGRAM STAFF PERSON, you gave a rating of ...<N3F RESPONSE> ... out of ten, indicating that the information provided was not that important to you. Can you tell me why the information provided was not that important?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

N4d When asked about THE INFORMATION from the <PROGRAM> or <UTILITY> MARKETING MATERIALS, you gave a rating of ...<N3H RESPONSE> ... out of ten, indicating that this information from the program or utility marketing materials was not that important to you. Can you tell me why this information was not that important?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

[SKIP N4e IF V4>1 or N3k=96,98,99]
N4e When asked about THE ENDORSEMENT or RECOMMENDATION by YOUR UTILTY ACCOUNT MANAGER, you gave a rating of <N3K RESPONSE> ... out of ten, indicating that this Account manager endorsement was not that important to you. Can you tell me why this endorsement was not that important?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

[ASK IF N3p<31 AND ANY ONE OF (N3b, N3c, N3f, N3h, OR N3k=8,9,10) ELSE SKIP TO N5]
N4aa You just gave <N3p RESPONSE> points to the importance of the program. I would interpret that to mean that the program was not very important to your decision to install the <ENDUSE>. Earlier, when I asked about the importance of individual elements of the program I recorded some answers that would imply that they were very important to you. Just to make sure I understand, would you explain why the program was not very important in your decision to install this equipment?
00 [Record VERBATIM]
98 (Don't know)

99 (Refused)

Now I would like you to think about the action you would have taken with regard to the installation of the <ENDUSE> that qualified for the incentive if the utility program had not been available.

N5 Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the Smart Ideas for Your Business Program had not been available, what is the likelihood that you would have installed exactly the same ENERGY EFFICIENT equipment? [RECORD 0 to 10; 98=Don't know; 99=Refused]

CONSISTENCY CHECKS

[ASK N5a-d IF N3b=8,9,10 AND N5=7,8,9,10]
N5a When you answered ...<N3B RESPONSE> ... for the question about the influence of the incentive, I would interpret that to mean that the incentive was quite important to your decision to install. Then, when you answered <N5 RESPONSE> for how likely you would be to install the same equipment without the incentive, it sounds like the incentive was not very important in your installation decision.

I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain the role the incentive played in your decision to install this efficient equipment?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

N5b Would you like for me to change your score on the importance of the incentive that you gave a rating of <N3B RESPONSE> or change your rating on the likelihood you would install the same equipment without the incentive which you gave a rating of <N5 RESPONSE> and/or we can change both if you wish?
1 (Change importance of incentive rating)
2 (Change likelihood to install the same equipment rating)
3 (Change both)
4 (No, don't change)
8 (Don't know)
9 (Refused)

[ASK IF N5b=1,3]
N5c How important was… availability of the PROGRAM incentive? (IF NEEDED: in your DECISION to install the equipment) [Scale of 0 to 10, where 0 means not at all important and 10 means extremely important; 98=Don't know, 99=Refused]

[ASK IF N5b=2,3]
N5d If the utility program had not been available, what is the likelihood that you would have installed exactly the same equipment? [Scale of 0 to 10, where 0 means "Not at all likely" and 10 means "Extremely likely"; 98=Don't know, 99=Refused]

[ASK IF N5>0, ELSE SKIP TO N8]

N7 You indicated earlier that there was a <N5 RESPONSE or Changed N5 RESPONSE> in 10 likelihood that you would have installed EXACTLY the same ENERGY EFFICIENT equipment if the program had not been available. Without the program, when do you think you would have installed the <ENDUSE>? Would you say…

1 At the same time
2 Earlier
3 Later
4 (Never)
8 (Don't know)
9 (Refused)

[ASK N7a IF N7=3]

N7a. How much later would you have installed the <ENDUSE>? Would you say…

1 Within 6 months?
2 7 months to 1 year
3 more than 1 year up to 2 years
4 more than 2 years up to 3 years
5 more than 3 years up to 4 years
6 Over 4 years
8 (Don't know)
9 (Refused)

[ASK N7b IF N7a=6]

N7b. Why do you think it would have been over 4 years later?

00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

PAYBACK BATTERY [ASK N8-N10e IF N3m=8, 9,10]

I'd like to find out more about the payback criteria <COMPANY> uses for its investments.

N8 What financial calculations does <COMPANY> make before proceeding with installation of a MEASURE like this one?

00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

N9 What is the payback cut-off point <COMPANY> uses (in months) before deciding to proceed with an investment? Would you say…

1 0 to 6 months
2 7 months to 1 year
3 more than 1 year up to 2 years
4 more than 2 years up to 3 years
5 more than 3 years up to 5 years
6 Over 5 years

8 (Don't know)
9 (Refused)

N10 Does your company generally install equipment that meet the required financial cut-off point?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[ASK N10aa IF N10=2]
N10aa Why doesn't your company generally install equipment that meet the required financial cut-off point?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

N10a Did the rebate (incentive) play a big role in moving your project within the acceptable payback cutoff point?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

CORPORATE POLICY BATTERY [ASK N11-N17 IF N3L= 8, 9,10]

N11 Does your organization have a corporate environmental policy to reduce environmental emissions or energy use? Some examples would be to "buy green" or use sustainable approaches to business investments.
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[ASK N12-N17 IF N11=1]
N12 What specific corporate policy influenced your decision to adopt or install the <ENDUSE> through the <UTILITY> program?
00 [RECORD VERBATIM]
98 (Don't know)
99 (Refused)

N13 Had that policy caused you to adopt <ENDUSE> at this facility before participating in the <UTILITY> program?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

N14 Had that policy caused you to adopt <ENDUSE> at other facilities before participating in the <UTILITY> Program?
1 (Yes)
2 (No)
3 (No other facilities)
8 (Don't know)
9 (Refused)
[ASK N15-N16 IF N13=1 OR N14=1]
N15 Did you receive an incentive for a previous installation of <ENDUSE>?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[ASK N16 IF N15=1]
N16 To the best of your ability, please describe…. [Record VERBATIM; 98=Don't know; 99=Refused]
a. the amount of incentive received
b. the approximate timing
c. the name of the program that provided the incentive

[ASK N17 IF N13=1 OR N14=1]
N17 If I understand you correctly, you said that <COMPANY> 's corporate policy has caused you to install <ENDUSE> previously at this and/or other facilities. I want to make sure I fully understand how this corporate policy influenced your decision versus the <UTILITY> program. Can you please clarify that?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

STANDARD PRACTICE BATTERY [ASK N18-N22 IF N3j=8,9,10]

N18 Approximately, how long has use of <ENDUSE> been standard practice in your industry?
M [00 Record Number of Months; 98=Don't know, 99=Refused]
Y [00 Record Number of Years; 98=Don't know, 99=Refused]

N19 Does <COMPANY> ever deviate from the standard practice?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[ASK IF N19=1]
N19a Please describe the conditions under which <COMPANY> deviates from this standard practice.
00 [Record VERBATIM]

98 (Don't know)
99 (Refused)

N20 How did this standard practice influence your decision to install the <ENDUSE> through the <PROGRAM>?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

N20a Could you please rate the importance of the <PROGRAM>, versus this standard industry practice in influencing your decision to install the <ENDUSE>. Would you say the <PROGRAM> was…
1 Much more important
2 Somewhat more important
3 Equally important
4 Somewhat less important
5 Much less important
8 (Don't know)
9 (Refused)

N21 What industry group or trade organization do you look to establish standard practice for your industry?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

N22 How do you and other firms in your industry receive information on updates in standard practice?
00 [Record VERBATIM]
98 (Don't know)
99 (Refused)

DESIGN ASSISTANCE

N23 Who provided the most assistance in the design or specification of the <ENDUSE> you installed through the <PROGRAM>? (If necessary, probe from the list below.)
1 (Designer)
2 (Consultant)
3 (Equipment distributor)
4 (Installer)
5 (<UTILITY> account manager)
6 (<PROGRAM> staff)
00 (Other, specify)
98 (Don't know)
99 (Refused)

[SKIP N24 IF N23=98, 99]

N24 Please describe the type of assistance that they provided.
00 Record VERBATIM
98 Don't know
99 Refused

ADDITIONAL PROJECTS

[ASK N26 IF MSAME=1]
Our records show that <COMPANY> also received an incentive from <UTILITY> for <NSAME> other <ENDUSE> project(s).

N26 Was it a single decision to complete all of those <ENDUSE> projects for which you received an incentive from <UTILITY> or did each project go through its own decision process?
1 (Single Decision)
2 (Each project went through its own decision process)
00 (Other, specify)
98 (Don't know)
99 (Refused)

[ASK N27 IF FSAME=1 ELSE SKIP TO SPILLOVER MODULE]
Our records show that <COMPANY> also received an incentive from <UTILITY> for a <FDESC> project at < ADDRESS >.

N27 Was the decision making process for the <FDESC> project the same as for the <ENDUSE> project we have been talking about?
1 (Same decision making process)
2 (Different decision making process)
00 (Other, specify)
98 (Don't know)
99 (Refused)

PY6 SPILLOVER MODULE

Thank you for discussing the new <ENDUSE> that you installed through the ComEd Smart Ideas Program. Next, I would like to discuss any energy efficient equipment you might have installed OUTSIDE of the program.

SP1 Since receiving an incentive for the project we just discussed, did you install any ADDITIONAL energy efficiency measures at this facility or at your other facilities within ComEd's service territory that did NOT receive incentives through any utility or government program?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[ASK IF SP1=1, ELSE SKIP TO S0]

SP1a. Do you plan to apply for incentives for these energy efficiency measure(s) through a utility program in the future?
1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[ASK IF SP1a=1, ELSE SKIP TO SP2]
SP1b. Which program(s) do you plan to apply to for incentives for these measures?
1 (Standard/Prescriptive Program)
2 (Custom Program)
00 (Other, specify)
98 (Don't know)
99 (Refused)

SP1c. Approximately when do you plan to apply for incentives through these programs?
77 Record VERBATIM

[ASK SP2 IF SP1a=2, ELSE SKIP TO S0]
SP2 On a scale of 0-10, where 0 means "no influence" and 10 means "greatly influenced," how much did your experience with the Smart Ideas program influence your decision to install high efficiency equipment on your own? [SCALE 0-10; 98=Don't know, 99=Refused]

[SKIP IF SP2=DK/REF]
SP2a Why did you give it this rating? [OPEN END]

[ASK IF SP2>7, ELSE SKIP TO S0]
SP3 What was the first measure that you installed? (IF RESPONSE IS GENERAL, E.G., "LIGHTING EQUIPMENT", PROBE FOR SPECIFIC MEASURE. PROBE FROM LIST, IF NECESSARY.)
1 (Lighting: T8 lamps)
2 (Lighting: T5 lamps)
3 (Lighting: Highbay Fixture Replacement)
4 (Lighting: CFLs)
5 (Lighting: Controls / Occupancy sensors)
6 (Lighting: LED lamps)
7 (Cooling: Unitary/Split Air Conditioning System)
8 (Cooling: Room air conditioners)
9 (Cooling: Variable Frequency Drives (VFD/VSD) on HVAC Motors)
10 (Motors: Efficient motors)
11 (Refrigeration: Strip curtains)
12 (Refrigeration: Anti-sweat controls)
13 (Refrigeration: EC motor for WALK-IN cooler/freezer)
14 (Refrigeration: EC motor for REACH-IN cooler/freezer)
00 (Other, specify)
96 (Didn't install any measures)
98 (Don't know)

99 (Refused)

[SKIP TO S0 IF SP2=96, 98, 99]
SP4 What was the second measure? (IF RESPONSE IS GENERAL, E.G., "LIGHTING EQUIPMENT", PROBE FOR SPECIFIC MEASURE. PROBE FROM LIST, IF NECESSARY.)
1 (Lighting: T8 lamps)
2 (Lighting: T5 lamps)
3 (Lighting: Highbay Fixture Replacement)
4 (Lighting: CFLs)
5 (Lighting: Controls / Occupancy sensors)
6 (Lighting: LED lamps)
7 (Cooling: Unitary/Split Air Conditioning System)
8 (Cooling: Room air conditioners)
9 (Cooling: Variable Frequency Drives (VFD/VSD) on HVAC Motors)
10 (Motors: Efficient motors)
11 (Refrigeration: Strip curtains)
12 (Refrigeration: Anti-sweat controls)
13 (Refrigeration: EC motor for WALK-IN cooler/freezer)
14 (Refrigeration: EC motor for REACH-IN cooler/freezer)
00 (Other, specify)
96 (There was no second measure)
98 (Don't know)
99 (Refused)

SP5 I have a few questions about the FIRST measure that you installed. (If needed, read back measure: <SP3 RESPONSE>). Why did you purchase this equipment without the incentive available through the Smart Ideas program? [MULTIPLE RESPONSE, UP TO 3]
1 (Takes too long to get approval)
2 (No time to participate, needed equipment immediately)
3 (The equipment did not qualify)
4 (The amount of the incentive wasn't large enough)
5 (Did not know the program was available)
6 (There was no program available)
7 (Had reached the maximum incentive amount)
00 (Other, specify)
98 (Don't know)
99 (Refused)

[ASK SP5a IF SP5=3, ELSE SKIP TO SP6]
SP5a Why didn't the equipment qualify? [OPEN END]

[SKIP TO SP7 if SP4=96, 98, 99]
SP6 I have a few questions about the SECOND measure that you installed. (If needed, read back measure: <SP4 RESPONSE>). Why did you purchase this equipment without the incentive available through the Smart Ideas program? [MULTIPLE RESPONSE, UP TO 3]

1 (Takes too long to get approval)
2 (No time to participate, needed equipment immediately)
3 (The equipment did not qualify)
4 (The amount of the incentive wasn't large enough)
5 (Did not know the program was available)
6 (There was no program available)
7 (Had reached the maximum incentive amount)
00 (Other, specify)
98 (Don't know)
99 (Refused)

[ASK SP6a IF SP6=3, ELSE SKIP TO SP7]
SP6a Why didn't the equipment qualify? [OPEN END]

SP7. Thank you for sharing this information with us. We may have follow-up questions about the equipment you installed outside of the program. Would you be willing to speak briefly with a member of our team?
1 (Yes)
2 (No)
98 (Don't know)
99 (Refused)

PROCESS MODULE

I'd now like to ask you a few general questions about your participation in the Smart Ideas for Your Business program.

Program Processes and Satisfaction
[IF S1<>1 SKIP TO S1A]
S0 How did you first hear about the Smart Ideas program?
1. (ComEd Account Manager)
2. (ComEd Website)
4. (Contractor/Trade Ally)
5. (Email)
6. (Friend/colleague/word of mouth)
00. (Other, specify)
98. (Don't know)
99. (Refused)

S1a Did YOU fill out the application forms for the project? (Either the initial or the final program application)
1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

[ASK S1b IF S1a=1 ELSE SKIP TO S1e]

S1b Did the application forms clearly explain the program requirements and how to participate?
1. (Yes)
2. (No)
3. (Somewhat)
8. (Don't know)
9. (Refused)

S1c How would you rate the application process? Please use a scale of 0 to 10 where 0 is "very difficult" and 10 is "very easy". [SCALE 0-10; 98=Don't know, 99=Refused]

[ASK S1e IF S1a=2]
S1e Who filled out the application forms for the project?
1. (Someone else at the facility)
2. (Someone else at the company)
3. (Contractor/Trade Ally)
5. (Supplier/Distributor/Vendor)
6. (Engineer)
7. (Consultant)
00. (Other, specify)
98. (Don't know)
99. (Refused)

[ASK IF V1=1 or V2a=1, ELSE SKIP TO R1]
S4b Was the contractor you used associated with ComEd's Smart Ideas for Your Business Program? (IF NEEDED: Was the contractor REGISTERED with the Smart Ideas for Your Business Program?)
1. Yes
2. No
8. (Don't know)
9. (Refused)

S7 How important is it to you that the contractor is trained in ComEd's Smart Ideas for Your Business application process and program incentives? Please use a scale from 0 to 10, where 0 is "not at all important" and 10 is "very important"? [SCALE 0-10; 98=Don't know, 99=Refused]

S5 How would you rate the contractor's ability to meet your needs in terms of implementing your project? Please use a scale from 0 to 10, where 0 is "not at all able to meet needs" and 10 is "completely able to meet needs"? [SCALE 0-10; 98=Don't know, 99=Refused]

[ASK IF S5<8]
S5a Why did you give that rating? [OPEN END; 98=Don't know, 99=Refused]

S5b Have you worked with this contractor before this project?
1. Yes
2. No
8. (Don't know)
9. (Refused)

S5c Would you work with this contractor on any future projects?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF S5c=2]
S5d Why not?
1. (Too small)
00. (Other, specify)
98. (Don't know)
99. (Refused)

S6a Would you recommend the contractor you worked with to other people or companies?
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF S6a = 2]
S6b Why not?
1. (Too small)
00. (Other, specify)
98. (Don't know)
99. (Refused)

R1 Do you plan to participate in the program again in the future?
1. Yes
2. No
3. Maybe
8. (Don't know)
9. (Refused)

Bonus
<PROMO> Bonus Measure equals 1 if customer received a bonus for a project

[IF PROMO=1 ASK, ELSE SKIP]

B1 Are you aware that you received a bonus incentive for the project you completed? (IF NEEDED: The bonus incentive was offered for a limited period of time and was an additional incentive on top of what the program normally offers.)
1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF B1=1, ELSE SKIP TO THANK YOU AND TERMINATE]

B2 Were you aware of the bonus incentive before you implemented the <ENDUSE> project?

1 (Yes)

2 (No)

8 (Don't know)

9 (Refused)

[ASK IF B2=1, ELSE SKIP TO B5a]

B3 How did you find out about the bonus incentive? [MULTIPLE RESPONSE up to 3]

1. (ComEd Account Manager)
2. (ComEd Website)
3. (Contractor/Trade Ally)
4. (Email)
5. (Friend/colleague/word of mouth)
00. (Other, specify)
98. (Don't know)
99. (Refused)

B4 If you had only received the regular incentive amount for installing the <ENDUSE> equipment, how likely would you have been to install the exact same equipment? Please use a scale from 0 to 10 where 0 means "not at all likely" and 10 means "extremely likely". [0-10, dk, ref]

B5a Did YOU fill out the application for the bonus incentive?

1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

[ASK IF B5A=1, SKIP TO B5d]

B5b On a scale of 0 to 10, where 0 is "not at all satisfied" and 10 is "very satisfied", how satisfied were you with the process for applying for the bonus? [0-10, dk, ref]

[IF B5b=<5 ASK B5c, ELSE SKIP]

B5c What could have been done to improve the process for applying for the bonus? [open end]

[ASK IF B5a=2]

B5d Who filled out the application for the bonus incentive?

1. (Someone else at the facility)
2. (Someone else at the company)
3. (Contractor/Trade Ally)
5. (Supplier/Distributor/Vendor)
6. (Engineer)
7. (Consultant)
00. (Other, specify)
98. (Don't know)
99. (Refused)

7.4.2 Survey Instrument - Process Only

COMED SMART IDEAS FOR YOUR BUSINESS PROGRAM

PARTICIPATING CUSTOMER SURVEY – STANDARD PROJECTS

PY6 FINAL – PROCESS ONLY

INTRODUCTION

[READ IF CONTACT=1]

Hello, this is _____ from Opinion Dynamics calling on behalf of ComEd. This is not a sales call. May I please speak with <PROGRAM CONTACT>?

Our records show that <COMPANY> recently installed <ENDUSE> that received an incentive from ComEd. When signing the application form, you also agreed to support evaluation efforts of the ComEd Smart Ideas for Your Business Program which includes participating in surveys like this one. I was told you're the person most knowledgeable about this project. Is this correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take less than 10 minutes. Is now a good time? [If no, schedule call-back]

[READ IF CONTACT=0]

Hello, this is _____ from Opinion Dynamics calling on behalf of ComEd. I would like to speak with the person most knowledgeable about recent changes in cooling, lighting or other energy-related equipment for your firm at this location.

[IF NEEDED] Our records show that <COMPANY> recently installed <ENDUSE> that received an incentive from ComEd. When signing the application form, you also agreed to support evaluation efforts of the ComEd Smart Ideas for Your Business Program which includes participating in surveys like this one. I was told you're the person most knowledgeable about this project. Is that correct? [IF NOT, ASK TO BE TRANSFERRED TO MOST KNOWLEDGABLE PERSON OR RECORD NAME & NUMBER.]

This survey will take less than 10 minutes. Is now a good time? [If no, schedule call-back]

SCREENING QUESTIONS

S1 Which of the following statements best characterizes your relation to <COMPANY>?

1. (I am an employee of <COMPANY> (THIS CATEGORY SHOULD INCLUDE THE OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY.))
2. (My company provides energy-related services to <COMPANY>)
3. (I am a contractor and was involved in the installation of energy efficient equipment for this project)

00. (Other, specify) (PUT OWNER/PRESIDENT/PARTNER ETC. OF THE COMPANY IN 1)

98. (Don't know)

99. (Refused)

[READ if S1<>1] This survey asks questions about the energy efficiency upgrades for which <COMPANY> received an incentive at <ADDRESS>. Please answer the questions from the perspective of <COMPANY>. For example, when I refer to "YOUR COMPANY", I am referring to <COMPANY>. If you are not familiar with certain aspects of the project, please just say so and I will skip to the next question.

A1. Just to confirm, between June 1, 2013 and May 31, 2014 did <COMPANY> participate in ComEd's Smart Ideas for Your Business Program at <ADDRESS>? (IF NEEDED: This is a program where your business received an incentive for installing one or more energy-efficient products.)

1 (Yes, participated as described)
2 (Yes, participated but at another location)
3 (NO, did NOT participate in program)
00 (Other, specify)
98 (Don't know)
99 (Refused)

[SKIP A2 IF A1=1,2]

A2. Is it possible that someone else dealt with the energy-efficient product installation?

1 (Yes, someone else dealt with it)
2 (No)
00 (Other, specify)
98 (Don't know)
99 (Refused)

[IF A2=1, ask to be transferred to that person. If not available, thank and terminate. If available, go back to A1]

[IF A1=2,3,00,98,99: Thank and terminate. Record dispo as "Could not confirm participation".]

Before we begin, I want to emphasize that this survey will be primarily about the <END USE> you installed through the Smart Ideas for Your Business Program at <ADDRESS>.

[ASK IF zero_t12 =1, ELSE SKIP TO NTG MODULE]

T12 Lighting

My first few questions are about T12 lamps.

L8a1 Are you aware that federal standards for lighting equipment recently changed so that there are now restrictions on the production of T12 lamps for sale in the U.S?

1 Yes
2 No
00 (Other, specify)
98 (Don't know)
99 (Refused)

(Note: Energy Independence and Security Act (EISA) of 2007 raised standards for a variety of lamp types. For linear fluorescent lamps, new standards restrict the production of T12 lamps. New standards went into effect July 2012.)

L8b1 What are lighting contractors and suppliers telling you about these changes in federal standards?

1 Never mentioned Federal standard
00 Other (RECORD VERBATIM)
98 (Don't know)

99 (Refused)

L8c1 Prior to participating in the program, did you consider trying to maintain your T12 system with spare or compliant T12 lamps and electronic T12 ballasts?
1 Yes
2 No
8 (Don't know)
9 (Refused)

L8d1 Were you experiencing a noticeable amount of failures in the T12 system due to aging T12 lamps?
1 Yes
2 No
8 (Don't know)
9 (Refused)

L8e1 Were you experiencing a noticeable amount of failures in the T12 system due to aging T12 ballasts?
1 Yes
2 No
8 (Don't know)
9 (Refused)

L8f1 Did you have any troubles finding replacement T12 lamps?
01 Yes
02 No
96 Not applicable
98 (Don't know)
99 (Refused)

L8g1 If you had not participated in the program, when would you have replaced your T12 lighting?
1 (Within one year)
2 (Between 1 and 2 years)
3 (2 or more years later)
8 (Don't know)
9 (Refused)

VENDOR INFORMATION

I would like to get some information on the VENDORS that may have helped you with the installation of this equipment.

V1 Did you work with a contractor or vendor that helped you with the CHOICE of this equipment?
1 Yes
2 No
8 (Don't Know)

9 (Refused)

[IF V1=1 ASK V2, IF NOT SKIP]

V2 Who was the contractor or vendor you worked with? [OPEN END]

[ASK IF V1<>1, ELSE SKIP TO PROCESS MODULE]

V2a Did you work with a contractor or vendor that helped you with the INSTALLATION of this equipment?

1 Yes
2 No
8 (Don't Know)
9 (Refused)

[IF V2a=1 ASK V2b, IF NOT SKIP TO PROCESS MODULE]

V2b Who was the contractor or vendor you worked with? [OPEN END]

PROCESS MODULE

I'd now like to ask you a few general questions about your participation in the Smart Ideas for Your Business program.

Program Processes and Satisfaction

[IF S1<>1 SKIP TO S1A]

S0 How did you first hear about the Smart Ideas program?

1. (ComEd Account Manager)
2. (ComEd Website)
4. (Contractor/Trade Ally)
5. (Email)
6. (Friend/colleague/word of mouth)
00. (Other, specify)
98. (Don't know)
99. (Refused)

S1a Did YOU fill out the application forms for the project? (Either the initial or the final program application)

1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

[ASK S1b IF S1a=1 ELSE SKIP TO S1e]

S1b Did the application forms clearly explain the program requirements and how to participate?

1. (Yes)
2. (No)
3. (Somewhat)
8. (Don't know)

9. (Refused)

S1c How would you rate the application process? Please use a scale of 0 to 10 where 0 is "very difficult" and 10 is "very easy". [SCALE 0-10; 98=Don't know, 99=Refused]

[ASK S1e IF S1a=2]

S1e Who filled out the application forms for the project?

1. (Someone else at the facility)
2. (Someone else at the company)
3. (Contractor/Trade Ally)
5. (Supplier/Distributor/Vendor)
6. (Engineer)
7. (Consultant)
00. (Other, specify)
98. (Don't know)
99. (Refused)

[ASK IF V1=1 or V2a=1, ELSE SKIP TO R1]

S4b Was the contractor you used associated with ComEd's Smart Ideas for Your Business Program? (IF NEEDED: Was the contractor REGISTERED with the Smart Ideas for Your Business Program?)

1. Yes
2. No
8. (Don't know)
9. (Refused)

S7 How important is it to you that the contractor is trained in ComEd's Smart Ideas for Your Business application process and program incentives? Please use a scale from 0 to 10, where 0 is "not at all important" and 10 is "very important"? [SCALE 0-10; 98=Don't know, 99=Refused]

S5 How would you rate the contractor's ability to meet your needs in terms of implementing your project? Please use a scale from 0 to 10, where 0 is "not at all able to meet needs" and 10 is "completely able to meet needs"? [SCALE 0-10; 98=Don't know, 99=Refused]

[ASK IF S5<8]

S5a Why did you give that rating? [OPEN END; 98=Don't know, 99=Refused]

S5b Have you worked with this contractor before this project?

1. Yes
2. No
8. (Don't know)
9. (Refused)

S5c Would you work with this contractor on any future projects?

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF S5c=2]

S5d Why not?

1. (Too small)
00. (Other, specify)
98. (Don't know)
99. (Refused)

S6a Would you recommend the contractor you worked with to other people or companies?

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF S6a = 2]

S6b Why not?

1. (Too small)
00. (Other, specify)
98. (Don't know)
99. (Refused)

R1 Do you plan to participate in the program again in the future?

1. Yes
2. No
3. Maybe
8. (Don't know)
9. (Refused)

Bonus

<PROMO> Bonus Measure equals 1 if customer received a bonus for a project

[IF PROMO=1 ASK, ELSE SKIP TO END OF SURVEY]

B1 Are you aware that you received a bonus incentive for the project you completed? (IF NEEDED: The bonus incentive was offered for a limited period of time and was an additional incentive on top of what the program normally offers.)

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF B1=1, ELSE SKIP TO THANK YOU AND TERMINATE]

B2 Were you aware of the bonus incentive before you implemented the <ENDUSE> project?

1 (Yes)
2 (No)
8 (Don't know)
9 (Refused)

[ASK IF B2=1, ELSE SKIP TO B5a]

B3 How did you find out about the bonus incentive? [MULTIPLE RESPONSE up to 3]

1. (ComEd Account Manager)
2. (ComEd Website)
3. (Contractor/Trade Ally)
4. (Email)
5. (Friend/colleague/word of mouth)
00. (Other, specify)
98. (Don't know)
99. (Refused)

B4 If you had only received the regular incentive amount for installing the <ENDUSE> equipment, how likely would you have been to install the exact same equipment? Please use a scale from 0 to 10 where 0 means "not at all likely" and 10 means "extremely likely". [0-10, dk, ref]

B5a Did YOU fill out the application for the bonus incentive?

1. (Yes)
2. (No)
8. (Don't know)
9. (Refused)

[ASK IF B5A=1, SKIP TO B5d]

B5b On a scale of 0 to 10, where 0 is "not at all satisfied" and 10 is "very satisfied", how satisfied were you with the process for applying for the bonus? [0-10, dk, ref]

[IF B5b=<5 ASK B5c, ELSE SKIP]

B5c What could have been done to improve the process for applying for the bonus? [open end]

[ASK IF B5a=2]

B5d Who filled out the application for the bonus incentive?

1. (Someone else at the facility)
2. (Someone else at the company)
3. (Contractor/Trade Ally)
5. (Supplier/Distributor/Vendor)
6. (Engineer)
7. (Consultant)
00. (Other, specify)
98. (Don't know)
99. (Refused)