



## Energy Efficiency / Demand Response Plan: Plan Year 4 (6/1/2011-5/31/2012)

### Evaluation Report: Smart Ideas for Your Business Prescriptive Program

**FINAL**

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Commonwealth Edison Company**

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## Table of Contents

<b>E.</b>	<b>Executive Summary .....</b>	<b>1</b>
E.1	Evaluation Objectives .....	1
E.2	Evaluation Methods.....	1
E.3	Key Impact Findings and Recommendations .....	2
E.4	Key Process Findings and Recommendation .....	5
<b>1.</b>	<b>Introduction to the Program.....</b>	<b>7</b>
1.1	Program Description.....	7
1.2	Evaluation Questions.....	8
<b>2.</b>	<b>Evaluation Methods.....</b>	<b>9</b>
2.1	Primary Data Collection.....	9
2.2	Additional Research .....	15
2.3	Impact Evaluation Methods .....	15
2.4	Process Evaluation Methods.....	18
<b>3.</b>	<b>Evaluation Results .....</b>	<b>20</b>
3.1	Impact Evaluation Results .....	20
3.1.1	Verification and Due Diligence Procedure Review.....	20
3.1.2	Tracking System Review and Savings Verification.....	20
3.1.3	Gross and Net Program Impact Parameter Estimates .....	23
3.1.4	Savings Verification Gross and Net Program Impact Results .....	25
3.2	Process Evaluation Results .....	25
3.2.1	Technical Services Offerings .....	27
3.2.2	Trade Ally Program.....	31
3.2.3	Account Manager Engagement.....	32
<b>4.</b>	<b>Findings and Recommendations .....</b>	<b>36</b>
4.1	Key Impact Findings and Recommendations .....	36
4.2	Key Process Findings and Recommendations .....	37
<b>5.</b>	<b>Appendix .....</b>	<b>40</b>
5.1	Glossary.....	40
5.2	Detailed Impact Results .....	45
5.2.1	Impact Evaluation Research Findings.....	45
5.2.2	Detailed NTG calculations.....	55
5.3	Detailed Process Results.....	67
5.3.1	Sampling .....	67
5.3.2	Survey Disposition .....	68

5.3.3	Participation Trends .....	69
5.4	Illinois TRM Recommendations.....	73
5.5	Data Collection Instruments .....	74
5.5.1	Telephone Survey for Participating Customers.....	74
5.5.2	Interview Guide for ComEd Account Managers.....	110
5.5.3	Interview Guide for Participating Trade Allies .....	113
5.5.4	Interview Guide for Smart Ideas Opportunity Assessment (SIOA) .....	118
5.5.5	Interview Guide for Facility System Assessment (FSA).....	120

## List of Figures and Tables

### Figures:

Figure 3-1.	Satisfaction with Program Elements .....	25
Figure 3-2.	Comparison of How Customers are contacted vs. Preferred Contact method .....	27
Figure 3-3.	Facility and System Assessment Satisfaction (n=6) .....	28
Figure 3-4.	Smart Ideas Opportunity Assessment Satisfaction (n=15) .....	29
Figure 3-5.	Activities since Assessment -FAS (n=6) .....	30
Figure 3-6.	Activities since Assessment- SIOA (n=15) .....	30
Figure 3-7.	Percent that Promote Program to Customers .....	31
Figure 3-8.	Awareness of Bonus .....	32
Figure 5-1.	Projects by Business Sector and Program Year .....	70
Figure 5-2.	Ex-Ante Peak Demand Savings by Program Year.....	71
Figure 5-3.	Ex-Ante Energy Savings by Year .....	71
Figure 5-4.	Average Project Size by Year.....	72
Figure 5-5.	Distribution of Projects and Ex-Ante Savings by End Use.....	72

### Tables:

Table E-1.	Savings Verification of the EPY4 Prescriptive Program .....	3
Table 2-1.	Principal Data Sources Contributing to the EPY4 Evaluation.....	10
Table 2-2.	Program Data Collection for Process Evaluation .....	11
Table 2-3.	Profile of the EPY4 Gross Savings Verification Sample by Strata.....	12
Table 2-4.	EPY4 Prescriptive Sample Project End-Use Measure Technology Type Comparison.....	13
Table 2-5.	EPY4 Prescriptive Sample Business Type Comparison.....	13
Table 2-6.	Profile of the Gross Impact M&V On-Site Sample by Strata .....	14
Table 2-7.	Evaluation Verified Gross Energy Realization Rate and Relative Precision .....	14
Table 3-1.	Projects with Adjustments due to Ineligible Quantities, EPY4 Prescriptive Program.....	22
Table 3-2.	Program Parameters for the EPY4 Prescriptive Program .....	24
Table 3-3.	Evaluation Verified Gross and Net Energy Savings, EPY4 Prescriptive Program .....	25
Table 5-1.	Research Findings for the Gross Impact Sample – By End-Use .....	48
Table 5-2.	ComEd Business Prescriptive EPY4 EFLH for Lighting from On-Site M&V Data Collection...	48
Table 5-3.	ComEd Business Prescriptive EPY4 Lighting Logger Results for PJM Summer Peak Coincidence Factor from Evaluation On-site M&V .....	49

Table 5-4. ComEd Business Prescriptive EPY4 Lighting Logger Results for Occupancy Sensor Measure “Percent Time Off” from Evaluation On-site M&V .....	50
Table 5-5. Participant Responses to CATI Lighting Impact Questions.....	51
Table 5-6. Participant Responses to Lighting EFLH Questions by Business Type.....	52
Table 5-7. Research Findings Gross Energy Realization Rates and Relative Precision.....	52
Table 5-8. Research Findings Gross Peak Demand Realization Rates and Relative Precision.....	53
Table 5-9. Research Findings for Gross Realization Rates and Savings Estimates.....	54
Table 5-10. Net-to-Gross Scoring Algorithm for the EPY4 Prescriptive Program .....	59
Table 5-11. EPY4 NTG Ratio and Relative Precision at 90% Confidence Level – Overall for Free-Ridership only .....	60
Table 5-12. NTG Ratio and Relative Precision at 90% Confidence Level - Lighting .....	61
Table 5-13. NTG Ratio and Relative Precision at 90% Confidence Level – Non-Lighting .....	61
Table 5-14. NTG Ratio and Relative Precision at 90% Confidence Level – Bonus Recipients .....	61
Table 5-15. EPY4 Prescriptive Program Spillover Evidence from the Participant Telephone Survey .....	63
Table 5-16. NTG Ratio and Relative Precision at a 90% Confidence Level - Overall .....	64
Table 5-17. Respondents and NTG Ratios for Sampled Lighting Participants with and without T12s.....	65
Table 5-18. Sampled Participants with T12 Lighting .....	66
Table 5-19. Summary of Sampling Approach for Analysis .....	67
Table 5-20. Process Weights .....	68
Table 5-21. Sample Disposition for NTG and Process Analysis.....	68
Table 5-22. Business Sector of Survey Respondents .....	68
Table 5-23. EPY4 Prescriptive Projects and Ex-Ante Energy Savings and Peak Demand Reduction .....	70

## E. Executive Summary

### E.1 Evaluation Objectives

The Commonwealth Edison Company (ComEd) Smart Ideas for Your Business program provides incentives for business customers who upgrade their facilities with energy efficient equipment. The goal of this report is to present the results from the evaluation of the Program Year 4 (PY4) Business Prescriptive program.

The primary objectives of the Prescriptive evaluation are to conduct savings verification of gross impacts and quantify net impacts, conduct measure and program-level research, determine key process-related program strengths and weaknesses, and identify ways in which the program can be improved. Elements of the Prescriptive program that factored into the EPY4 evaluation include the following:

- The majority of measures offered in the EPY4 Prescriptive Program have deemed gross per unit savings. The EPY4 ex ante net-to-gross ratio was drawn from EPY2 research.
- ComEd offered larger customers options for technical assistance in identifying projects at their facilities.
- ComEd offered a number of bonus incentives throughout the year to boost participation and savings generated by a number of measures.
- ComEd offered trade allies opportunities to earn performance bonuses based upon how much energy savings they brought into the program.
- ComEd continued to leverage the account manager relationships with their customers to promote the program. For EPY4, goals were set for presentations to Tier 1 customers and for completing Smart Ideas Opportunity Assessments (SIOAs) with customers.

### E.2 Evaluation Methods

The key evaluation methods to conduct savings verification of the gross and net impacts of the EPY4 Business Prescriptive program were:

- Reviewed tracking data and deemed savings assumptions used by the program.
- Implemented a stratified random sampling design to select 90 projects from the population of 4,603 Prescriptive project applications for impact evaluation. Sampling was done in two waves with three strata.
- Conducted on-site visits and measurement and verification (M&V) activities on a sample of 44 Prescriptive projects selected from the 90 projects to support deemed and non-deemed measure savings verification and measure-level research. An engineering review of project files and energy savings estimates was conducted on the remaining 46 projects from the sample of 90

projects to support deemed and non-deemed measure savings verification and program-level research.

- The 90 sampled projects contained 277 measures, 264 of which were deemed, and 13 were non-deemed.

The Net-to-Gross (NTG) ratio for the EPY4 Prescriptive Program was assessed according to the following conditions from the NTG Framework:<sup>1</sup>

- *“Where a program design and its delivery methods are relatively stable over time, and an Illinois evaluation of that program has estimated a NTG ratio, that ratio can be used prospectively until a new evaluation estimates a new NTG ratio.”*
- *“For existing and new programs not yet evaluated, and previously evaluated programs undergoing significant changes — either in the program design or delivery, or changes in the market itself<sup>[1]</sup> — NTG ratios established through evaluations would be used retroactively, but could also then be used prospectively if the program does not undergo continued significant changes.”*

To recommend whether it is appropriate to apply a previous NTG ratio (from EPY2) to EPY4, we had to consider whether the program design and delivery method were stable, and whether markets had changed – specifically, whether the phase out of the least efficient components of T12 lighting driven by Federal standards has changed free-ridership significantly between EPY2 and EPY4.

We completed computer assisted telephone interviews (CATI) with 110 Prescriptive project contacts from EPY4 to support net impact research. Spillover candidates identified in the CATI survey received a follow-up interview to quantify spillover savings, if they were willing to be interviewed a second time by an engineer.

Five research activities were conducted in support of the process evaluation: (1) interviews with the program manager and program contractor, (2) interviews with participating market actors, (3) quantitative telephone surveys with 110 participating customers, (4) telephone surveys with participants in the Smart Ideas Opportunity Assessment and Facility Assessment program offerings, and (5) in-depth interviews with ComEd Account Managers. These activities are further described in the section below.

### ***E.3 Key Impact Findings and Recommendations***

The evaluation savings verification process does not adjust the deemed EPY4 NTG value but does make adjustments to the ex-ante gross savings under conditions that will be described later in this report. As shown in Table E-1, savings verification of the EPY4 Prescriptive program found that evaluation verified gross energy savings were 5 percent lower than ex-ante gross savings reported in ComEd’s tracking system, resulting in a realization rate of 0.95 (realization rate = evaluation verified gross / ex-ante gross

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<sup>1</sup> “Proposed Framework for Counting Net Savings in Illinois.” Memorandum March 12, 2010 from Philip Mosenthal, OEI, and Susan Hedman, OAG.

<sup>[1]</sup> An example of a market change might be where baselines have improved significantly and the likely free riders are growing substantially because of it.

from the tracking system). Table E-1 provides the evaluation verified net energy savings based on a NTG ratio of 0.74.

**Table E-1. Savings Verification of the EPY4 Prescriptive Program**

Savings Estimates	Energy Savings (kWh)
Ex Ante Gross*	333,030,521
Ex Ante Net**	246,442,585
Evaluation Verified Gross	316,378,995
<b>Evaluation Verified Net</b>	<b>234,120,456</b>

\* Source: Ex-ante gross savings from ComEd online tracking system, September 25, 2012.

\*\* ComEd's reported net savings include a net-to-gross ratio of 0.74.

The relative precision at a 90% confidence level for the Prescriptive projects in the savings verification sample is  $\pm 3\%$  for the evaluation verified gross realization rate on ex-ante savings of 0.95.

The primary findings and recommendations are as follows:

The evaluation team concludes that the Prescriptive program design and delivery method between EPY2 and EPY4 has been relatively stable and the changes that have occurred have not resulted in a significant change in free-ridership. Although the market for T12 lighting is in the process of transforming due to the impact of Federal ballast and lamp standards, we conclude that between EPY2 and EPY4 the market changes have not resulted in a significant change in free-ridership. Applying the NTG Framework, we believe it is appropriate to use the NTG ratio calculated in the EPY2 evaluation research.

- **Recommendation:** The evaluation team believes it is reasonable that the net savings for the EPY4 Prescriptive Program be based on application of the Net-to-Gross ratio contained in the Illinois Commerce Commission's Order 10-0570, dated December 21, 2010, that specified a net-to-gross ratio of 0.74 for EPY4, based on evaluation research conducted with EPY2 participants.

**About three-quarters of sampled measures (206 of 277, or 74 percent) had verified gross savings realization rates that were between 0.98 and 1.02.** When the measure-level verified gross realization rate equals 1.00, this indicates we verified that the ex-ante gross savings reported by the tracking system represented a measure that was eligible for the definition of the deemed or non-deemed value applied, the appropriate per unit savings was correctly implemented in the tracking system, and that quantities matched (or very nearly matched). This indicates good performance by trade allies and the program implementer to produce accurate application forms and enter data correctly. The simple average of the verified gross realization rate (VGRR) for all measures in this category was 1.0.

- **Recommendation:** Where deemed values are used, it is especially important to record accurate quantities and confirm eligibility. Although we have concluded in our evaluation research since EPY1 that ComEd has sound verification procedures, we recommend ComEd consider a reassessment of internal project verification procedures in light of EPY4



evaluation findings and use of deemed measures. The reasons for this recommendation are explained below.

**After conducting on-site visits and file reviews to verify gross energy savings, we made three types of adjustments on 38 of 277 sampled measures (14 percent) that we would categorize as verified information not matching tracking system information that would be gathered from the application form submittal or pre- and post-inspection.** A common adjustment that tended to result in a verified gross savings realization rate less than 1.00 was a finding that verified quantities did not match ex-ante quantities. Generally, these were minor quantity reductions that occurred in lighting projects, with a few instances of verified quantities that were higher than tracking system reporting. On some projects, the verified business type or measure type was changed, and these adjustments resulted in evaluation verified gross realization rates both higher and lower than 1.0. The simple average of the verified gross realization rate for all adjustments in this category was 0.959.

- **Recommendation:** Although these types of adjustments might be caught and fixed by increasing the number of on-site pre- and post-inspections by the program, that would not be practical for the large number of small projects in the program. The need for accurate recording of quantities, measure type, and business type should be stressed with trade allies.

**For 19 of 277 sampled measures (7%), we found that measure type, business type, and quantities matched evaluation verification findings but the tracking system did not correctly apply the appropriate deemed or non-deemed value.** Examples of measures with incorrect reporting of deemed or non-deemed values were: new T5/T8 fixtures in heavy industry (seven of 277 sampled measures, VGRR=0.89), delamping of eight foot fixtures with reflectors (eight of 277 sampled measures had a VGRR=0.73, while three instances had correct values), one instance each of EC motor Walk-in and EC motor Reach in, and two instances of “One 8-ft T12 Lamp to two 4-ft HP T8 Lamps and Ballast”. The simple average of the verified gross realization rate for all adjustments in this category was 0.895.

- **Recommendation:** Tracking system related evaluation adjustments might be caught and fixed prior to annual evaluations. Although ComEd and the evaluation team conducted periodic checks during the program year, some incorrect per unit savings values made it to final reporting. We recommend ongoing tracking system verification checks by program staff emphasizing the types of issues found in EPY4 evaluation.<sup>2</sup> As part of the verification sampling process, the evaluation team checks ex-ante savings in tracking data extracts for outliers and errors, and will alert ComEd to observed discrepancies in EPY5.

**We verified that 14 of 277 sampled measures (5%) 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.** Examples of this adjustment occurred when a required T12 fluorescent baseline for a deemed measure was not met, and in some instances of variable speed drives that did not meet eligibility requirements specified in *Appendix A – ComEd Workpapers 8-5-11.pdf*<sup>3</sup> and EPY4 application forms. The simple average of the verified gross realization rate for all adjustments in this category was 0.155.

<sup>2</sup> ComEd indicated this recommended activity is underway in their comments on the October 26, 2012 draft report for this program.

<sup>3</sup> Provided by David Nichols, email August 12, 2011.

- **Recommendation:** We recommend that ComEd consider reviewing the procedures for pre-qualifying and approving variable speed drive projects to ensure that baseline and eligibility requirements are being met and that the VSD is installed with automatic flow control technology. ComEd should consider emphasizing eligibility issues with trade allies on VSDs and T12 lighting projects.

Given the prominence of measure-level deemed savings and the approval of an Illinois TRM, we expect to implement a new sample design approach in the EPY5 evaluation. Factors to be considered in the EPY5 sample design include deemed versus non-deemed measures, measure savings uncertainty, research data needs for the TRM updating process, measure technologies or end-use, project size, and building types. Although the details of the new sampling method will be developed after a review of preliminary EPY5 results, our EPY5 evaluation plan will recommend a starting point for sample design that will be based on measure technology or end-use, rather than the project size stratification that drove sample design in EPY1 through EPY4.

#### ***E.4 Key Process Findings and Recommendation***

The primary findings and recommendations are as follows:

**Customers are quite satisfied with the Prescriptive Program.** In general, 96% of the customers surveyed reported being satisfied with the program overall. Most customers (96%) reported being satisfied with the incentive amount; while 87% reported being satisfied with the communications with Smart Ideas staff.

**We compared how people reported wanting to learn about the program with how they reported actually learning about the program.** A third of respondents (38%) report that they learned about the program through contact with a ComEd Account Manager, while two-thirds of managed accounts (68%) reported that discussing the Smart Ideas for Your Business Program with an Account Managers is very useful as a contact method. This could possibly indicate that the account manager channel is underutilized. Similarly, nearly all participants (90%) reported the ComEd website is very useful as a contact method for learning about the program, but less than two-thirds reported actually learning about the program on the website. This could be an indication that although people find the website helpful, they need to be motivated to visit the website. Also, 50% of respondents reported that they would like to learn about the program from ComEd and KEMA staff; however only 21% report that they actually learned about the program that way.

- **Recommendation:** Customers found the website very useful, however only 59% reported actually going there to learn about the program. The challenge for the Smart Ideas program appears to be in getting customers to the website to begin with. ComEd should continue to develop tactics to drive website traffic and make sure that the program information appears on areas of the ComEd website that customers most often visit.
- **Recommendation:** Although 38% of managed accounts reported learning about the program from their account manager, 68% said this was a channel they would like to learn about the program through. ComEd has been working to increase account manager involvement by setting goals for program presentations and SIOAs for Tier 1 customers.

ComEd should continue these efforts as well as look for new opportunities to engage the account management channel; perhaps expanding the outreach to smaller managed accounts. ComEd should continue to look for ways to reward top-performing account managers.

**Account managers reported that the Smart Ideas slide deck presentation goal was achievable, but they felt that the information included was too general.**

- **Recommendation:** To address this, ComEd could produce more industry-specific marketing materials (such as case studies) to help the account managers tailor their presentations to specific customer segments.

**Trade allies remain a very important channel to customers.** Both SIOA and Facility and System Assessment (FAS) participants reported that, after receiving the assessment, they often contact vendors for quotes on the projects that are identified and they are less likely to contact their ComEd account manager or other ComEd and KEMA staff. Additionally, ComEd account managers report that they are likely to hear of projects after the customer has been approached by the trade allies. Account managers also indicate that they would like to increase their involvement with trade allies.

- **Recommendation:** ComEd could consider ways in which they could strengthen the ties between account managers and trade allies. This could include having more trade allies present at Lunch-and-Learns for the account managers or having account managers attend Trade Ally Basic Training sessions or other trade ally events.

**With the exception of a handful of trade allies that underperformed in EPY4, trade allies appear to be motivated by cash bonuses.** The aggregate performance of the trade allies that participated in the EPY4 Trade Ally bonus program did not appear to be significantly higher than the savings achieved in EPY3 by the same group of trade allies; however, the aggregate total is skewed because of significant underperformance of just a handful of trade allies. In fact, two “Platinum” trade allies combined contributed 31 million fewer kWh in EPY4 than in EPY3. If those two trade allies are excluded from the analysis, the “Platinum” tier of trade allies achieved 27% more energy savings in EPY4 than they did in EPY3.

- **Recommendation:** Comparing year over year performance offers trade allies a longer time horizon which is important because shorter- term “fire sale” bonuses have the tendency to clear the pipeline and are not helpful in the long run. ComEd should continue to test different bonus structures with trade allies to find what works best.

## 1. Introduction to the Program

### 1.1 Program Description

The Commonwealth Edison Company (ComEd) Smart Ideas for Your Business program provides incentives for business customers who upgrade their facilities with energy efficient equipment. This incentive program is available to all eligible, nonpublic, commercial and industrial customers in ComEd's service territory. ComEd retained KEMA Services Inc. in June 2008 and KEMA continues to serve as the Prescriptive Program implementer, responsible for day-to-day operations of the program. The basic program design remains largely unchanged; however ComEd has continued to refine the program in order to meet energy savings goals.

Important changes to the program implementation for EPY4 are summarized below:

**Technical Service Offerings:** In EPY4, ComEd introduced two new technical services offerings intended to help customers identify projects. The Smart Ideas Opportunity Assessments (SIOA) are free assessments conducted by ComEd engineers during a two-hour site visit. The assessments help customers identify the most economically feasible projects, find trade allies that can help implement the potential project, locate incentives for the projects, calculate estimated returns on investment, and complete and submit application paperwork.

The Facility and System Assessment (FAS) program offering is available for customers with a peak demand of 500 KW or greater. The audit for this program is more comprehensive than for the SIOA and customers are required to use pre-qualified providers. Many of these providers are also Retro-Commissioning Service Providers (RSPs). The customers are required to pay a \$5,000 fee for the assessment; if they implement a project that qualifies for a \$10,000 or more incentive through the Smart Ideas program, ComEd will refund the \$5,000 fee.

**Trade Ally Rewards:** Trade allies continue to be an important part of the Prescriptive Program. For EPY4, the program offered a performance reward system in order to generate increased trade ally participation. The Platinum Trade Ally rewards were calculated based on the increase the trade ally brought in to the program in EPY4 compared to EPY3. Trade allies who achieved 25% more kWh in EPY4 received a bonus amount of 4% of the dollar amount of paid incentives at goal. Trade Allies who achieved a 50% increase over EPY3 paid kWh received a bonus amount of 8% of the dollar amount of paid incentives at goal. The program also had a "Gold" performance reward level whereby trade allies that achieve between 2,300,000 and 4,999,999 kWh receive a reward of \$7,500 and trade allies that achieve more than 5,000,000 kWh get a reward of \$15,000.

**Account Manager Engagement:** During EPY4, Account Managers were more formally engaged in the Smart Ideas for Your Business Program. For the ComEd fiscal year of 2011 (which runs from January-December as opposed to the program year which runs from June through May), ComEd gave the account managers goals of completing presentations on the Smart Ideas program to all of their Tier 1 customers; these are customers that are over one MW in size.

For 2012, the account managers had goals of bringing in non-participating customers to the SIOA offering. Again, because this goal started in January of 2012 the full results of this effort may not be fully realized until EPY5.

## ***1.2 Evaluation Questions***

The evaluation sought to answer the following key researchable questions in Program Year 4.

### **Impact Questions:**

The impact evaluation questions focused on the following key areas:

1. What are the evaluation verified gross energy savings for this program?
2. What are the net impacts from this program?
3. What is the program's benefit-cost ratio using the Illinois TRC test?
4. What are the results of measure-level and program-level research?

### **Process questions:**

The process evaluation questions focused on the following key areas:

5. Effectiveness of program design and processes
6. Effectiveness of program implementation
7. Customer and program partner experience and satisfaction with the program
8. Opportunities for program improvement

## 2. Evaluation Methods

This section describes the analytic methods and data collection activities implemented as part of the EPY4 impact and process evaluation of the Prescriptive program, including the data sources and sample designs used as a base for the data collection activities.

### 2.1 *Primary Data Collection*

The key evaluation activities to estimate the evaluation verified gross energy savings of the Prescriptive program were:

- Reviewed tracking data and deemed savings assumptions used by the program to assess correct implementation of deemed and non-deemed values in the ex-ante gross savings estimates.
- Implemented a stratified random sampling design to select 90 projects from the population of 4,603 Prescriptive project applications. Sampling was done in two waves with three strata.
- Conducted on-site visits and measurement and verification (M&V) activities on a sample of 44 Prescriptive projects selected from the 90 projects to support deemed and non-deemed measure savings verification and measure-level research.
- Conducted an engineering review of project files and energy savings estimates on the remaining 46 projects from the sample of 90 projects to support deemed and non-deemed measure savings verification and program-level research.

We completed computer assisted telephone interviews (CATI) with 110 Prescriptive project contacts from EPY4 to support net impact research. Spillover candidates identified in the CATI survey received a follow-up interview to quantify spillover savings, if they were willing to be interviewed a second time by an engineer.

These activities are summarized in the table below.

**Table 2-1. Principal Data Sources Contributing to the EPY4 Evaluation**

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size
Tracking Data Analysis	PY4 Prescriptive Program Projects and Measures	Frontier Tracking Database Extracts: March 29, 2012 and September 25, 2012	Census engineering check for outliers and correct implementation of deemed and non-deemed values	4,603 Projects, 10,625 Measures
CATI Telephone Survey	Prescriptive Program Participants	Frontier Tracking Database (July 5, 2012 extract)	Stratified random sample of Prescriptive Program participants	110
Telephone Interview	Prescriptive Program Participants	Seven self-described spillover candidates from 110 participant survey respondents willing to have a call back interview	Census for engineering interview to quantify spillover	7
Engineering File Review	Projects in the Prescriptive Program	Frontier Tracking Database Extracts: Wave 1 (March 29, 2012) and Wave 2 (July 5, 2012)	Stratified random sample of 90 by Prescriptive project-level ex-ante gross energy savings (3 Strata in two sampling waves)	46
On-Site Visit M&V				44

Five research activities were conducted in support of the process evaluation: (1) interviews with the program manager and program contractor, (2) interviews with participating market actors, (3) quantitative telephone surveys with 110 participating customers, (4) telephone surveys with participants in the Smart Ideas Opportunity Assessment and Facility Assessment program offerings, and (5) in-depth interviews with ComEd Account Managers. These activities are summarized in the table below.



**Table 2-2. Program Data Collection for Process Evaluation**

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size
In-depth Telephone Interviews	ComEd Prescriptive Program Staff	Contact from ComEd	Prescriptive Program Manager	1
	KEMA Program Implementation Staff	KEMA Staff	Program Manager	1
	ComEd Account Managers	Account Managers Affiliated with Projects	ComEd Account Managers	11
	Implementer Program Staff	Contact from ComEd	KEMA Manager	1
CATI Telephone Survey	Prescriptive Program Participants	Frontier Tracking Database (July 5, 2012 extract)	Stratified Random Sample of Prescriptive Program Participants	110
CATI Telephone Survey	Market Actors	Frontier Tracking Database (July 5, 2012 extract)	Survey of a mix of “registered” and “unregistered” contractors that have completed projects.	27
CATI Telephone Survey	Smart Ideas Opportunity Assessment participants	ComEd Tracking Spreadsheet	SIOA Participants	15
CATI Telephone Survey	Facility and System Assessments	ComEd Tracking Spreadsheet	Facility and System Assessment Participants	6

For the EPY4 program year, a statistically significant sample based on 90/10 confidence/precision level for program-level savings was drawn for the gross savings verification. We implemented a stratified random sampling design to select 90 projects from the population of 4,603 Prescriptive project applications. Strata were defined by project size, based on ex-ante gross energy savings boundaries that placed about one-third of program-level savings into each stratum. Stratum 1 consisted of large projects with project-level ex-ante energy savings greater than 327,600 kWh, stratum 3 consisted of small projects with ex-ante gross energy savings less than 108,992 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 29, 2012 database extract. The second and final wave of sample projects was drawn from a July 5, 2012 tracking system extract of projects paid after the March 29 extract. The second sampling wave did not sample 10 projects with a pending status on July 5 that were eventually paid, but these 10 projects accounted for less than 1 percent of program savings.



The Prescriptive telephone sample for process evaluation, measure-level research, and net-to-gross ratio research was drawn in one wave from unique participant contacts with paid EPY4 projects in the July 5, 2012 database extract to represent the final population of projects. Sampling followed the stratification boundaries established for the impact evaluation sample. Details of the sampling approach are provided in Appendix 5.3.1.

Table 2-3 provides a profile of the gross savings verification sample for the EPY4 Prescriptive program in comparison with the Prescriptive program population. The resulting sample that was drawn consisted of 90 projects, responsible for 27.9 million kWh of ex-ante gross energy savings and representing 8% of the ex-ante gross energy savings for the program population. The 90 sampled projects contained 277 measures, 264 of which were deemed, and 13 were non-deemed.

**Table 2-3. Profile of the EPY4 Gross Savings Verification Sample by Strata**

Population Summary					Sample		
Population Group	Sampling Strata	Number of Projects (N)	Ex-ante Gross Savings, kWh	kWh percent	n	Ex-ante Gross Savings kWh	Sampled percent of stratum Pop.
Wave 1	1	108	63,903,532	19%	21	14,665,598	23%
	2	378	67,815,747	20%	21	3,909,134	6%
	3	2,372	65,786,852	20%	21	538,533	1%
Wave 2	1	67	45,568,749	14%	9	6,830,930	15%
	2	275	49,122,439	15%	9	1,664,780	3%
	3	1,393	39,613,384	12%	9	264,494	1%
Not Sampled		10	1,219,819	0%		-	0%
TOTAL		4,603	333,030,521	100%	90	27,873,470	8%

Source: Savings verification and analysis of ex-ante savings from ComEd online tracking system, September 25, 2012.

Table 2-4 provides a comparison of the population profile to the sample, analyzed by measure technology types for sampled projects that align with end uses. For reporting purposes only (not sampling), we characterized projects by the types of measures included within the project. Among sampled projects, those with lighting measures had only lighting measures; similarly with refrigeration. For remaining measures, projects either had variable speed drive measures, HVAC equipment measures, or both. 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 2-4. EPY4 Prescriptive Sample Project End-Use Measure Technology Type Comparison**

Consolidated End-Use Measure Technology Type	Ex-Ante Gross Savings					
	Gross kWh, Population		Project Count, Sample		Gross kWh, Sample	
LIGHTING	279,230,687	84%	74	82%	21,430,583	77%
VSDs (HVAC/PROCESS) / HVAC EQUIPMENT	44,012,166	13%	13	14%	6,398,654	23%
REFRIGERATION	8,541,528	3%	3	3%	44,234	0%
FOOD SERVICE / OTHER	1,246,140	0%	-	0%	-	
Total	333,030,521	100%	90	100%	27,873,470	100%

Source: Savings verification and analysis of ex-ante savings from ComEd online tracking system, September 25, 2012.

Table 2-5 provides a comparison of the population profile to the sample analyzed by business type. The sampled projects reasonably reflect the spread of savings across the six main business types that comprise the majority of ComEd's energy savings.

**Table 2-5. EPY4 Prescriptive Sample Business Type Comparison**

Business Type	Ex-Ante Gross Savings					
	Gross kWh, Population		Project Count, Sample		Gross kWh, Sample	
Retail/Service	45,430,074	14%	15	17%	2,640,476	9%
Office	36,704,068	11%	12	13%	2,405,256	9%
Light Industry	62,422,477	19%	19	21%	6,352,957	23%
Warehouse	56,590,546	17%	8	9%	6,164,245	22%
Grocery	14,296,400	4%	2	2%	38,024	0%
Heavy Industry	29,037,106	9%	9	10%	2,384,833	9%
Medical	20,800,880	6%	4	4%	3,867,418	14%
Restaurant	2,012,954	1%	-	0%	-	0%
College / University	4,770,746	1%	1	1%	18,287	0%
Hotel/Motel	3,698,051	1%	4	4%	622,466	2%
K-12 School	1,348,340	0%	1	1%	12,314	0%
Miscellaneous	55,918,879	17%	15	17%	3,367,194	12%
Total	333,030,521	100%	90	100%	27,873,470	100%

Source: Evaluation analysis of ex-ante savings from ComEd online tracking system, September 25, 2012.

Table 2-6 provides a profile of the 44 sites selected from the impact sample for on-site M&V.

**Table 2-6. Profile of the Gross Impact M&V On-Site Sample by Strata**

On-Site Sample				
Sampling Strata	Number of Sites	Business Types	Ex-ante Gross Savings kWh	Sampled % of Population
1	26	Warehouse, Light/Heavy Industry, Medical, Retail/Service, Office, Hotel/Motel, Miscellaneous	19,679,881	6%
2	15	Warehouse, Light/Heavy Industry, Medical, Retail/Service, Office, Hotel/Motel, Miscellaneous	2,887,806	1%
3	3	Light/Heavy Industry, Retail/Service, Office, Hotel/Motel, K-12 School, Grocery, Miscellaneous	181,716	<1%
TOTAL	44		22,749,403	7%

Source: Evaluation analysis of ex-ante savings from ComEd online tracking system, September 25, 2012.

A stratified ratio estimation technique was used to estimate evaluation verified gross energy savings for the Prescriptive program. The stratified ratio estimation technique follows the steps outlined in the California Evaluation Framework<sup>4</sup>. These steps are matched to the stratified random sampling method that was used to create the sample for the program. The standard error was used to estimate the error bound around the estimate of evaluation verified gross energy savings realization rate. The results are summarized in Table 2-7.

**Table 2-7. Evaluation Verified Gross Energy Realization Rate and Relative Precision**

Population Group	Sampling Strata	Relative Precision at 90% Level of Confidence $\pm$ %			
			Low	Mean	High
Wave 1	Stratum 1	5%	0.88	0.93	0.97
	Stratum 2	25%	0.63	0.84	1.05
	Stratum 3	3%	0.95	0.98	1.01
Wave 2	Stratum 1	6%	0.91	0.96	1.02
	Stratum 2	4%	0.95	0.99	1.03
	Stratum 3	2%	0.97	0.98	1.00
Total kWh RR		3%	0.92	0.95	0.98

Source: Evaluation analysis.

<sup>4</sup> TecMarket Works, et al., *The California Evaluation Framework*, Chapter 13, Sampling. June 2004

The sample profile, disposition, sample weighting, and sampling error for the process and net-to-gross telephone survey is provided in Appendix 5.3.

## 2.2 *Additional Research*

The impact evaluation included three components to support measure-level and program-level research:

1. We completed computer assisted telephone interviews (CATI) with 110 Prescriptive project contacts from EPY4 to support net impact research. Spillover candidates identified in the CATI survey received a follow-up interview to quantify spillover savings, if they were will to be interviewed a second time by an engineer.
2. On-site measurement and verification (M&V) audits at 44 project sites selected from the sample of 90 projects. Performance measurements included spot measurements and run-time hour data logging for selected measures. On-site data collection was conducted in the June 1 through August 31 summer peak period.
3. Review of participant responses from the telephone survey on a brief set of measure impact questions, including lighting hours of use, lighting baseline equipment and T12 fluorescent replacement plans, installation of lighting in non-air-conditioned space, placement of equipment into storage, and age and condition of baseline equipment.

The resulting savings from the measure-level research M&V results were used to develop program-level research findings for gross realization rate (which is the ratio of the research findings gross savings to ex-ante gross savings reported in tracking system), following analytical methods used in the savings verification estimate.

The measure-level findings and resulting research estimate of program-level gross and net savings for the Prescriptive program are provided in Appendix 5.1

## 2.3 *Impact Evaluation Methods*

### **Defining Deemed Measure Level Energy Savings**

The ex-ante gross energy savings for the EPY4 Prescriptive program are calculated from deemed and non-deemed per unit savings values. Deemed parameters for EPY4 are defined by the document *Plan Year 4 Deemed Savings Values 31230.pdf*<sup>5</sup>. This document contains 2,256 line-item entries for business-type specific values of 186 unique measure names. Measures not included on the Deemed Savings Values list are non-deemed. The technical basis for ComEd's deemed and non-deemed ex-ante gross savings are contained in the ComEd document *Appendix A – ComEd Workpapers 8-5-11.pdf*.<sup>6</sup>

ComEd proposed an approach for using deemed measure-level energy savings in the 2011 – 2013 Energy Efficiency and Demand Response Plan:<sup>7</sup>

<sup>5</sup> This document is on the ICC web site for docket 10-0570.

(<http://www.icc.illinois.gov/docket/Documents.aspx?no=10-0570>)

<sup>6</sup> Provided by David Nichols, email August 12, 2011.

<sup>7</sup> Commonwealth Edison Company's 2011 – 2013 Energy Efficiency and Demand Response Plan, October 1, 2010.

*Over the past three years, we worked with our implementation contractors and evaluation contractor to revise a number of measure-level savings values. These efforts helped ensure that the savings we report to all parties are appropriate for our service territory and our customers' operating conditions. All of the evaluator-reviewed measure-level energy savings are provided in the Master Measures List, which can be found in Appendix B. We continue to refine savings calculations on an ongoing basis, and as such the deeming of specific measure-level savings for the duration of a three year portfolio may not be appropriate.*

*ComEd proposes that the measure-level energy savings provided in the Master Measure List be provisionally deemed by the Commission, with the expectation that as measure-level savings are modified as a result of new efficiency standards, changes in market conditions, and feedback from ongoing evaluation efforts, new values will be calculated and used on a prospective basis. The timeframe for implementing new values would be the same as for the NTG and realization rate adjustments, which become effective June 1 of the following Plan year.*

ComEd's position was modified in the settlement stipulation and request<sup>8</sup>:

*ComEd's position on deemed measure savings and realization rates as articulated in the Plan is accepted, with the following exception –*

- *Components of realization rates that are within the control of ComEd (e.g., data entry errors or custom engineering calculations) will not be deemed. Components of realization rates over which ComEd has no control shall be deemed as part of the deemed measure savings (e.g., in-service rates for CFLs).*

The ICC's final order provided this analysis and conclusion<sup>9</sup>:

*The Commission has reviewed the record and finds that the parties' settlement concerning the deeming of energy savings values is appropriate and reasonable, supported by the record, and in the public interest. The parties' agreement regarding deeming addresses the unmanageable risk described by ComEd. Also, we note with approval that ComEd has clarified that it does not propose to deem energy savings values related to custom program elements.*

## **Verification Method**

The evaluation team conducted on-site visits on a sample of 44 Prescriptive projects selected from the 90 projects to support measure-level deemed savings verification. An engineering review of project files and energy savings estimates was conducted on the remaining 46 projects from the sample of 90 projects to support measure level deemed savings verification and program-level research. The 90 sampled projects contained 277 measures, 264 of which were deemed, and 13 were non-deemed.

Evaluation verified gross savings for sampled projects were estimated through the following approach, for each sampled measure:

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<sup>8</sup> Illinois Commerce Commission Docket 10-0570 Commonwealth Edison Company's 2011 – 2013 Energy Efficiency and Demand Response Plan Settlement Stipulation and Request, Joint Exhibit 1.0, November 18, 2010.

<sup>9</sup> Illinois Commerce Commission Order, Docket 10-0570 Commonwealth Edison Company Approval of the Energy Efficiency and Demand Response Plan Pursuant to Section 8-103(f) of the Public Utilities Act. December 21, 2010.

1. Review the ex-ante measure type and determine whether it is covered by ComEd's EPY4 Deemed Values list or whether it is a non-deemed measure that is subject to evaluation adjustments. Since ComEd's EPY4 Deemed Values list provides only measure name, quantity unit, business type, and per unit savings we relied upon ComEd's Appendix A workpapers and EPY4 application forms to define whether a measure was eligible to be assigned the deemed value.
2. For Prescriptive measures with deemed values, verified gross savings are estimated by multiplying deemed per unit savings by the verified quantity of eligible measures installed. To be eligible, a deemed measure must meet all physical, operational, and baseline characteristics required to be assigned to the deemed value as defined in Appendix A or EPY4 application forms. The following are specific guidelines:
  - a. Unless an in-service rate is explicitly modeled in the deemed savings, a measure must be installed and operational and not placed in storage. If the deemed value excludes back-up or redundant units that would operate only when the primary unit is not operating, then back-up units are not counted as eligible quantities. If an in-service rate is included in the deemed algorithm, all verified quantities comply as installed.
  - b. Installed and operational measures must be enabled with the potential to produce savings as defined by Appendix A or the EPY4 application forms (for example, a VSD is installed with automatic control technology), and have an eligible operating status at the time of verification (e.g., deemed savings is verified as eligible if heating equipment is inspected in summer, or if spaces are found unoccupied<sup>10</sup>).
  - c. A measure must comply with required conditions specified by Appendix A or the EPY4 application forms to be assigned deemed value (e.g., minimum operating hours<sup>11</sup>, baseline equipment, type of site specific equipment receiving the measure, etc.).
  - d. Verified business type is reasonably consistent with ex-ante business type.
3. Prescriptive measures with non-deemed ex-ante savings were subject to retrospective evaluation adjustments to gross savings. We considered all algorithm and parameter values to be open to evaluation adjustment. For all non-deemed measures in EPY4, Appendix A and EPY4 application forms were used to determine eligibility and per unit savings.

A verified gross realization rate (which is the ratio of the verified gross savings to ex-ante gross savings as reported in the tracking system) was then estimated for the sample and applied to the total program ex-ante gross savings, using sampling-based approaches that are described in greater detail in Appendix 5.1. The result is an evaluation verified gross savings for the Prescriptive program.<sup>12</sup>

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<sup>10</sup> The deemed savings that ComEd applied to PY4 lighting measures included hours of use reflecting evaluation findings in EPY1 and EPY2. Unoccupied spaces are reflected in the average equivalent full load hours of use by building type reported in EPY1 and EPY2 evaluation findings.

<sup>11</sup> Minimum hours of use are specified for the measure "Variable-Speed Drives for HVAC and Process Applications". There are no maximum hours of use.

<sup>12</sup> The term "verified gross savings" is used to describe the overall program savings, even though non-deemed measures were subject to retrospective adjustment for EPY4. The savings in the EPY4 Prescriptive program were dominated by deemed measure savings.

### Net Savings Approach

The Net-to-Gross (NTG) ratio for the EPY4 Prescriptive Program was assessed according to the following conditions from the NTG Framework:<sup>13</sup>

- *“Where a program design and its delivery methods are relatively stable over time, and an Illinois evaluation of that program has estimated a NTG ratio, that ratio can be used prospectively until a new evaluation estimates a new NTG ratio.”*
- *“For existing and new programs not yet evaluated, and previously evaluated programs undergoing significant changes — either in the program design or delivery, or changes in the market itself<sup>14</sup> — NTG ratios established through evaluations would be used retroactively, but could also then be used prospectively if the program does not undergo continued significant changes.”*

To recommend whether it is appropriate to apply a previous NTG ratio (from EPY2) to EPY4, we had to consider whether the program design and delivery method were stable, and whether markets had changed – specifically, whether the phase out of the least efficient components of T12 lighting driven by Federal standards has changed free-ridership significantly between EPY2 and EPY4.

## 2.4 Process Evaluation Methods

### Program Staff Interviews

The evaluation team conducted one telephone call with the Program Manager of the Prescriptive Program and other senior ComEd staff. This call covered key changes to the program design and implementation for EPY4. The evaluation team also conducted an interview with staff members at KEMA responsible for program implementation and marketing strategies.

### Trade Ally Interviews

Interviews with 27 trade allies were conducted as part of the EPY4 evaluation of the Prescriptive Program. The interviews focused on (1) how the Smart Ideas for Your Business Program has affected business practices and market trends, (2) net-to-gross questions for contractors identified by customers as having had a strong influence in the implementation of specific EPY4 projects,<sup>14</sup> (3) the influence of performance bonus structure on their motivation and ability to complete projects (4) barriers to installation of energy efficient equipment and customer participation in the program, and (5) satisfaction with the program and participation processes.

### Interviews with Smart Ideas Opportunity Assessment and Facility Assessment Participants

The evaluation team also conducted interviews with participants in ComEd’s Smart Ideas Opportunity Assessments and Facility Assessments. Since these were new program offerings for EPY4 and were

<sup>13</sup> “Proposed Framework for Counting Net Savings in Illinois.” Memorandum March 12, 2010 from Philip Mosenthal, OEI, and Susan Hedman, OAG.

<sup>14</sup> An example of a market change might be where baselines have improved significantly and the likely free riders are growing substantially because of it.

<sup>14</sup> Please refer to Appendix 0 on how these questions were used as an input to the NTG algorithm.



designed to help customers identify potential projects, the interviews focused on (1) customer satisfaction with the process for conducting the assessments, (2) the usefulness of the information provided to the customer in the assessment reports and, (3) the potential influence the audit had on helping customers implement projects.

#### **Telephone Survey with Prescriptive Program Participants**

A telephone survey was conducted with a stratified random sample of Prescriptive Program participants. This survey focused on two key areas: (1) questions to estimate net program impacts and (2) questions to support the process evaluation. All CATI surveys were completed in August and September 2012.

The CATI survey was directed toward unique customer contact names drawn from the tracking system for EPY4 paid Prescriptive projects. The survey data collected supports EPY4 free-ridership estimation (to be used prospectively), process evaluation inputs (including business demographics), and a qualitative assessment of spillover. The CATI survey instrument used for this evaluation is included in Appendix 5.5.



### 3. Evaluation Results

#### 3.1 Impact Evaluation Results

##### 3.1.1 Verification and Due Diligence Procedure Review

The ComEd Prescriptive program is mature, and we did not undertake a separate verification and due diligence procedure review in EPY4. Findings relevant to verification procedures are provided in Section 4.1 and Appendix 5.1 based on our EPY4 impact evaluation and on-site measure-level M&V research.

##### 3.1.2 Tracking System Review and Savings Verification

The EPY4 Prescriptive program contains both deemed and non-deemed measures.<sup>15</sup> ComEd requested that the evaluation team review EPY4 measure savings assumptions that were to be loaded into the tracking system prior to the start of EPY4 on June 1, 2011. In January through March of 2011, we reviewed ComEd's draft Appendix A workpapers that were the basis for EPY4 deemed and non-deemed per unit ex-ante gross savings implemented in ComEd's tracking system. We provided comments through email and conference calls, prompting revisions by ComEd. We finished this review process on March 29, 2011, concluding that ComEd's EPY4 deemed and non-deemed values, as defined by the Appendix A workpapers, were reasonable. We reviewed minor revisions and updates by ComEd, resulting in a final version of Appendix A dated August 5, 2011.

The evaluation team conducted a measure-level review of ComEd's implementation of deemed and non-deemed per unit savings values in the EPY4 Prescriptive tracking system, and provided feedback in a June 1, 2012 memo to ComEd.<sup>16</sup> For most measures, the tracking system was providing the expected ex-ante gross energy savings defined by ComEd's deemed parameter list. Where we found inconsistencies, those were brought to ComEd's attention in the June 2012 memo.

The evaluation savings verification on the 90 sampled projects (277 measures) provided a second opportunity to verify tracking system implementation of deemed and non-deemed values. For a limited number of sampled deemed measure types, we found that measure type, business type, and quantities matched evaluation verification findings but the tracking system did not produce the expected savings. When this was observed in a sampled measure, we used ComEd's deemed value for that measure as defined by *Plan Year 4 Deemed Savings Values 31230.pdf*<sup>17</sup>. The following measures had evaluation adjustments due to tracking system implementation of deemed values:

- Delamping 8 foot (fluorescent fixture) with Reflector. The ex-ante gross impacts for sampled measures indicated a deemed value higher than the approved deemed value per unit on some projects. For example, in heavy industry there were some instances of an ex-ante deemed value

<sup>15</sup> The basis for deemed and non-deemed measures are discussed in Section 4.1.3

<sup>16</sup> Summarized in a memo to ComEd from the evaluation team, *EPY4 Business Prescriptive Tracking System Interim Ex-ante Review*, June 1, 2012.

<sup>17</sup> This document is on the ICC web site for docket 10-0570.

(<http://www.icc.illinois.gov/docket/Documents.aspx?no=10-0570>)

- of 428 kWh per unit, while the approved deemed value is 311 kWh per unit, a measure level realization rate of 0.73. Some installations had the correct 311 kWh per unit value. Light industry, Retail, and Miscellaneous business types had this error as well. In total, eight out of 277 sampled measures had this error. The sampled projects with these errors were: 5556, 8450, 9280, 10244, 10443, 11217, 12410, and 12766.
- EC Motor Walk In. The ex-ante gross impacts for one sampled measure indicated a deemed value of 392 kWh per unit. The approved deemed value is 870 kWh per unit, which was used on a second instance of that measure in the sample. The sampled project with this error was: 8311.
  - EC Motor Reach in. The ex-ante gross impacts for one sampled measure indicated a deemed value of 344 kWh per unit. The approved deemed value is 369 kWh per unit, which was used on two other instances of that measure in the sample. The sampled project with this error was: 8311.
  - One 8-ft T12 Lamp to two 4-ft HP T8 Lamps and Ballast. The ex-ante gross impacts for two sampled measures indicated a deemed value of 92.2 kWh per unit. The approved deemed value is 79.0 kWh per unit. The sampled projects with this error were: 9280 and 11023.

A second observation was that there was no deemed value provided for new T5/T8 fixtures in heavy industry. There were two identical entries for Light Industry for that measure in the approved deemed values list. The ex-ante gross impacts for sampled measures for new T5/T8 fixtures in heavy industry indicated a per unit savings value of 5.27 kWh per unit, consistent with the deemed value for light industry. Since there was no approved deemed value for heavy industry, we used ComEd's Appendix A workpaper value of 4.709 kWh per unit for heavy industry when estimating evaluation verified gross energy savings for new T5/T8 fixtures. The sampled projects with this error were: 10224, 10443, 10510, 11822, 12046, 12410, and 14658.

- **Recommendation:** Tracking system related evaluation adjustment might be caught and fixed prior to annual evaluations. Although ComEd and the evaluation team conducted periodic checks during the program year, some incorrect per unit savings values made it to final reporting. We recommend ongoing tracking system verification checks by program staff in EPY5, emphasizing the types of issues found in the EPY4 evaluation. As part of the verification sampling process, the evaluation team checks ex-ante savings in tracking data extracts for outliers and errors, and will alert ComEd to observed discrepancies in EPY5.

We verified that 14 of 277 sampled measures (5%) 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. Examples of this adjustment occurred when a required T12 fluorescent baseline for a deemed measure was not met, and in some instances of variable speed drives that did not meet eligibility requirements specified in *Appendix A – ComEd Workpapers 8-5-11.pdf*<sup>18</sup> and EPY4 application forms. The simple average of the verified gross realization rate for all adjustments in this category was 0.155. Occurrences are summarized in Table 3-1 below.

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<sup>18</sup> Provided by David Nichols, email August 12, 2011.

**Table 3-1. Projects with Adjustments due to Ineligible Quantities, EPY4 Prescriptive Program**

Project ID	Measure Description	Summary of Adjustment
8648	Exit Signs	Existing fixtures were reported to be LED exit signs.
9452	2' Lamp and Ballast	Measure quantity reduced because of reported T8s in base case instead of all T12s
9452	HP T8 (4') and ballast	Measure quantity reduced because of reported T8s in base case instead of all T12s
10016	CTF-ALL-ALL-Cooling Tower Fan - w/All Types	VFD measure was disqualified because the base case for code minimum is a motor with 2 speeds, which is not an eligible base case
10016	CDWP-ALL-ALL-Condenser Water Pump - w/All Types	Measure quantity changed due to a finding of backup equipment in multi-unit installation
10016	Water Cooled Chiller Centrifugal	Measure quantity changed due to a finding of backup equipment in multi-unit installation
10262	CDWP-ALL-ALL-Condenser Water Pump - w/All Types	Pumps were found to operate at full speed and do not modulate to meet system requirement
10262	CHWP-ALL-ALL-Chilled Water Pump - w/All Types	Pumps were found to operate at full speed and do not modulate to meet system requirement
10443	HP T8 (4') and ballast	Measure quantity reduced because of reported T8s in base case instead of all T12s
10577	CDWP-ALL-ALL-Condenser Water Pump - w/All Types	Measure type changed. Only one pump operated/modulated at a time hence total measure HP changed
10577	CTF-ALL-ALL-Cooling Tower Fan - w/All Types	Only one fan modulated hence total measure HP changed. Second fan is constant full speed, third is backup
11052	EC Motor Walk-In	Installed equipment was not eligible
11207	Time Clocks for Lighting	Measure was disqualified because of manual control
14959	Time Clocks for Lighting	Measure was disqualified, found to be digital time clocks that did not provide lighting control according to set schedules

Source: Savings verification and analysis

- Recommendation:** We recommend that ComEd consider reviewing the procedures for pre-qualifying and approving variable speed drive projects to ensure that baseline and eligibility requirements are being met and that the VSD is installed with automatic flow control technology. ComEd should consider emphasizing eligibility issues with trade allies on VSDs and T12 lighting projects.

After conducting on-site visits and file reviews to verify gross energy savings, we made three types of adjustments on 38 of 277 sampled measures (14 percent) that we would categorize as verified information not matching tracking system information that would be gathered from the application form submittal or pre- and post-inspection. A common adjustment that tended to result in a verified gross savings realization rate less than 1.00 was a finding that verified quantities did not match ex-ante

quantities. Generally, these were minor quantity reductions that occurred in lighting projects, with a few instances of verified quantities that were higher than tracking system reporting. On some projects, the verified business type or measure type was changed, and these adjustments resulted in evaluation verified gross realization rates both higher and lower than 1.0. The simple average of the verified gross realization rate for all adjustments in this category was 0.959.

### 3.1.3 Gross and Net Program Impact Parameter Estimates

The ex-ante gross energy savings for the EPY4 Prescriptive program are calculated from deemed and non-deemed per unit savings values. Deemed parameters for EPY4 are defined by the document *Plan Year 4 Deemed Savings Values 31230.pdf*<sup>19</sup>. This document contains 2,256 line-item entries for business-type specific values of 186 unique measure names. The technical basis for ComEd's deemed and non-deemed ex-ante gross savings are contained in the ComEd document *Appendix A – ComEd Workpapers 8-5-11.pdf*.<sup>20</sup>

These two ComEd documents, along with EPY4 participant application forms, provided the basis for evaluation verified gross energy savings. The methodology for verifying measure savings was outlined in Section 2.3.

The evaluation team concludes that the Prescriptive program design and delivery method between EPY2 and EPY4 has been relatively stable and the changes that have occurred have not resulted in a significant change in free-ridership. Although the market for T12 lighting is in the process of transforming due to the impact of Federal ballast and lamp standards, we conclude that between EPY2 and EPY4 the market changes have not resulted in a significant change in free-ridership. Further details are provided in Appendix 5.2.2. Applying the NTG Framework, we believe it is appropriate to use the NTG ratio calculated in the EPY2 evaluation research.

- **Recommendation:** The evaluation team recommends that the net savings for the EPY4 Prescriptive Program be based on application of the Net-to-Gross ratio contained in the Illinois Commerce Commission's Order 10-0570, dated December 21, 2010, that specified a net-to-gross ratio of 0.74 for EPY4, based on evaluation research conducted with EPY2 participants.

The program parameters used for evaluating the EPY4 Prescriptive program are summarized in Table 3-2.

<sup>19</sup> This document is on the ICC web site for docket 10-0570.

(<http://www.icc.illinois.gov/docket/Documents.aspx?no=10-0570>)

<sup>20</sup> Provided by David Nichols, email August 12, 2011.

**Table 3-2. Program Parameters for the EPY4 Prescriptive Program**

Parameter	Value	Deemed or Evaluated?		Source Notes	
		Verification Report	Research Report	Verification Report	Research Report†
Deemed Net-to-Gross Ratio	0.74	Deemed	NA	<i>PY4 Deemed Values</i>	NA
Research Findings Net-to-Gross Ratio	0.70	NA	Evaluated	NA	Evaluation of EPY4 Participants
Measure Type and Eligibility	Varies	Evaluated	Evaluated	<i>PY4 Deemed Values</i> , supported by <i>Appendix A</i> and EPY4 program application forms	
Business Type	Varies	Evaluated	Evaluated	Tracking data unless verified on-site	
Quantity	Varies	Evaluated	Evaluated	Tracking data unless verified on-site or through review of project-specific documentation	
Gross Savings per Unit, Sampled Deemed Measures	Varies	Deemed	Evaluated	<i>PY4 Deemed Values</i> <sup>21</sup>	Tracking data unless verified on-site or through review of project-specific documentation
Gross Savings per Unit, Sampled Non-Deemed Measures	Varies	Evaluated	Evaluated	<i>Appendix A</i>	Tracking data unless verified on-site or through review of project-specific documentation
Verified Realization Rate on Ex-Ante Gross Savings	0.95	Evaluated	NA	Calculated from Sampled EPY4 Measures	NA
Research Findings Gross Realization Rate	1.04	NA	Evaluated	NA	Calculated from Sampled EPY4 Measures

† This is covered in *Appendix 5.1*.

<sup>21</sup> The PY4 Deemed Values document provided the deemed per unit savings – the kWh and peak kW saved per unit that was used as the sole source for deemed measure savings. To determine whether a measure we verified met the eligibility criteria to be assigned a deemed per unit savings value, we referred to Appendix A and the program application forms.

### 3.1.4 Savings Verification Gross and Net Program Impact Results

The evaluation verified gross and net energy savings are provided in Table 3-3.

**Table 3-3. Evaluation Verified Gross and Net Energy Savings, EPY4 Prescriptive Program**

Ex-Ante Gross Energy Savings kWh	Evaluation Verified Gross Realization Rate on Ex-Ante Gross Savings	Evaluation Verified Gross Energy Savings kWh	Deemed Net-to-Gross Ratio	Evaluation Verified Net Energy Savings kWh
333,030,521	0.95	316,378,995	0.74	234,120,456

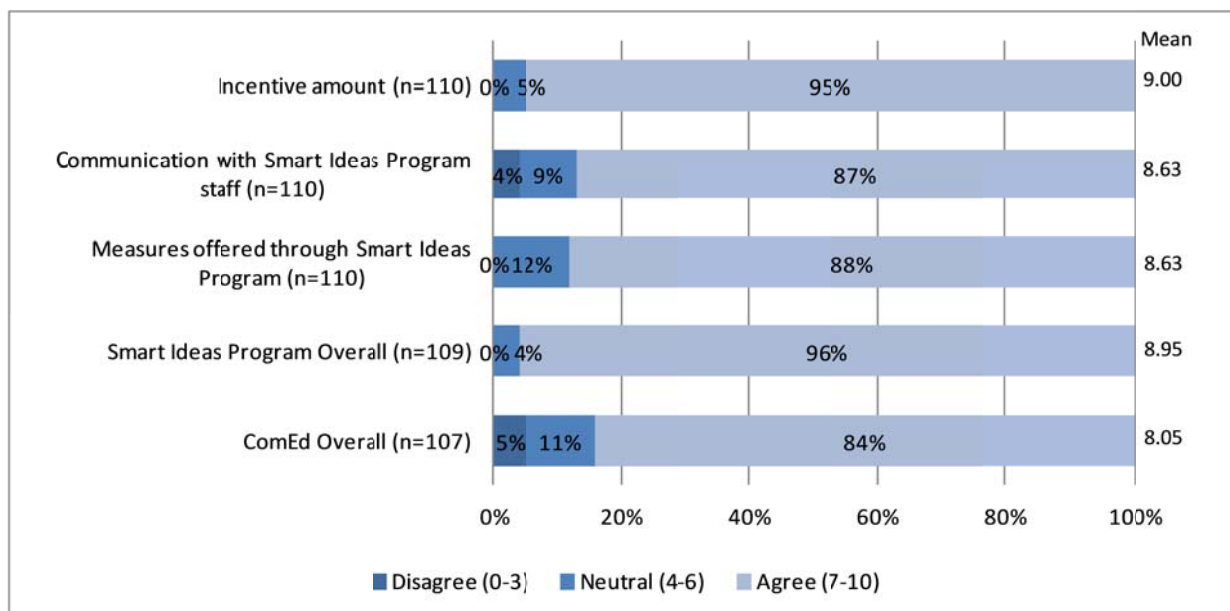
Source: Savings verification and analysis of ex-ante gross savings from ComEd online tracking system, September 25, 2012.

## 3.2 Process Evaluation Results

### Customer Satisfaction

The participant survey, conducted in September 2012, included 110 interviews. As part of that survey, we spoke with customers about their satisfaction with the program. In general, 96% of the customers surveyed reported being satisfied with the program overall. Most customers (96%) reported being satisfied with the incentive amount; while 87% reported being satisfied with the communications with Smart Ideas staff (although this program element had the lowest reported satisfaction, 87% is still quite high). A majority (82%) reported planning to participate in ComEd's Smart Ideas for Your Business Program again in the future. Although most (65%) participants could offer no recommendations for improving the program, of those who did, 11% called for higher incentives for program measures. Customer satisfaction with the program elements is reported in Figure 3-1.

**Figure 3-1. Satisfaction with Program Elements**



Source: Participant survey



When asked about the main benefits to participating in the program, respondents most often (69%) noted the potential for energy savings followed by the opportunity for a rebate or incentive (25%). On the whole, respondents typically claimed that the program presents no drawbacks to participation (86%); however, of those who identified issues, most were concerned with the paperwork being too burdensome (9%). It should be noted however, that of the participants that actually filled out their own application forms (which was 62%), most indicated that the application clearly explained the program requirements (96%). On average, participants felt that the application process was very easy, rating it as a 7.7 on a 0-10 scale.

Comparatively, few (26%) participants reported contacting the Smart Ideas for Your Business Call Center during the program. Yet, of this group, the majority (90%) was satisfied with the Call Center's ability to answer program-related questions.

### **Marketing and Outreach**

In terms of marketing and outreach, most participants hear about ComEd's Smart Ideas for Your Business Program through a discussion with a contractor or a trade ally (89%), followed by the ComEd website (59%), e-mails (47%), through a colleague, friend, or family member (46%), or ComEd Account Manager (38%). Other methods included monthly utility bills (26%), ComEd newsletters (30%), ComEd or KEMA staff (21%), a ComEd-hosted customer event (18%), a meeting, seminar, or workshop hosted by a third-party (19%), or a webinar (6%).

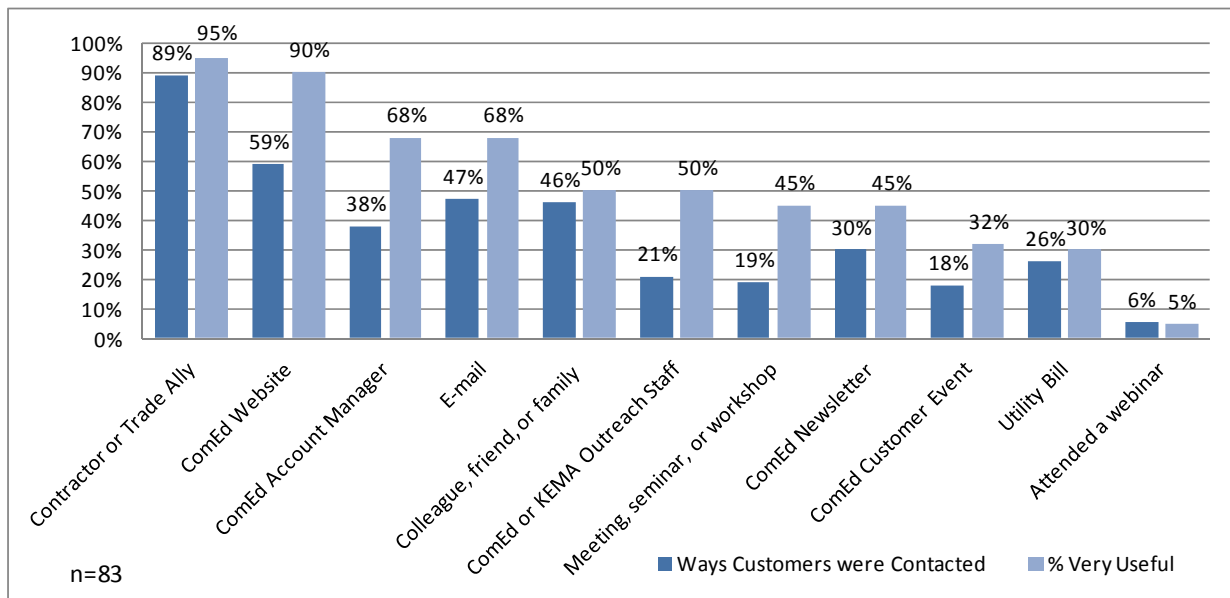
We compared this with the ways that customers reported wanting to learn about the program and found that trade allies (95%), the ComEd website (90%), Account Managers (68%), and e-mails (68%) were rated highest. Notably, there are several areas where participants' preferred method of learning about the program was out of sync with how they actually learned about the program. For example, a third (38%) actually reported contact with a ComEd Account Manager, while two-thirds of managed accounts (68%) think that discussing the Smart Ideas for Your Business Program with an Account Managers is very useful as a contact method. Similarly, nearly all participants (90%) reported the ComEd website is very useful as a method for learning about the program, but less than two-thirds reported learning about the program on the ComEd website. This could be an indication that although people find the website helpful they need to be motivated to visit the website. Other notable differences included:

- Email- 68% reported it was useful, but only 47% reported that is how they learned about the program
- Outreach staff- 50% reported it was useful but only 19% reported that is how they learned about the program
- Meetings, seminars or workshops- 45% reported this was useful but only 19% reported that was how they learned about the program
- ComEd newsletters- 45% reported this was useful but only 19% reported this was how they learned about the program
- ComEd customer events- 32% reported this was useful, but only 18% reported this is how they actually learned about the program.

From this analysis it appears that the contractor/trade ally channel is being well utilized by the program. Trade allies were mentioned by 89% of participants as being how they learned about the program; the

next most utilized channel was the website (mentioned by 59%), followed by email (47%). The website and the ComEd account managers represent the largest gaps between how customers hear of the program and how they prefer to about the program. Figure 3-2 illustrates these findings in detail.

**Figure 3-2. Comparison of How Customers are contacted vs. Preferred Contact method**



Source: Participant survey

Participants were also asked how useful program marketing materials are in providing information about the program. Almost a quarter (24%) of participants felt the materials are very useful. When asked about the best ways to reach companies regarding energy efficiency opportunities, 39% felt that e-mail was the best method, followed by bill inserts (18%), and trade allies (13%), while 12% felt that contact from ComEd Account Managers was the best approach to reaching companies.

### 3.2.1 Technical Services Offerings

ComEd also introduced two new technical services offerings for EPY4; the Facility and System Assessments (FAS) and the Smart Ideas Opportunity Assessments (SIOA). The FAS offering consists of a more in-depth audit conducted by a third-party provider for which the customer pays a \$5,000 fee. If the customer completes a project identified through the FAS process, the initial fee is returned. The SIOA assessment is free to the customer and consists of a two-hour walk through of the customers facility conducted by a ComEd engineer. Thirty-four customers had participated in the FAS offering and 366 had participated in the SIOA offering at the end of EPY4. Because the population size for the FAS assessments was limited, only six interviews were conducted with participants in the FAS program offering, while fifteen were completed with participants in the SIOA offering.

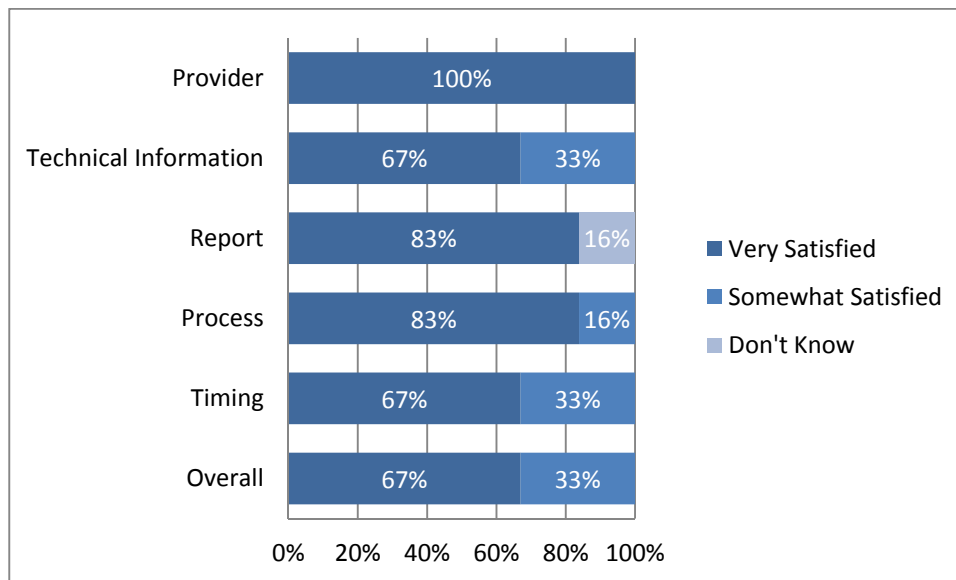
Customers were asked about their satisfaction with the program as well as the likelihood that they will complete projects based on their participation.



### Participant Satisfaction

Although only six participants in both technical assistance offerings completed satisfaction surveys, they all indicated satisfaction with the program overall. Facility and System Assessment participants rated their providers very highly, with 100% of the respondents reporting that they were “Very Satisfied” with them. FAS participants were least satisfied with the technical information they received as well as the timing. Figure 3-3 breaks down the satisfaction by program element.

**Figure 3-3. Facility and System Assessment Satisfaction (n=6)**

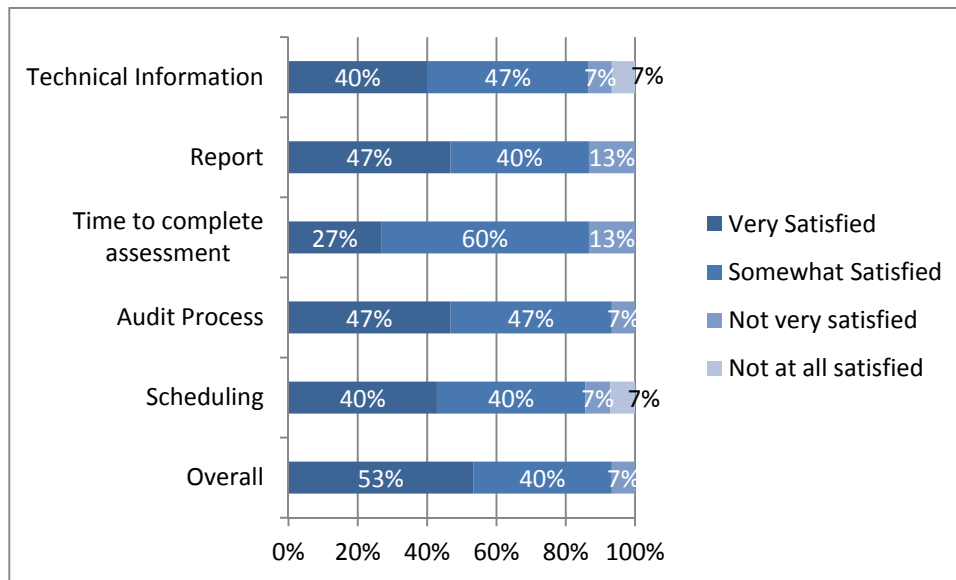


Source: Participant survey

Customers that participated in the SIOA program were also satisfied with the program overall, with 93% reporting being “Very” or “Somewhat” satisfied<sup>22</sup>. SIOA participants rated the report and the audit process highly. The program received lower marks for the technical information provided with 87% of customers being either “Very” or “Somewhat” satisfied, and the scheduling of the audit with 80% being either “Very” or “Somewhat” satisfied. Figure 4-9 breaks out participant satisfaction with the various elements.

<sup>22</sup> The choices were read out to the participant during the survey; these scores are not derived from zero to ten scoring.

**Figure 3-4. Smart Ideas Opportunity Assessment Satisfaction (n=15)**



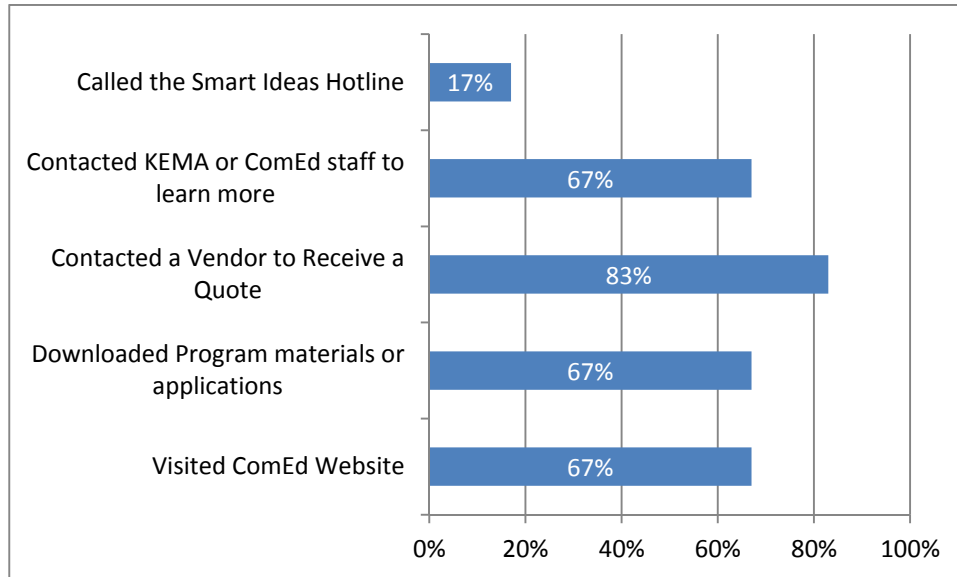
Source: Participant survey

### Project Completion

The goal of the technical assistance offerings is to bring projects into the program; therefore, we also asked customers if the assessments uncovered projects that they were not aware of and if the assessments made them more likely to complete a project in the future. The majority of SIOA participants (73%) reported that they were aware of the projects before they had the assessment, whereas 50% of the Facility and System Assessment participants report being aware of the projects identified in the assessment. Both of the technical services offerings do seem to generate interest in the program with 47% of SIOA and 67% of FAS participants reporting that the assessment has impacted their interest in the program. Additionally, 33% of SIOA participants and 50% of the Facility and System Assessment participants reported that they have completed at least one project identified by the assessment.

Eighty-three percent of participants in the FAS offering reported that since receiving the assessment they have reached out to a vendor or trade ally to receive a quote. Additionally, two-thirds (67%) of FAS participants report contacting KEMA or ComEd staff to learn more about the program and have downloaded program materials and applications from the website. Figure 3-5 shows the activities that the FAS participants report completing since they received their assessments.

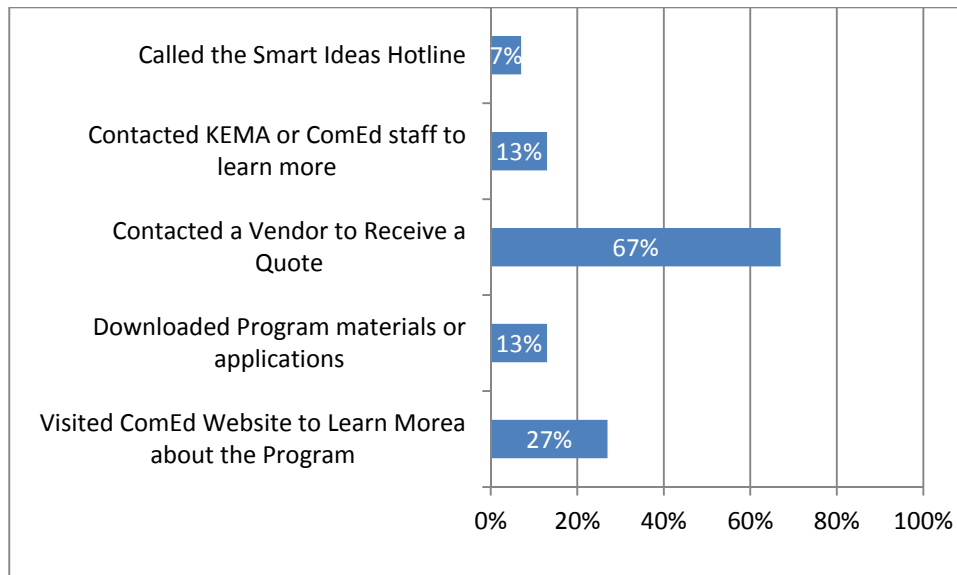
**Figure 3-5. Activities since Assessment -FAS (n=6)**



Source: Participant survey

As with the FAS participants, the SIOA participants reported most often that after receiving the assessment they contacted a vendor for a quote (67%). The next most common Smart Ideas related activity that SIOA customers report is visiting the ComEd website (mentioned by 27% of those interviewed).

**Figure 3-6. Activities since Assessment- SIOA (n=15)**



Source: Participant survey

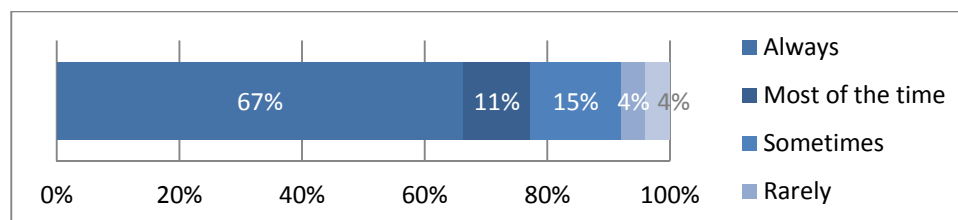
### 3.2.2 Trade Ally Program

Contractors and equipment vendors are important channels to ComEd's business customers. The bulk of participants (86%) worked with a contractor to complete their projects. Overall, two-thirds (66%) of those interviewed felt that it was important (7-10 on a 0-10 scale) that contractors are trained in ComEd's Smart Ideas for Your Business application process and program incentives. However, only a third (32%) of those same customers reported that they used a contractor affiliated ComEd Smart Ideas for Your Business program. Satisfaction with contractors is high; of those who worked with a contractor, most (68%) felt that the contractor was completely able to meet their needs (10 on a scale of 0-10) and nearly all (98%) would recommend their contractor to other people or companies.

In order to boost energy savings delivered through trade allies, ComEd launched a two-tiered bonus incentive structure for the program. So called, "Platinum" trade allies were given the goal of achieving 25% or 50% more in EPY4 than what they achieved in EPY3. The Platinum Trade Ally rewards were calculated based on the increase in kWh that the trade ally brought in to the program in EPY4 compared to EPY3. Trade allies who produced 25% more kWh in EPY4 received a bonus amount of 4% of the dollar amount of paid incentives at goal. Trade Allies who achieved a 50% increase over EPY3 paid kWh received a bonus amount of 8% of the dollar amount of paid incentives at goal. The program also had a "Gold" performance reward level whereby trade allies that achieve between 2,300,000 and 4,999,999 kWh receive a reward of \$7,500 and trade allies that achieve more than 5,000,000 kWh get a reward of \$15,000. There were 274 unique contractors that submitted projects to the Smart Ideas programs listed in the program database. We interviewed 27 trade allies that submitted projects to the program to get their feedback on the program including the bonus incentives.

Trade allies are generally quite active in promoting the program to their customers. In fact, most trade allies (67%) report "always" promoting the program to their customers and conversely only 4% reported that they "never" promote the program to their customers.

**Figure 3-7. Percent that Promote Program to Customers**



*Source: Trade ally survey*

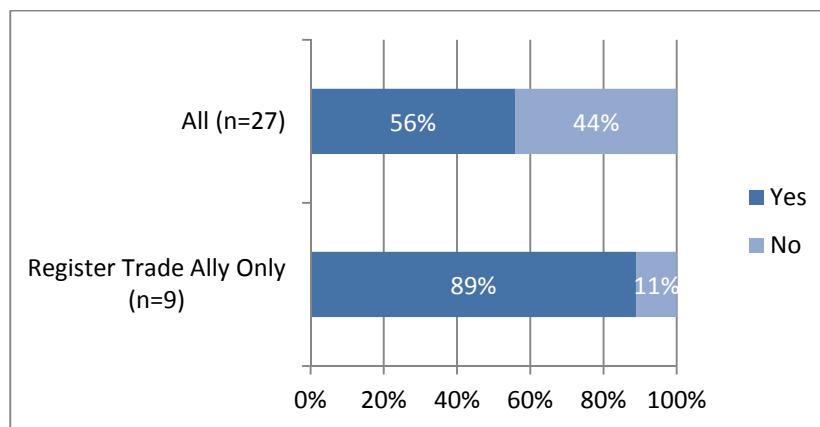
The bonus program was intended to increase promotion of the Smart Ideas program on the part of trade allies in order to bring more projects into the program. Thirteen trade allies participated in the "Platinum" performance reward tier and 60 participated in the "Gold" tier performance reward. The program staff based the trade ally tier on their performance in EPY3. According to the trade ally performance report provided by ComEd, four "Platinum" trade allies received bonuses with two of those trade allies meeting the basic goal and two meeting the stretch goal. Five "Platinum" trade allies brought fewer kWh into the program in EPY4 than they did in EPY3. Combined, the "Platinum" tier trade allies in EPY4 brought in 107,715,095 in EPY3. The combined goals for the "Platinum" trade allies

for EPY4 were 147,000,000 for the basic goal and 176,500,000 for the stretch goal<sup>23</sup>. The final amount of kWh brought into the program for EPY4 was actually lower than for EPY3 by about 12 million kWh. There were two participants that significantly underperformed in EPY4 when compared to EPY3; those two trade allies alone accounted for a 31million kWh decrease year over year. If those two trade allies were excluded from the analysis the “Platinum” tier would have seen a 27% increase in savings.

The combined savings achieved by the “Gold” tier trade allies in EPY3 was about 64 million kWh; in EPY4 those trade allies produced 91 million kWh in savings which is a 42% increase in savings year-over-year (27 million kWh). However, eleven of the trade allies included in the EPY4 program did not have any savings attributed to them in EPY3. If you exclude trade allies included in the EPY4 bonus program that did not participate in EPY3, the additional savings achieved drops from 27 million kWh down to just over 6 million kWh, which is about a 10% increase year-over-year.

Of the 27 contractors we interviewed, over half (56%) reported being aware of the bonuses offered by the program. Among the nine registered trade allies interviewed, awareness was even higher at 89%.

**Figure 3-8.Awareness of Bonus**



Source: Trade ally survey

### 3.2.3 Account Manager Engagement

The account managers had two program goals during EPY4. For the first half of EPY4 (June-December, 2011) they were required to present a slide deck about the Smart Ideas program to all of their Tier 1 customers<sup>24</sup>, during the second half of EPY4 they had the goal of bringing opportunity assessments into the program. During our interviews with 11 account managers we asked them about their experiences promoting the program to their customers, their goals and any recommendations for the future.

<sup>23</sup> There was one trade ally included in the “Platinum” list that did not have any savings recorded for either EPY3 or EPY4. This trade ally was dropped from the trade ally performance analysis.

<sup>24</sup> ComEd has three tiers of managed customer accounts. Tier 1 customers represent the largest managed accounts.

### **Promoting the Program to Customers**

Overall, account managers report already feeling that they have the tools and materials necessary to promote the Smart Ideas for Your Business Program. Account managers were largely divided on how best to contact customers with e-mail (36%) and in-person meetings (36%) being the most frequently mentioned responses. Generally, account managers reported in-person meetings to be more common among larger Tier 1 and 2 customers; however, e-mail contact seems to be useful across the board due to its ease of use.

When asked about recommendations for how to better promote the program to customers, many account managers cited the importance of high-quality hand-outs to provide to customers, in addition to expanding webinar offerings and case studies. Overall, three-quarters (73%) feel that the marketing materials are very useful. However, one recurring theme throughout the interviews was the need to tailor the program messages and materials to customer segments. Account managers reported that they use case studies to relate the program results to their customers. One account manager noted that case studies:

*“Help the customer see what their peer group is doing.”*

Similarly, when asked about the Lunch-and-Learns, account managers pointed to tips on selling to specific customer segments, program awareness, and internal resources as useful educational aspects of the Lunch-and-Learn presentations, which were then used as a part of the program selling process. Account managers still feel that the lunch and learns are useful; a third indicated they are “very” useful and the other two thirds reported they were “somewhat” useful.

Less than a third (27%) of account managers felt they were very familiar with the trade ally network. Generally, account managers reported rarely or never reaching out to the trade ally network to help a customer complete a project, preferring to work with internal staff or KEMA representatives. One account manager said:

*“I specifically try to work almost exclusively internally. When I start working with trade allies, there are people internally within our marketing department or KEMA that I hand that off to.”*

Awareness of program participation was high among account managers with two-thirds (64%) claiming to be very aware of their customers’ participation in the program. That said, 90% of those interviewed felt that their current process of tracking contact with customer leads was working effectively. Nearly all (91%) reported that the weekly updates were useful in tracking customer participation; however, slightly less (82%) felt that the updates provided enough information about their customers.

### **Smart Ideas Presentation Goal**

As mentioned earlier, account managers had goals for presenting a slide deck about the program to their Tier 1 customers. When we asked account managers about this goal, several account managers indicated that it was difficult to get adequate time with the customer to present the whole deck and that the slide deck had too much detail for the audience. The account managers recommended tailoring the message of the slide deck presentation specifically to their customer segments. This relates to the findings on program promotion overall as well:

*"Bring it down to a level that relates to that specific industry/customer class I think that would be something that would maybe get their attention."*

*"It is wonderful to have a slide deck, but ...it needs to be more of a custom approach to each customer as far as what makes the most sense and [account managers] are in the position to make that decision individually."*

### **Smart Ideas Opportunity Assessment Goal**

As for the goal of bringing more Smart Ideas Opportunity Assessments into the program, the account managers reported that often the challenge is in asking the customer to provide data about their facility in order to complete the report. One account manager reported:

*"When we get out with customers, it's one thing to get them to agree to do the assessment - we reach a different set of challenges when it comes to contacting the engineer and trying to schedule and getting onsite. Once we accomplish that obstacle then if the customer is responsible for getting us data sets to complete a report I've had a couple of challenges with customers there where the whole thing stalls at that point."*

In terms of program feedback, account managers reported that their customers seem to be mostly happy with the program and with saving money. One account manager said:

*"Those who participated have been very pleased. They have good feedback about the engineers, if they have an assessment, and they all appreciated the energy savings."*

### **Customer Barriers**

Over half (55%) of the account managers interviewed report that they promote the program to their customers very often, but they also indicated that customers are often more concerned about reliability, new service and power quality issues than they are about energy efficiency. For example one account manager noted:

*"You can't just redirect them when their focus is "Hey I'm not getting good power quality; I can't run a couple of my production lines" You're not going to say "Oh, by the way [here are the energy efficiency programs]"."*

Another noted:

*"It's a money issue and the time [is an issue] for the customers."*

Almost half (46%) of the account managers thought that all of their customers were aware of the Smart Ideas for Your Business Program, while only 9% thought that their customers were interested in the program. Typically, account managers felt that customer interest was largely tied to whether the customer could afford to have the work done, rather than the potential for savings. One account manager argued:

*"There are customers on the verge of bankruptcy and have no money for [these types of] programs. If they can't meet their payroll, then they can't think about energy savings ideas."*



Others noted:

*"Customers having available funds to begin a project" [is a barrier].*

*"Incentives are the make-or-break point. The incentives can make the case to the business."*



## 4. Findings and Recommendations

### 4.1 Key Impact Findings and Recommendations

The primary findings and recommendations are as follows:

The evaluation team concludes that the Prescriptive program design and delivery method between EPY2 and EPY4 has been relatively stable and the changes that have occurred have not resulted in a significant change in free-ridership. Although the market for T12 lighting is in the process of transforming due to the impact of Federal ballast and lamp standards, we conclude that between EPY2 and EPY4 the market changes have not resulted in a significant change in free-ridership. Applying the NTG Framework, we believe it is appropriate to use the NTG ratio calculated in the EPY2 evaluation research.

- Recommendation:** The evaluation team believes it is reasonable that the net savings for the EPY4 Prescriptive Program be based on application of the Net-to-Gross ratio contained in the Illinois Commerce Commission's Order 10-0570, dated December 21, 2010, that specified a net-to-gross ratio of 0.74 for EPY4, based on evaluation research conducted with EPY2 participants.

**About three-quarters of sampled measures (206 of 277, or 74 percent) had verified gross savings realization rates that were between 0.98 and 1.02.** When the measure-level verified gross realization rate equals 1.00, this indicates we verified that the ex-ante gross savings reported by the tracking system represented a measure that was eligible for the definition of the deemed or non-deemed value applied, the appropriate per unit savings was correctly implemented in the tracking system, and that quantities matched (or very nearly matched). This indicates good performance by trade allies and the program implementer to produce accurate application forms and enter data correctly. The simple average of the verified gross realization rate (VGRR) for all measures in this category was 1.0.

- Recommendation:** Where deemed values are used, it is especially important to record accurate quantities and confirm eligibility. Although we have concluded in our evaluation research since EPY1 that ComEd has sound verification procedures, we recommend ComEd consider a reassessment of internal project verification procedures in light of EPY4 evaluation findings and use of deemed measures.

**After conducting on-site visits and file reviews to verify gross energy savings, we made three types of adjustments on 38 of 277 sampled measures (14 percent) that we would categorize as verified information not matching tracking system information that would be gathered from the application form submittal or pre- and post-inspection.** A common adjustment that tended to result in a verified gross savings realization rate less than 1.00 was a finding that verified quantities did not match ex-ante quantities. Generally, these were minor quantity reductions that occurred in lighting projects, with a few instances of verified quantities that were higher than tracking system reporting. On some projects, the verified business type or measure type was changed, and these adjustments resulted in evaluation verified gross realization rates both higher and lower than 1.0. The simple average of the verified gross realization rate for all adjustments in this category was 0.959.

- **Recommendation:** Although these types of adjustments might be caught and fixed by increasing the number of on-site pre- and post-inspections by the program, that would not be practical for the large number of small projects in the program. The need for accurate recording of quantities, measure type, and business type should be stressed with trade allies.

**For 19 of 277 sampled measures (7%), we found that measure type, business type, and quantities matched evaluation verification findings but the tracking system did not correctly apply the appropriate deemed or non-deemed value.** Examples of measures with incorrect reporting of deemed or non-deemed values were: new T5/T8 fixtures in heavy industry (seven of 277 sampled measures, VGRR=0.89), delamping of eight foot fixtures with reflectors (eight of 277 sampled measures had a VGRR=0.73, while three instances had correct values), one instance each of EC motor Walk-in and EC motor Reach in, and two instances of “One 8-ft T12 Lamp to two 4-ft HP T8 Lamps and Ballast”. The simple average of the verified gross realization rate for all adjustments in this category was 0.895.

- **Recommendation:** Tracking system related evaluation adjustment might be caught and fixed prior to annual evaluations. Although ComEd and the evaluation team conducted checks during the program year, some incorrect per unit savings values made it to final reporting. We recommend ongoing tracking system verification checks by program staff emphasizing the types of issues found in EPY4 evaluation. As part of the verification sampling process, the evaluation team checks ex-ante savings in tracking data extracts for outliers and errors, and will alert ComEd to observed discrepancies in EPY5.

**We verified that 14 of 277 sampled measures (5%) 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.** Examples of this adjustment occurred when a required T12 fluorescent baseline for a deemed measure was not met, and in some instances of variable speed drives that did not meet eligibility requirements specified in *Appendix A – ComEd Workpapers 8-5-11.pdf*<sup>25</sup> and EPY4 application forms. The simple average of the verified gross realization rate for all adjustments in this category was 0.155.

- **Recommendation:** We recommend that ComEd consider reviewing the procedures for pre-qualifying and approving variable speed drive projects to ensure that baseline and eligibility requirements are being met and that the VSD is installed with automatic flow control technology. ComEd should consider emphasizing eligibility issues with trade allies on VSDs and T12 lighting projects.

## 4.2 Key Process Findings and Recommendations

The primary findings and recommendations are as follows:

**Customers are quite satisfied with the Prescriptive Program.** In general, 96% of the customers surveyed reported being satisfied with the program overall. Most customers (96%) reported being satisfied with the incentive amount; while 87% reported being satisfied with the communication with Smart Ideas staff.

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<sup>25</sup> Provided by David Nichols, email August 12, 2011.

**We compared how people reported wanting to learn about the program with how they reported actually learning about the program.** A third of respondents (38%) report that they learned about the program through contact with a ComEd Account Manager, while two-thirds of managed accounts (68%) reported that discussing the Smart Ideas for Your Business Program with an Account Managers is very useful as a contact method. This could possibly indicate that the account manager channel is underutilized. Similarly, nearly all participants (90%) reported the ComEd website is very useful as a contact method for learning about the program, but less than two-thirds reported actually learning about the program on the website. This could be an indication that although people find the website helpful they need to be motivated to visit the website. Also, 50% of respondents reported that they would like to learn about the program from ComEd and KEMA staff; however only 21% report that they actually learned about the program that way.

- **Recommendation:** Customers found the website very useful, however only 59% reported actually going there to learn about the program. The challenge for the Smart Ideas program appears to be in getting customers to the website to begin with. ComEd should continue to develop tactics to drive website traffic and make sure that the program information appears on areas of the ComEd website that customers most often visit.
- **Recommendation:** Although 38% of managed accounts reported learning about the program from their account manager, 68% said this was a channel they would like to learn about the program through. ComEd has been working to increase account manager involvement by setting goals for program presentations and SIOAs for Tier 1 customers. ComEd should continue these efforts as well as look for new opportunities to engage the account management channel; perhaps expanding the outreach to smaller managed accounts. ComEd should continue to look for ways to reward top-performing account managers.

**Account managers reported that the Smart Ideas slide deck presentation goal was achievable, but they felt that the information included was too general.**

- **Recommendation:** To address this, ComEd could produce more industry-specific marketing materials (such as case studies) to help the account managers tailor their presentations to specific customer segments.

**With the exception of a handful of trade allies that underperformed in EPY4, trade allies appear to be motivated by cash bonuses.** The aggregate performance of the trade allies that participated in the EPY4 Trade Ally bonus program did not appear to be significantly higher than the savings achieved in EPY3 by the same group of trade allies; however, the aggregate total is skewed because of significant underperformance of just a handful of trade allies. In fact, two “Platinum” trade allies combined contributed 31 million fewer kWh in EPY4 than in EPY3. If those two trade allies are excluded from the analysis, the “Platinum” tier of trade allies achieved 27% more energy savings in EPY4 than they did in EPY3.

- **Recommendation:** Comparing year over year performance offers trade allies a longer time horizon which is important because shorter- term “fire sale” bonuses have the tendency to

clear the pipeline and are not helpful in the long run. ComEd should continue to test different bonus structures with trade allies to find what works best.

**Trade allies remain a very important channel to customers.** Both SIOA and FAS participants reported that, after receiving the assessment, they often contact vendors for quotes on the projects that are identified and they are less likely to contact their ComEd account manager or other ComEd and KEMA staff. Additionally, ComEd account managers report that they are likely to hear of projects after the customer has been approached by the trade ally. Account managers also indicate that they would like to increase their involvement with trade allies.

- **Recommendation:** ComEd could consider ways in which they could strengthen the ties between account managers and trade allies. This could include having more trade allies present at Lunch-and-Learns for the account managers or having account managers attend Trade Ally Basic Training sessions or other trade ally events.

**Initial qualitative results seem to indicate that FAS participants are more likely to complete a project after the assessment;** 50% of FAS and 33% of SIOA participants report completing a project reported in the assessment. The ComEd program managers indicated that since FAS participants pay a \$5,000 fee to receive the assessment they have some “skin in the game” which could possibly motivate them to complete the identified projects.

- **Recommendation:** ComEd could consider adding some sort of fee for the SIOA offering in order to weed out customers that may not be as serious about doing energy efficiency projects. ComEd may need to test several fee levels in order to find a level that does not pose a barrier to serious participants but does separate out customers that are not serious about completing projects.

## 5. Appendix

### 5.1 Glossary

**ComEd, Nicor Gas, Peoples Gas, and North Shore Gas EM&V Reporting Glossary. January 10, 2013**

#### High Level Concepts

##### Program Year

- EPY1, EPY2, etc. Electric Program Year where EPY1 is June 1, 2008 to May 31, 2009, EPY2 is June 1, 2009 to May 31, 2010, etc.
- GPY1, GPY2, etc. Gas Program Year where GPY1 is June 1, 2011 to May 31, 2012, GPY2 is June 1, 2012 to May 31, 2013.

There are two main tracks for reporting impact evaluation results, called Verified Savings and Impact Evaluation Research Findings.

##### Verified Savings composed of

- Verified Gross Energy Savings
- Verified Gross Demand Savings
- Verified Net Energy Savings
- Verified Net Demand Savings

These are savings using deemed savings parameters when available and after evaluation adjustments to those parameters that are subject to retrospective adjustment for the purposes of measuring savings that will be compared to the utility's goals. Parameters that are subject to retrospective adjustment will vary by program but typically will include the quantity of measures installed. In EPY4/GPY1 ComEd's deemed parameters were defined in its filing with the ICC. The Gas utilities agreed to use the parameters defined in the TRM, which came into official force for EPY5/GPY2.

**Application:** When a program has deemed parameters then the Verified Savings are to be placed in the body of the report. When it does not (e.g., Business Custom, Retrocommissioning), the evaluated impact results will be the Impact Evaluation Research Findings.

##### Impact Evaluation Research Findings composed of

- Research Findings Gross Energy Savings
- Research Findings Gross Demand Savings
- Research Findings Net Energy Savings
- Research Findings Net Demand Savings

These are savings reflecting evaluation adjustments to any of the savings parameters (when supported by research) regardless of whether the parameter is deemed for the verified savings analysis. Parameters that are adjusted will vary by program and depend on the specifics of the research that was performed during the evaluation effort.

**Application:** When a program has deemed parameters then the Impact Evaluation Research Findings are to be placed in an appendix. That Appendix (or group of appendices) should be labeled

Impact Evaluation Research Findings and designated as “ER” for short. When a program does not have deemed parameters (e.g., Business Custom, Retrocommissioning), the Research Findings are to be in the body of the report as the only impact findings. (However, impact findings may be summarized in the body of the report and more detailed findings put in an appendix to make the body of the report more concise.)

#### Program-Level Savings Estimates Terms

N	Term Category	Term to Be Used in Reports‡	Application†	Definition	Otherwise Known As (terms formerly used for this concept)§
1	Gross Savings	Ex-ante gross savings	Verification and Research	Savings as recorded by the program tracking system, unadjusted by realization rates, free ridership, or spillover.	Tracking system gross
2	Gross Savings	Verified gross savings	Verification	Gross program savings after applying adjustments based on evaluation findings for only those items subject to verification review for the Verification Savings analysis	Ex post gross, Evaluation adjusted gross
3	Gross Savings	Verified gross realization rate	Verification	Verified gross / tracking system gross	Realization rate
4	Gross Savings	Research Findings gross savings	Research	Gross program savings after applying adjustments based on all evaluation findings	Evaluation-adjusted ex post gross savings
5	Gross Savings	Research Findings gross realization rate	Research	Research findings gross / ex-ante gross	Realization rate
6	Gross Savings	Evaluation-Adjusted gross savings	Non-Deemed	Gross program savings after applying adjustments based on all evaluation findings	Evaluation-adjusted ex post gross savings
7	Gross Savings	Gross realization rate	Non-Deemed	Evaluation-Adjusted gross / ex-ante gross	Realization rate
1	Net Savings	Net-to-Gross Ratio (NTGR)	Verification and Research	1 – Free Ridership + Spillover	NTG, Attribution
2	Net Savings	Verified net savings	Verification	Verified gross savings times NTGR	Ex post net
3	Net Savings	Research Findings net savings	Research	Research findings gross savings times NTGR	Ex post net
4	Net Savings	Evaluation Net Savings	Non-Deemed	Evaluation-Adjusted gross savings times NTGR	Ex post net
5	Net Savings	Ex-ante net savings	Verification and Research	Savings as recorded by the program tracking system, after adjusting for realization rates, free ridership, or spillover and any other factors the program may choose to use.	Program-reported net savings

‡ “Energy” and “Demand” may be inserted in the phrase to differentiate between energy (kWh, Therms) and demand (kW) savings.

† **Verification** = Verified Savings; **Research** = Impact Evaluation Research Findings; **Non-Deemed** = impact findings for programs without deemed parameters. We anticipate that any one report will either have the first two terms or the third term, but never all three.

§ Terms in this column are not mutually exclusive and thus can cause confusion. As a result, they should not be used in the reports (unless they appear in the “Terms to be Used in Reports” column).

### Individual Values and Subscript Nomenclature

The calculations that compose the larger categories defined above are typically composed of individual parameter values and savings calculation results. Definitions for use in those components, particularly within tables, are as follows:

**Deemed Value** – a value that has been assumed to be representative of the average condition of an input parameter and documented in the Illinois TRM or ComEd’s approved deemed values. Values that are based upon a deemed measure shall use the superscript “D” (e.g., delta watts<sup>D</sup>, HOU-Residential<sup>D</sup>).

**Non-Deemed Value** – a value that has not been assumed to be representative of the average condition of an input parameter and has not been documented in the Illinois TRM or ComEd’s approved deemed values. Values that are based upon a non-deemed, researched measure or value shall use the superscript “E” for “evaluated” (e.g., delta watts<sup>E</sup>, HOU-Residential<sup>E</sup>).

**Default Value** – when an input to a prescriptive saving algorithm may take on a range of values, an average value may be provided as well. This value is considered the default input to the algorithm, and should be used when the other alternatives listed for the measure are not applicable. This is designated with the superscript “DV” as in X<sup>DV</sup> (meaning “Default Value”).

**Adjusted Value** – when a deemed value is available and the utility uses some other value and the evaluation subsequently adjusts this value. This is designated with the superscript “AV” as in X<sup>AV</sup>

### Glossary Incorporated From the TRM

Below is the full Glossary section from the TRM Policy Document as of October 31, 2012<sup>26</sup>.

**Evaluation:** Evaluation is an applied inquiry process for collecting and synthesizing evidence that culminates in conclusions about the state of affairs, accomplishments, value, merit, worth, significance, or quality of a program, product, person, policy, proposal, or plan. Impact evaluation in the energy efficiency arena is an investigation process to determine energy or demand impacts achieved through the program activities, encompassing, but not limited to: *savings verification*, *measure level research*, and *program level research*. Additionally, evaluation may occur outside of the bounds of this TRM structure to assess the design and implementation of the program.

*Synonym:* **Evaluation, Measurement and Verification (EM&V)**

<sup>26</sup> IL-TRM\_Policy\_Document\_10-31-12\_Final.docx



**Measure Level Research:** An evaluation process that takes a deeper look into measure level savings achieved through program activities driven by the goal of providing Illinois-specific research to facilitate updating measure specific TRM input values or algorithms. The focus of this process will primarily be driven by measures with high savings within Program Administrator portfolios, measures with high uncertainty in TRM input values or algorithms (typically informed by previous savings verification activities or program level research), or measures where the TRM is lacking Illinois-specific, current or relevant data.

**Program Level Research:** An evaluation process that takes an alternate look into achieved program level savings across multiple measures. This type of research may or may not be specific enough to inform future TRM updates because it is done at the program level rather than measure level. An example of such research would be a program billing analysis.

**Savings Verification:** An evaluation process that independently verifies program savings achieved through prescriptive measures. This process verifies that the TRM was applied correctly and consistently by the program being investigated, 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 may be expressed as a program 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.

**Measure Type:** Measures are categorized into two subcategories: custom and prescriptive.

**Custom:** Custom measures are not covered by the TRM and a Program Administrator's savings estimates are subject to retrospective evaluation risk (retroactive adjustments to savings based on evaluation findings). Custom measures refer to undefined measures that are site specific and not offered through energy efficiency programs in a prescriptive way with standardized rebates. Custom measures are often processed through a Program Administrator's business custom energy efficiency program. Because any efficiency technology can apply, savings calculations are generally dependent on site-specific conditions.

**Prescriptive:** The TRM is intended to define all prescriptive measures. Prescriptive measures refer to measures offered through a standard offering within programs. The TRM establishes energy savings algorithm and inputs that are defined within the TRM and may not be changed by the Program Administrator, except as indicated within the TRM. Two main subcategories of prescriptive measures included in the TRM:

**Fully Deemed:** Measures whose savings are expressed on a per unit basis in the TRM and are not subject to change or choice by the Program Administrator.

**Partially Deemed:** Measures whose energy savings algorithms are deemed in the TRM, with input values that may be selected to some degree by the Program Administrator, typically based on a customer-specific input.





In addition, a third category is allowed as a deviation from the prescriptive TRM in certain circumstances, as indicated in Section 3.2:

**Customized basis:** Measures where a prescriptive algorithm exists in the TRM but a Program Administrator chooses to use a customized basis in lieu of the partially or fully deemed inputs. These measures reflect more customized, site-specific calculations (e.g., through a simulation model) to estimate savings, consistent with Section 3.2.

## 5.2 *Detailed Impact Results*

### 5.2.1 **Impact Evaluation Research Findings**

The objective of this element of the impact evaluation is to develop savings reflecting evaluation adjustments to any of the savings parameters (when supported by research) regardless of whether the parameter is deemed for the verified savings analysis. The result is an evaluation research findings estimate of gross and net savings.

The evaluation methods to conduct a research findings estimate of the gross and net impacts of the EPY4 Business Prescriptive program were:

- Implemented a stratified random sampling design to select 90 projects from the population of 4,603 Prescriptive project applications. Sampling was done in two waves with three strata. The sample selected and methodology was the same as used in the savings verification estimate of the main report.
- Conducted on-site visits and measurement and verification (M&V) activities on a sample of 44 Prescriptive projects selected from the 90 projects to support measure-level research. An engineering review of project files and energy savings estimates was conducted on the remaining 46 projects from the sample of 90 projects to support program-level research.

We completed computer assisted telephone interviews (CATI) with 110 Prescriptive project contacts from EPY4 to support net impact research through participant self-reporting. The participant's reporting of influence of registered trade allies and trade associates was considered in the net-to-gross scoring, and follow-up vendor interviews were conducted to assess the influence of the program on vendors. Spillover candidates identified in the CATI survey received a follow-up interview to quantify spillover savings, if they were willing to be interviewed a second time by an engineer. The result is a Net-to-Gross Ratio (NTGR) research findings estimate from the EPY4 program population.

### **Research Findings on Gross Impacts**

The ex-ante gross savings reported in ComEd's tracking system were evaluated using the following steps:

1. Engineering review at the measure-level for a sample of 90 project files, with the following subcomponents:
  - a. Engineering review and analysis of measure savings based on project documentation, default assumptions, and tracking data for 46 of the sampled projects.
  - b. On-site verification audits at 44 project sites selected from the sample of 90 projects. Performance measurements included spot measurements and run-time hour data logging for selected measures. On-site data collection occurred during the June 1 through August 31 summer peak period.
  - c. Calculation of a verified gross savings value (kWh and kW) for each project within the sample, based on measure-level engineering analysis.
2. Carry out a quality control review of the research findings impact estimates and the associated draft site reports and implement any necessary revisions.

A research findings gross realization rate (which is the ratio of the research findings gross savings to ex-ante gross savings as reported in the tracking system) was then estimated for the sample and applied to the total program ex-ante gross savings, using sampling-based approaches that are described in greater detail below. The result is an evaluation research findings estimate of gross savings for the Prescriptive program.

### **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 44 of the 90 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.

#### **Research Findings for the Gross Impact Sample**

In Table 5-1 below we present the research findings results by end-use for sampled projects to provide insight into the findings. 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 5-1. Research Findings for the Gross Impact Sample – By End-Use**

End Use	Measure Count	Sample-Based Ex-ante kWh	Sample-Based Ex Post Gross kWh Impact	RR† on kWh	Sample-Based Ex-ante kW	Sample-Based Ex Post Gross kW Impact	RR on kW
Lighting	244	21,430,583	25,012,591	117%	3,592	3,658	102%
VSD	22	4,531,109	8,069,352	178%	1,085	983	91%
Refrig.	6	44,234	57,609	130%	5	6	120%
HVAC	5	1,867,545	1,675,830	90%	10,113	991	10%
Other	-	-	-	-	-	-	-
Total	277	27,873,470	34,815,382	125%	14,796	5,638	38%

Source: Evaluation analysis

† Energy and demand realization rates shown are un-weighted, and do not reflect population estimates of realization rates.

Table 5-2 provides the results of short-term logger data collection on lighting installations from on-site M&V of the EPY4 Prescriptive program. For most of the projects selected for on-site M&V, lighting loggers were deployed by Michaels Energy field engineers for at least two weeks during the PJM peak months, to collect operating data on installed efficiency measures. Depending on the project, multiple loggers may have been deployed to capture operating hours for different zones of the lighting project to provide an equivalent full load hours (EFLH) of operation for the year. On some projects, timeclock settings or on-site customer interviews were used. Timeclock settings were used on projects where there was a high degree of certainty that lighting would remain on during fixed operating schedules, while customer reporting was used on spaces with highly certain 8,760 hours of operation (e.g., hospital common areas). It is important to note that on-site M&V collected equivalent full load hours of use data for the installed measures, not operating hours for the facility lighting as a whole.

**Table 5-2. ComEd Business Prescriptive EPY4 EFLH for Lighting from On-Site M&V Data Collection**

Business Type	EPY4 Lighting On-Site M&V Sample Count	Sample Overall Average EFLH	EFLH Averaging by Project Size Strata			
			Average of Strata	Stratum 1 Large	Stratum 2 Medium	Stratum 3 Small
Heavy Industry	5	6,075	6,005	6,353	5,658	
Light Industry	9	4,927	4,728	5,584	4,470	4,130
Medical	1	6,113	6,113		6,113	
Miscellaneous	7	4,207	3,593	4,067	4,867	1,845
Office	1	2,202	2,202		2,202	
Retail/Service	6	4,231	4,231	4,697	3,765	
Warehouse	3	5,605	5,605	5,605		
Total	32					

Source: EPY4 evaluation on-site M&V

Table 5-3 provides the results of short-term logger data collection on lighting installations from on-site M&V of the EPY4 Prescriptive program.

**Table 5-3. ComEd Business Prescriptive EPY4 Lighting Logger Results for PJM Summer Peak Coincidence Factor from Evaluation On-site M&V**

Verified Building Type	Sites with On-site M&V	Project-level Ex Post Gross PJM Peak kW Weighted Lighting Coincidence Factor
Heavy Industry	5	0.89
Light Industry	9	0.83
Medical	1	0.93
Miscellaneous	7	0.84
Office	2	0.83
Retail/Service	6	0.87
Warehouse	3	0.99
Average for the above building types	33	0.91

*Source: EPY4 evaluation on-site M&V*

Table 5-4 below provides the results of short-term logger data collection on lighting occupancy sensor installations from EPY4 on-site M&V of the Prescriptive program.

**Table 5-4. ComEd Business Prescriptive EPY4 Lighting Logger Results for Occupancy Sensor Measure “Percent Time Off” from Evaluation On-site M&V**

Site	Business Type	Percent Time Off	Average for Multiple Sites
1	Heavy Industry	85%	51%
2	Heavy Industry	69%	
3	Heavy Industry	43%	
4	Heavy Industry	34%	
5	Heavy Industry	25%	
6	Light Industry	95%	82%
7	Light Industry	68%	
8	Miscellaneous	73%	59%
9	Miscellaneous	45%	
10	Retail/Service	41%	24%
11	Retail/Service	21%	
12	Retail/Service	11%	
13	Warehouse	79%	57%
14	Warehouse	52%	
15	Warehouse	41%	
	Average	52%	

Source: EPY4 evaluation on-site M&V

#### **CATI Survey Responses to Impact Questions**

A brief set of questions in the CATI survey was asked regarding installed lighting measures, removed equipment, installation in non-air-conditioned space, and lighting hours of use. Table 5-5 identifies the survey question or issue that was addressed, the participant responses, and conclusions.

**Table 5-5. Participant Responses to CATI Lighting Impact Questions**

Survey Question	Participant Responses	EM&V Conclusion
Which of the following statements best describes the performance and operating condition of the lighting equipment you replaced through the program?	Responses for 123 measures: 112 were fully functional without significant problems, 2 indicated equipment had failed, and 9 indicated other, such as new equipment, old equipment, or partial failure.	Responses are consistent with a retrofit baseline.
After you completed the installation of the new fixtures, did you install additional lighting fixtures in that same space at a later time to increase the amount of lighting?	Yes: 5 of 115 measure level responses had added fixtures. Respondents added an additional 2, 5, 6, 5, and “don’t know” fixtures making a total of 18 reported additional fixtures.	The installation of additional fixtures to increase light levels did not appear to be a significant issue in EPY4, as the projects involved were quite large (average incentive \$17,938).
What types of linear fluorescent lights were removed?	Of 58 measure-level responses, 9 reported standard performance T8; 37 reported T12 fixtures only; 2 reported “other” but did not specify; and 10 did not know any of removed fluorescent types	Of the 9 measure responses reporting T8s as a baseline fixture, 6 involved projects that allowed T8s in the baseline because the savings are estimated through a delta watts calculation. Three measure responses reported T8s when T12s were required.
If type of linear fluorescent lights removed were T12 fixtures: “What types of ballasts were in use on the linear fluorescent fixtures you removed?”	Of 37 measure-level responses reporting T12s, the identified ballast types were: (7) electronic, (17) magnetic ballast, (8) a mix, (5) don’t know	About half of the measure responses (15 of 32) where a ballast type was identified indicated electronic T12 ballasts for some or all of their fixtures.
If you had not participated in the program, when would you have replaced your T-12 lighting?	There were 37 measure level responses from 24 respondents: 7 were chosen as “Don’t Know”, while 16 were chosen as “2 or more years later.” Three were chosen as “within one year” and 11 were chosen “between one and two years.”	This question provides qualitative baseline feedback on T12 systems. Ten respondents reporting on 14 of 37 measures (38%) indicated an expectation to replace T12 lighting systems within the next two years. NTG ratios for T12 lighting are provided in the net-to-gross analysis.
Placed lighting equipment in storage or installed lighting equipment at another location?	Yes: 2 of 82 respondents placed equipment into storage or at another facility. One did not give percentages, and the second indicated 5% placed into storage and 20% at another facility.	These responses support an assumption of a 100% in-service rate on lighting equipment.
Was the new lighting equipment installed in air conditioned (cooled) space?	108 responses (60 yes, 36 no, 12 some was/some wasn't)	29 of the 36 “no AC” responses were in warehouse or industry, where ComEd factored non-cooled space into HVAC interaction factors. The remaining “no AC” responses were in retail and miscellaneous.
Type of exit sign removed	3 responses: 1 incandescent, 2 CFL	Sample too small to draw conclusions.

Source: Participant survey



Table 5-6 below provides the un-weighted average annual equivalent full load hours (EFLH) of operation for lighting among all respondents (67) who provided complete responses to the lighting hours of operation questions.

**Table 5-6. Participant Responses to Lighting EFLH Questions by Business Type**

Business Type	Respondent Count	Un-weighted Average Annual Lighting EFLH
College / University	1	4,258
Heavy Industry	3	4,911
K-12 School	1	2,960
Light Industry	20	5,113
Miscellaneous	12	5,552
Office	6	4,281
Retail/Service	9	4,312
Warehouse	15	3,188
Total	67	4,587

*Source: Participant survey*

#### **Research Findings Realization Rate for the EPY4 Prescriptive Program**

A stratified ratio estimation technique was used to estimate evaluation research findings gross energy savings for the Prescriptive program. The stratified ratio estimation technique follows the steps outlined in the California Evaluation Framework<sup>27</sup>. These steps are matched to the stratified random sampling method that was used to create the sample for the program. The standard error was used to estimate the error bound around the estimate of evaluation research findings gross energy savings realization rate. The results are summarized in Table 5-7 and Table 5-8 below.

**Table 5-7. Research Findings Gross Energy Realization Rates and Relative Precision**

Population Group	Sampling Strata	Relative Precision at 90% Level of Confidence $\pm$ %			
			Low	Mean	High
Wave 1	Stratum 1	35%	0.99	1.51	2.03
	Stratum 2	28%	0.70	0.97	1.25
	Stratum 3	16%	0.87	1.04	1.21
Wave 2	Stratum 1	21%	0.63	0.80	0.97
	Stratum 2	21%	0.68	0.85	1.03
	Stratum 3	21%	0.66	0.83	1.01
Total kWh RR		12%	0.91	1.04	1.17

*Source: Evaluation analysis*

<sup>27</sup> TecMarket Works, et al., *The California Evaluation Framework*, Chapter 13, Sampling. June 2004

**Table 5-8. Research Findings Gross Peak Demand Realization Rates and Relative Precision**

Population Group	Sampling Strata	Relative Precision at 90% Level of Confidence $\pm$ %			
			Low	Mean	High
Wave 1	Stratum 1	80%	0.06	0.31	0.56
	Stratum 2	71%	0.11	0.39	0.66
	Stratum 3	13%	0.90	1.03	1.16
Wave 2	Stratum 1	17%	0.71	0.86	1.01
	Stratum 2	9%	0.86	0.94	1.03
	Stratum 3	24%	0.63	0.83	1.03
Total kW RR		22%	0.42	0.54	0.66

Source: Evaluation analysis

Research findings:

- 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 Appendix A, 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 Appendix A provided the best available assumptions.
- The research findings estimate a higher realization rate on energy savings (1.04) when compared with savings verification (0.95) for the following reasons: Lighting hours of use on some projects were substantially higher than the deemed assumption, energy savings on some variable speed drive projects were substantially higher than deemed values, and refrigeration projects saved slightly more than deemed values.
- Although some installations of variable speed drives were judged ineligible by the evaluation team, the remaining eligible measures were found to save substantially more energy than deemed.
- The research findings estimate a lower realization rate on peak demand reduction (0.54) when compared with ex-ante demand (1.00 by definition) for the following reasons: sampled chiller projects were significantly over-estimating peak demand reduction, some lighting and variable speed drive measures were ineligible, and minor adjustments to quantities.
- The chiller projects sampled had a research findings realization rate of 0.10 on peak demand but 0.90 on energy savings. We found that the projects are saving energy, but the ex-ante peak demand calculation seems to contain an error of about a factor of 10. The low realization rate caused by the over-estimation of chiller peak demand impact resulted in a

low relative precision for the peak demand estimate. If ComEd were to revise the ex-ante peak demand estimate for chillers, the evaluation research estimate could be revised – the realization rate would be higher, the precision would be better, and likely the evaluation research peak demand realization rate would be higher than shown in this draft report.

- Ten respondents representing 14 of 37 measures (38%) where T12 lighting was reported as the baseline indicated an expectation to replace T12 lighting systems within the next two years. By comparison, only two of 36 measure-level responses made by 31 respondents to this question in EPY3 indicated an expectation to replace T12 lighting within the next two years, but 23 responses by 20 respondents were answered “Don’t Know”. We did not specifically ask EPY2 participants when they expected to replace their T12 lighting. When asked a more detailed set of questions in the net-to-gross battery, with consistency checks, some EPY3 and EPY4 participants responded differently regarding near-term plans. The net-to-gross research findings provide further discussion. ComEd has provided educational materials to customers and trade allies discussing the phase-out of T12 lighting through Federal standards. Although we did not ask respondents about their knowledge of the T12 phase-out, some CATI survey respondents mentioned the T12 phase-out or government regulations, and had the opinion that T12 lighting is old and inefficient.

Given the prominence of measure-level deemed savings and the approval of an Illinois TRM, we expect to implement a new sample design approach in the EPY5 evaluation. Factors to be considered in the EPY5 sample design include deemed versus non-deemed measures, measure savings uncertainty, research data needs for the TRM updating process, measure technologies or end-use, project size, and building types. Although the details of the new sampling method will be developed after a review of preliminary EPY5 results, our EPY5 evaluation plan will recommend a starting point for sample design that will be based on measure technology or end-use, rather than the project size stratification that drove sample design in EPY1 through EPY4.

### Research Findings Gross Program Impact Summary Results

Based on the gross impact parameter research findings described previously, the evaluation research findings gross program impacts were derived for the EPY4 Prescriptive program. The results are provided in Table 5-9.

**Table 5-9. Research Findings for Gross Realization Rates and Savings Estimates**

Ex-ante Gross Energy Savings kWh	Research Findings Gross Energy Realization Rate	Research Findings Gross Energy Savings kWh	Ex-ante Gross Peak Demand Savings kW	Research Findings Gross Peak Demand Realization Rate	Research Findings Gross Peak Demand Savings kW
333,030,521	1.04	346,351,742	79,958	0.54	43,177

Source: Evaluation analysis

### 5.2.2 Detailed NTG calculations

The primary objective of the net savings analysis for the Prescriptive 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 EPY4, the net program impacts were quantified from the estimated 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 participant spillover was quantitatively examined by identifying spillover candidates through questions asked in the participant telephone interviews. If response data provided evidence participant spillover and the participant was willing to have a follow-up interview by an engineer, an attempt was made to estimate the spillover impacts.

Once free-ridership and participant spillover has been estimated the Net-to-Gross (NTG) ratio is calculated as follows:

$$\text{NTG Ratio} = 1 - \text{Free-ridership Rate} + \text{Participant Spillover}$$

#### 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.

In EPY4, if a Basic Rigor respondent identified a vendor as an “other factor” that was influential, and the vendor was registered as a ComEd trade ally or trade associate, the “other factor” score for that vendor was included among program influences in the “Timing and Selection” score.

### **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, age, and condition of existing equipment, 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 Account Manager interview provides insight into multiple points of program influence exerted into large and often complex participating customer organizations. Account Manager interviews were triggered only on projects that were managed accounts where the customer had not already assigned a maximum program influence score to one of the other program components.

Triggering of a vendor interview occurs when the interviewee responds as follows:

The respondent identifies that a contractor, engineer, architect, manufacturer, distributor, or supplier:

- was the most influential in identifying and recommending that the respondent install the project completed through the Smart Ideas Program, or
- informed the respondent about the availability of an incentive through ComEd Smart Ideas Program
- AND, the respondent rates the importance with a score of 8 or higher for
  - Recommendation from an equipment vendor or contractor that helped with the choice of the equipment
  - A recommendation from a design or consulting engineer
- When triggered, vendors and ComEd Account Managers were interviewed regarding their involvement in the project and the influence of the program in their recommendations to the participant. The NTG interview questions for vendors and Account Managers are provided in Appendix 5.5 and are the basis for estimating a Vendor Score and Account Manager Score.

The Vendor Score is the maximum (on a scale of 0 to 10) of the following factors:

1. [Score= response, on scale of 0 to 10] On a scale of 0 to 10 where 0 is NOT AT ALL IMPORTANT and 10 is EXTREMELY IMPORTANT, how important was the PROGRAM, including incentives as well as program services and information, in influencing your

decision to recommend that <%CUSTOMER> install the energy efficiency MEASURE at this time?

2. [Score= 10 minus the response, on a scale from 0 to 10] And using a 0 to 10 likelihood scale where 0 is NOT AT ALL LIKELY and 10 is EXTREMELY LIKELY, if the PROGRAM, including incentives as well as program services and information, had not been available, what is the likelihood that you would have recommended this specific MEASURE to <%CUSTOMER>?

The algorithm above provides a score on a scale of 0 to 10, where 10 is associated with no free-ridership due to program influence. The Account Manager score is assigned by the evaluator based on a qualitative assessment of the influence exerted by the Account Manager. The Vendor Score or Account Manager Score is then factored into the Timing and Selection Score.

The calculation of free-ridership for the Prescriptive 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.

### **Participant Spillover**

For the EPY4 Prescriptive program evaluation, a battery of questions was asked to identify spillover candidates and to encourage spillover candidates to participate in a follow-up interview by an engineer to quantify spillover savings. Below are paraphrased versions of the spillover questions that were asked:

1. Since your participation in the ComEd program, did you implement 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?
2. 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?
3. Why do you give the ComEd program this influence rating?

If the response to question 2 was given a score of 7 or higher, we judged the respondent to be a spillover candidate. Spillover candidates were asked additional questions:

4. What was the first measure that you implemented?
  - a. Why did you purchase this equipment without the incentive available through the Smart Ideas program?
5. What was the second measure that you implemented?
  - a. Why did you purchase this equipment without the incentive available through the Smart Ideas program?

6. 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?

All respondents who answered “yes” to question 6 that they would be willing to speak with a member of our team were contacted by an engineer. The follow-up engineering interview attempted to confirm that spillover had occurred and estimate the energy savings.

#### **NTG Scoring**

The net-to-gross scoring approach is summarized in Table 5-10.



**Table 5-10. Net-to-Gross Scoring Algorithm for the EPY4 Prescriptive Program**

Scoring Element	Calculation
<b>Timing and Selection score.</b> 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, G, and H
<b>Program Influence score.</b> “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
<b>No-Program score.</b> “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)
PY4 Project level Net-to-Gross Ratio (free-ridership only) Source: Evaluation team	1 – Project level Free-ridership

The NTG ratio reflecting free-ridership only and relative precision at a 90% confidence level for the overall program is provided in Table 5-11.



**Table 5-11. EPY4 NTG Ratio and Relative Precision at 90% Confidence Level – Overall for Free-Ridership only**

Sample Strata	Population (N=4,603)	NTG Interviews (n=110)	NTG Sample (n=166)	Sample kWh Wgts.	Relative Precision $\pm$ %	Low	NTGR Mean	High
1	176	24	27	0.330	8%	0.63	0.68	0.74
2	655	60	81	0.352	7%	0.63	0.68	0.73
3	3,772	26	58	0.317	10%	0.63	0.71	0.78
Total	4,603	110	166	1.000	5%	0.66	0.69	0.72

Source: Evaluation analysis

For sampled projects that had quantifiable spillover, the research findings net savings reflecting free-ridership-only was adjusted to add the participant spillover to the net savings. The participant spillover adjustment added 0.01 to the free-ridership-only NTG ratio, for a final research findings NTG ratio of 0.70 (0.67 low, 0.70 NTGR mean, 0.73 high).

Comparing EPY3 and EPY4, the mean NTG ratio decreased slightly from EPY3 (0.72) to EPY4 (0.70), but the difference is not statistically significant.

For EPY4, 24 of 110 respondents in our sample went through the standard rigor approach, and two of the 24 standard rigor interviews had responses that triggered follow-up interviews with two different vendors. On 10 projects, a registered trade ally or trade associate was identified an “other factor” with a score of eight or higher. The impact of our adjustments when participant-reported program-influenced trade ally and account manager involvement was more important than any other factor in the timing and selection score increased the NTG ratio from just above 0.68 to 0.69 (less than 1%). This does not mean that trade ally and account managers are not influential – in 19 of 110 projects they were the highest or tied for the most important influence. Their substantial influence, as indicated in point scores and open end-ended responses was overshadowed by the high scores given for the incentive. No projects were triggered for a follow-up Account Manager interview, although eight of the 110 projects scored the Account Manager influence as an eight or greater.

No adjustments were made to increase or decrease free-ridership for non-program influences, based on a qualitative review of participant responses. Non-program influences were weighed against program influences in the Timing & Selection score on a project-by-project basis.

In EPY4, the evaluation team examined NTG ratios accounting for free-ridership only for three other subgroups of the overall population: Lighting, non-lighting, and projects that received a bonus payment for one or more lighting measures. The additional NTG ratio subgroup tables were requested in previous program years based on review of evaluation reports. Given the poor relative precision of the Non-lighting NTG ratio shown in Table 5-13, we do not recommend applying the results to non-lighting measures. A question was raised whether bonus payment recipients have a statistically significant different NTG ratio, but that does not appear to be the case. The findings of Table 5-14 suggest that it is not necessary to apply a separate NTG ratio to bonus recipients.

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 5-12.

**Table 5-12. NTG Ratio and Relative Precision at 90% Confidence Level - Lighting**

Sample Strata	Population (N=3,734)	NTG Interviews (n=82)	NTG Sample (n=136)	Sample kWh Wgts.	Relative Precision $\pm$ %	Low	NTGR Mean	High
1	151	20	23	0.333	7%	0.65	0.70	0.75
2	549	48	69	0.362	7%	0.65	0.70	0.75
3	3,034	14	44	0.305	12%	0.62	0.71	0.79
Total	3,734	82	136	1.000	5%	0.67	0.70	0.74

Source: Evaluation analysis

The NTG ratio and relative precision at a 90% confidence level for projects with non-lighting energy savings, based only on the variable speed drive, HVAC equipment, or refrigeration portion of project-level savings, is provided in Table 5-13.

**Table 5-13. NTG Ratio and Relative Precision at 90% Confidence Level – Non-Lighting**

Sample Strata	Population (N=869)	NTG Interviews (n=28)	NTG Sample (n=30)	Sample kWh Wgts.	Relative Precision $\pm$ %	Low	NTGR Mean	High
1	25	4	4	0.318	56%	0.26	0.60	0.93
2	106	12	12	0.301	18%	0.46	0.56	0.66
3	738	12	14	0.380	24%	0.54	0.71	0.87
Total	869	28	30	1.000	16%	0.53	0.63	0.73

Source: Evaluation analysis

The NTG ratio and relative precision at a 90% confidence level for projects that received a bonus payment for a lighting measure is provided in Table 5-14.

**Table 5-14. NTG Ratio and Relative Precision at 90% Confidence Level – Bonus Recipients**

Sample Strata	Population (N=2,189)	NTG Interviews (n=59)	NTG Sample (n=104)	Sample kWh Wgts.	Relative Precision $\pm$ %	Low	NTGR Mean	High
1	114	16	17	0.359	8%	0.63	0.68	0.73
2	417	35	52	0.375	9%	0.62	0.68	0.74
3	1,658	8	35	0.266	13%	0.62	0.71	0.79
Total	2,189	59	104	1.000	6%	0.65	0.69	0.72

Source: Evaluation analysis

Comparing the NTG ratio for lighting versus non-lighting projects, the lighting-only projects have a NTG ratio (0.70) above the overall program mean (0.69 for the mean without spillover). The NTG ratio for non-lighting measures (0.63) is lower than the overall program mean, but the relative precision of that estimate is low because the available sample in strata 1 and 2 was exhausted after reaching 16 completed interviews. The NTG ratio of bonus recipients is not statistically different from lighting or the program overall.

### **Participant Spillover Findings**

The evidence of spillover from the CATI participant survey for the Prescriptive program is presented in Table 5-15 below. These findings suggested that participant spillover effects for EPY4 are evident, and an effort was made to quantify them. Seven spillover candidates identified in the CATI survey were willing to be interviewed a second time and received a follow-up interview by an engineer to quantify spillover savings.

The impact of participant spillover increased the NTG ratio from 0.69 to the final value of 0.70. Three participants identified lighting projects that we were able to quantify as spillover. In two of the projects, ComEd influence was indicated but someone involved in the project had not followed through on pursuing the incentives. The third case involved a vendor that did not submit the application as expected. On all three projects, we confirmed that applications had not been submitted as of August 31, 2012, ninety days past the end of EPY4.

**Table 5-15. EPY4 Prescriptive 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 110 survey respondents, 30 said “Yes.”
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 is as follows: (1) “Don’t Know” (12) Rating between 0 and 3 (6) Rating between 4 and 6 (11) Rating between 7 and 10
Spillover Candidates (influence 7 or higher)	11 participants
Among the 11 candidates, what type of energy efficiency measures were installed without an incentive?	(4) T5 or T8 lamps or Lighting upgrades (1) CFLs or LED lamps (1) VSD in HVAC (1) Unitary and room air conditioners (6) “Other” measures
Spillover candidates willing to be interviewed by an engineer	7 of 11 participants
Of 7 interviewed candidates, those with quantifiable spillover	3 participants with estimated savings:: <ul style="list-style-type: none"> <li>• T12 to T8 retrofit, 153,000 kWh estimated</li> <li>• Halogen to LED (2,790 kWh), Induction parking lot lights (2,556 kWh)</li> <li>• T12 to T8 retrofit (189,900 kWh), LED exit signs (29,600 kWh)</li> </ul>

*Source: Evaluation analysis*

#### **Assessment of the NTG Framework Criteria**

To recommend whether it is appropriate to apply the EPY2 NTG ratio to EPY4 according to the Illinois NTG framework, we had to consider whether the program design and delivery method were stable, and whether market changes have significantly changed free-ridership between EPY2 and EPY4. The NTG ratios from EPY1 through EPY4 evaluation research on Prescriptive Program participants are summarized in Table 5-16.

**Table 5-16. NTG Ratio and Relative Precision at a 90% Confidence Level - Overall**

Program Year	Relative Precision ± %	Low	NTGR Mean	High
EPY1	9%	0.62	0.67	0.74
EPY2	6%	0.69	0.74	0.78
EPY3	5%	0.69	0.72	0.76
EPY4	5%	0.67	0.70	0.73

*Source: Evaluation analysis*

The evaluation team concludes that the Prescriptive program design and delivery method between EPY2 and EPY4 has been relatively stable and the more significant changes that have occurred, listed below, have not resulted in a significant change in free-ridership:

- per customer incentive caps were increased
- expanded the list of rebated measures;
- T12 lighting bonus incentive payments added;
- trade ally rewards were added; and
- offering of facility assessments

The proportion of overall ex-ante gross energy savings from non-lighting measures increased from 6 percent in EPY2 to 16% in EPY4. The research findings for the NTG ratio of non-lighting measures is not known with enough confidence and precision to conclude that increasing the share of non-lighting savings has significantly changed the net-to-gross ratio. Future sample designs will attempt to estimate a non-lighting NTG ratio with 90/10 confidence and precision.

The Illinois TRM<sup>28</sup> addresses the impact on gross savings due to the phase out of T12 lighting driven by Federal standards:

“Due to new federal standards for linear fluorescent lamps, manufacturers of T12 lamps will not be permitted to manufacture most varieties of T12 lamps for sale in the United States after July 2012. All remaining stock and previously manufactured product may be sold after the July 2012 effective date. If a customer relamps an existing T12 fixture the day the standard takes effect, an assumption can be made that they would likely need to upgrade to, at a minimum, 800-series T8s in less than 5 years’ time. This assumes the T12s installed have a typical rated life of 20,000 hours and are operated for 4500 hours annually (average miscellaneous hours 4576/year). Certainly, it is not realistic that everyone would wait until the final moment to relamp with T12s. Also, the exempted T12 lamps greater than 87 CRI will continue to be available to purchase, along with electronic T12 ballasts, although they will be expensive. Therefore the more likely scenario would be a gradual shift to T8s over the 4 year timeframe. In other words, we can expect that for each year between 2012 and 2016, ~20% of the existing T12 lighting will change

<sup>28</sup> Section 4.5.3 High Performance and Reduced Wattage T8 Fixtures and Lamps

over to T8 lamps that comply with the federal standard. To simplify this assumption, we recommend assuming that standard T8s become the baseline for all T12 linear fluorescent retrofit January 1, 2016.”

To examine the effect on net impact due to the Federal T12 standards, we separated CATI sample respondents who claimed T12 lighting as a baseline for one or more measures from the remaining sample of lighting projects that did not report T12 lighting in their baseline. For sampled EPY4 respondents reporting T12 lighting in the baseline, representing 51 projects in the NTG sample, we calculated a mean NTG ratio of 0.80 (free-ridership only). The remaining non-T12 respondents, representing 85 sampled lighting projects, had a mean NTG ratio of 0.66. That is, the EPY4 respondents who reported existing T12 lighting had an overall *lower* free-ridership than sampled lighting participants that did not report T12s. As a group, participants with T12 lighting were found to be slightly less likely to take action to upgrade their lighting absent the program – this makes some sense if one considers that they still have T12 lighting 20 years after the emergence of T8 lighting.

Looking more closely at the 24 sampled EPY4 participants who reported T12 lighting in their baseline, we found the group tended to involve smaller customers or projects, weighted 40% in stratum 3, versus the non-T12 group, weighted only 27% in stratum 3. In the NTG battery of questions, participants with existing T12 lighting were asked “Without the program, when do you think you would have installed this equipment (referring to the new lighting equipment)?” The 8 participants with T12s who indicated they would have installed new equipment within 2 years had much lower NTG ratios (simple average 0.66, not a weighted mean) than the 16 participants with T12s who indicated a time frame of never, later than two years, or did not know (their simple average NTG ratio was 0.88).

The findings for sampled lighting participants reporting T12 lighting and those who did not are provided in Table 5-17.

**Table 5-17. Respondents and NTG Ratios for Sampled Lighting Participants with and without T12s**

Program Year	All Sampled Lighting Participants	Sampled Lighting Participants Reporting T12s	Sampled Lighting Participants Not Reporting T12s
EPY3	93 participants (276 projects) Mean NTGR = 0.74	31 participants (202 projects) Mean NTGR = 0.74	62 participants (74 projects) Mean NTGR = 0.73
EPY4	82 participants (136 projects) Mean NTGR=0.70 CI/RP: 90/±5%	24 participants (51 projects) Mean NTGR = 0.80 CI/RP: 90±14%	58 participants (85 projects) Mean NTGR = 0.66 CI/RP: 90/±9%

*Source: Evaluation analysis*

**Table 5-18. Sampled Participants with T12 Lighting**

Program Year	Sampled Participants Reporting T12s	Those with T12s who said they would have installed new equipment within 2 years	Those with T12s who said they would have installed new equipment "Never", "Don't know" or more than 2 years later
EPY2	17	7 (41%)	10
EPY3	31	11 <sup>29</sup> (35%)	20
EPY4	24	8 <sup>30</sup> (33%)	16

*Source: Evaluation analysis*

Although the market for T12 lighting is in the process of transforming due to the impact of Federal ballast and lamp standards, we conclude that between EPY2 and EPY4 the market changes have not resulted in a significant change in overall free-ridership for the program.

In summary, the changes in program design, lighting versus non-lighting savings split, and the pending phase-out of certain types of T12 lighting have not significantly changed the level of free-ridership between EPY2 and EPY4, as indicated in Table 5-16. Applying the NTG Framework, we believe it is reasonable to use the NTG ratio calculated in the EPY2 evaluation research.

- Recommendation:** The evaluation team believes it is reasonable that the net savings for the EPY4 Prescriptive Program be based on application of the Net-to-Gross ratio contained in the Illinois Commerce Commission's Order 10-0570, dated December 21, 2010, that specified a net-to-gross ratio of 0.74 for EPY4, based on evaluation research conducted with EPY2 participants.

<sup>29</sup> When asked early in the survey, "If you had not participated in the program, when would you have replaced your T12 lighting?" only two EPY3 participants responded 2 years or less, but 20 responded "don't know". In the NTG battery, several of these initial "don't know" respondents indicated less than two years.

<sup>30</sup> When asked early in the survey, "If you had not participated in the program, when would you have replaced your T12 lighting?" ten EPY4 participants responded 2 years or less. In the NTG battery, two respondents switched to "2 to 3 years later".

### 5.3 Detailed Process Results

#### 5.3.1 Sampling

A CATI telephone survey was implemented with a stratified random sample of Prescriptive Program participants, resulting in 110 completed interviews.

To best support estimation of the net-to-gross ratio for the program, a stratified random sampling approach was employed for this survey. Projects were stratified by savings, using the ex-ante kWh impacts reported in the tracking database. Records were sorted from largest to smallest kWh claimed, and placed into one of three strata, such that approximately one-third of ex-ante savings fell into each stratum.

The sampling unit for the CATI telephone survey was the unique program participant. When the sample was developed, there were 4,484 projects participants who had installed 10,579 measures through the program. When multiple projects were associated with an individual the interview focused on the projects that received desk reviews. Participants who completed both prescriptive and custom projects were also removed from the sample for the prescriptive survey (given the smaller population of custom projects, the Custom program was given priority for calling overlapping project contacts).

We completed interviews with 110 participants, which resulted in a precision level of +/- 10% for net-to-gross questions.

Table 5-19 provides a summary of the sampling approach used for the net impact analysis, by stratum. The table shows that the 110 completed interviews represent 8% of program savings.

**Table 5-19. Summary of Sampling Approach for Analysis**

Program Population				Completed Interviews		
Sampling Strata	Number of Applications (N)	Ex-ante kWh Impact Claimed	kWh Weights by Segment	Number of Applications (n)	Ex-ante kWh	% of Population Impacts Surveyed
1	176	110,058,168	33%	24	15,553,263	32%
2	655	117,266,547	35%	60	11,090,812	9%
3	3,772	105,705,806	32%	26	1,173,703	1%
<b>TOTAL</b>	<b>4,603</b>	<b>333,030,521</b>		<b>110</b>	<b>27,817,778</b>	<b>8%</b>

Source: Program tracking database; results of CATI telephone survey.

For the process analysis, survey weights were developed for the three strata. These weights reflect the fact that not all strata were surveyed in proportion to their representation in the population. The following weights were applied to respondents in the three strata:



**Table 5-20. Process Weights**

Stratum	Population	Completes	Weight
1	146	24	0.49
2	448	60	0.61
3	761	26	2.38
<b>TOTAL</b>	<b>1,355</b>	<b>110</b>	

*Source: Evaluation analysis*

### 5.3.2 Survey Disposition

Table 5-21 below shows the final disposition of the 1,355 unique contacts included in the original sample frame for the participant survey.

**Table 5-21. Sample Disposition for NTG and Process Analysis**

Sample Disposition	Customers
Population of Unique Customers	1,355
Completed Survey	110
Not Dialed	401
Unable to Reach	102
Callback requested	331
Refusal	150
Phone Number Issue	35
Ended Interview Midway Through	18
Could not confirm measures	1
<i>Response Rate</i>	11%

*Source: Evaluation team*

Table 5-22 presents the comparison of business sectors for survey respondents and the overall population of participating projects.

**Table 5-22. Business Sector of Survey Respondents**

Sector	Respondents (n=110)	Percentage	Population (N=4,484)	Percentage
Light Industry	29	27%	1510	15%
Warehouse	18	17%	871	8%
Heavy Industry	12	11%	535	5%
Retail/Service	9	8%	2800	27%
Office	13	12%	1509	14%

Sector	Respondents (n=110)	Percentage	Population (N=4,484)	Percentage
Medical	3	3%	360	3%
Grocery	3	3%	640	6%
Hotel/Motel	1	1%	56	1%
College/University	2	2%	129	1%
K-12 School	1	1%	92	1%
Miscellaneous	18	17%	1906	18%

*Source: Program Tracking Database; results of CATI telephone survey.*

### 5.3.3 Participation Trends

Program participation continued to increase over previous years. In EPY4, the number of projects completed was 4,603 and in EPY3 it was 3,794. This represents a 21% year-over-year increase. As participation increased significantly so did the achieved ex-ante energy savings; increasing by about 29% from EPY3 to EPY4. The average project size decreased slightly down from 191,848 in EPY3 to 157,196 in EPY4; about an 18% drop. Specific observations:

- Restaurant and Grocery participation was much higher in EPY4 than in EPY3; increasing by 131% and 104% respectively in terms of the number of projects. There were fewer Retail/Service sector projects in EPY4 than EPY3 and that was the only sector that shows an overall decrease year-over-year.
- In terms of ex-ante gross energy savings, the highest contributors to the overall energy savings came from the Light Industry, Miscellaneous, and Warehouse categories.
- The biggest year-over year increase in energy savings was in the restaurant sector which saw energy savings grow by 174%. Colleges and universities contributed 118% more this year and the Miscellaneous sector contributed 144% more. Energy savings grew across all business sectors; however the hotel/motel and K-12 School sectors only grew by about 1%.
- The largest average project size was seen in the Medical and Warehouse sectors with the average project size for each sector being about 157,000 kWh.

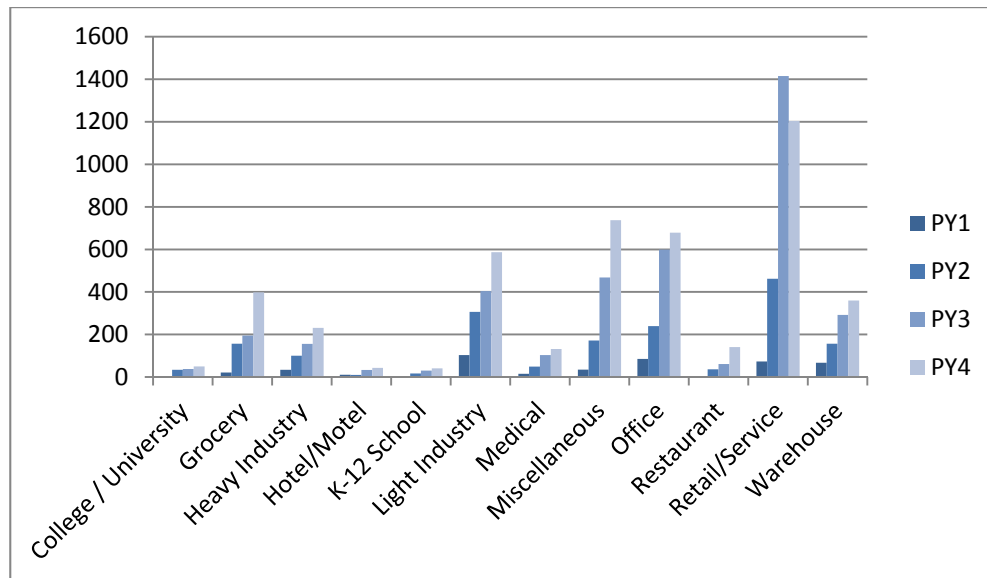
Table 5-23 and Figure 5-1 through Figure 5-4 compare the number of projects, participants, and ex-ante gross energy and peak demand saving by business sector and program year.

**Table 5-23. EPY4 Prescriptive Projects and Ex-Ante Energy Savings and Peak Demand Reduction**

Sector	Projects		Ex-ante Gross Energy Savings		kWh / Project	Ex-ante Gross Peak Demand Savings	
	#	%	kWh	%		KW	%
College /	50	1.1%	4,770,746	1%	95,415	1,873	2.3%
Grocery	398	8.6%	14,296,400	4%	35,921	2,119	2.7%
Heavy Industry	231	5.0%	29,037,106	9%	125,702	5,136	6.4%
Hotel / Motel	43	0.9%	3,698,051	1%	86,001	1,976	2.5%
K-12 School	41	0.9%	1,348,340	0%	32,886	409	0.5%
Light Industry	587	12.8%	62,422,477	19%	106,342	10,451	13.1%
Medical	132	2.9%	20,800,880	6%	157,582	11,170	14.0%
Miscellaneous	737	16.0%	55,918,879	17%	75,874	13,956	17.5%
Office	679	14.8%	36,704,068	11%	54,056	8,533	10.7%
Restaurant	141	3.1%	2,012,954	1%	14,276	409	0.5%
Retail/Service	1,204	26.2%	45,430,074	14%	37,733	15,637	19.6%
Warehouse	360	7.8%	56,590,546	17%	157,196	8,287	10.4%
<b>TOTAL</b>	<b>4,603</b>		<b>333,030,521</b>			<b>79,958</b>	

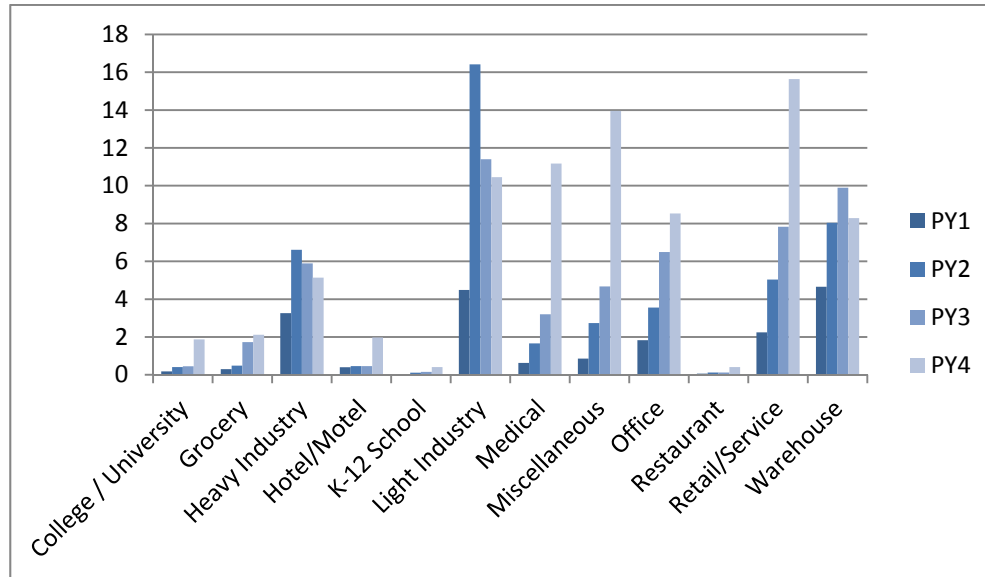
Source: EPY4 Program Tracking Database, September 25, 2012 extract.

**Figure 5-1. Projects by Business Sector and Program Year**



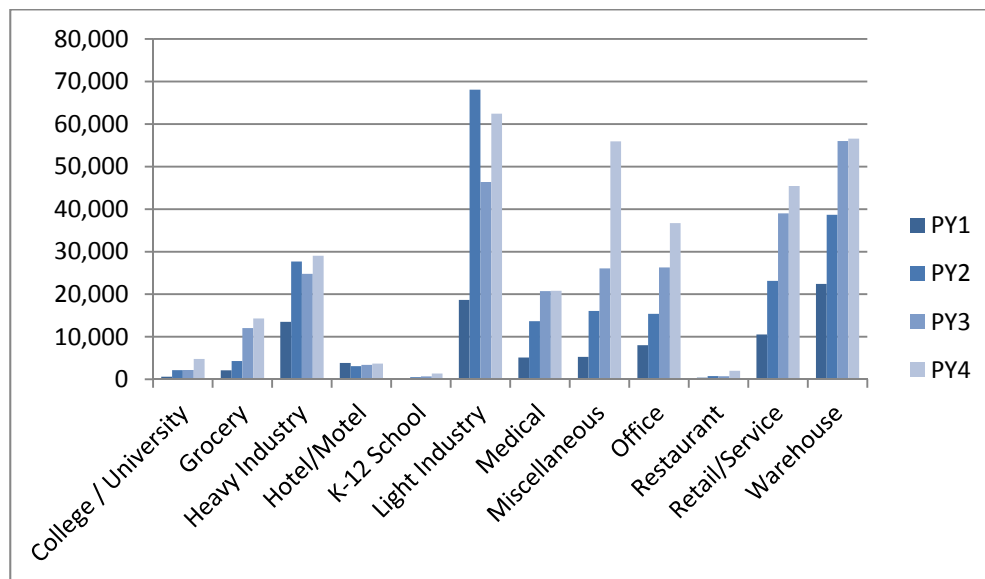
Source: EPY4 Program Tracking Database, September 25, 2012 extract.

**Figure 5-2. Ex-Ante Peak Demand Savings by Program Year**



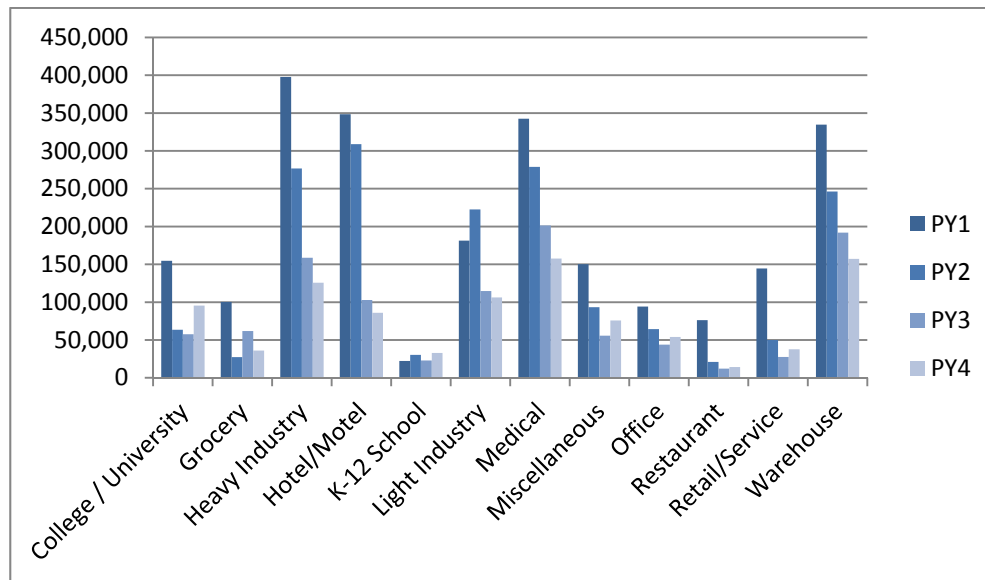
Source: EPY4 Program Tracking Database, September 25, 2012 extract.

**Figure 5-3. Ex-Ante Energy Savings by Year**



Source: EPY4 Program Tracking Database, September 25, 2012 extract.

**Figure 5-4. Average Project Size by Year**

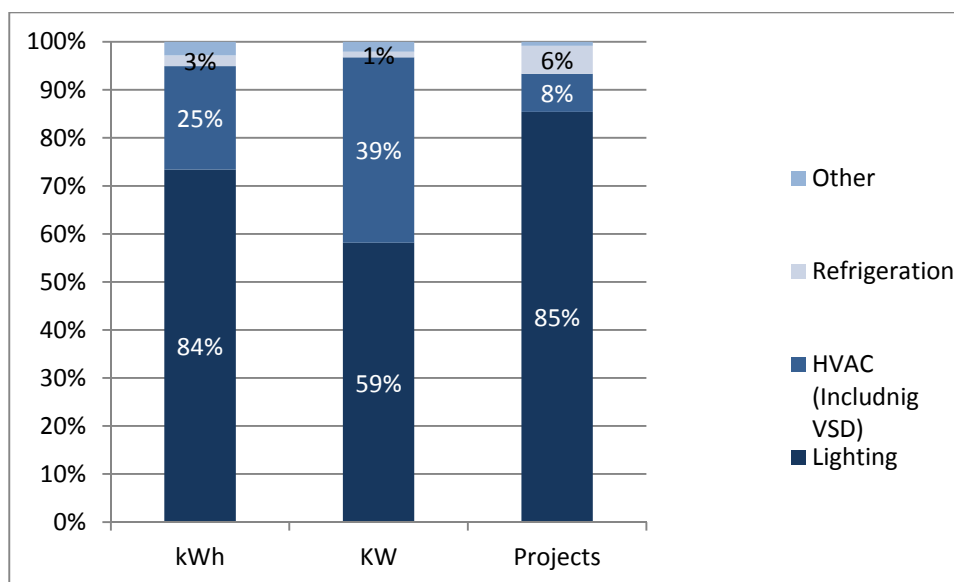


Source: EPY4 Program Tracking Database, September 25, 2012 database extract.

### Participation by End Use

In EPY4, the vast majority of projects (85%), ex-ante energy (84%) and ex-ante peak demand (59%) came from lighting. This is largely consistent with EPY3 where 79% of projects and 85% of ex-ante energy came from lighting. However, the portion of ex-ante demand savings that came from lighting in EPY4 (59%) is far less than EPY3 (86%).

**Figure 5-5. Distribution of Projects and Ex-Ante Savings by End Use**



Source: EPY4 Program Tracking Database.

#### **5.4 Illinois TRM Recommendations**

The following research findings and recommendations may assist the Illinois TRM Technical Advisory Committee annual updating process:

- The following commercial and industrial electric measures should be considered for addition to the TRM, in approximate order of importance:
  - Eight foot T12 fluorescent conversion to T8
  - LED exit signs
  - Bi-level lighting fixtures
  - Anti-sweat heater controls
  - Cold cathode and induction lighting
- Evaluation field engineers conducted extensive data logging of lighting measures on EPY4 projects. Results from data collected includes estimates of hours of use, occupancy sensor percent off time, and coincidence factors. The CATI survey of EPY4 participants provides limited sample research findings on lighting measures, including estimated annual full load hours of use. These findings are summarized in Table 5-2 through Table 5-6.

## 5.5 Data Collection Instruments

### 5.5.1 Telephone Survey for Participating Customers

**COMED SMART IDEAS FOR YOUR BUSINESS PROGRAM  
PARTICIPANT SURVEY – BUSINESS PRESCRIPTIVE PROJECTS  
PY4 FINAL DRAFT July 9, 2012**

#### 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> purchased energy efficient <ENDUSE>, which was recently installed and received an incentive of <INCENTIVE AMOUNT> from ComEd. We are calling to do a follow-up study about <COMPANY>'s participation in this incentive program, which is called the Smart Ideas for Your Business Program. Your answers will provide very important information that will help ComEd improve its program. 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> purchased energy efficient <ENDUSE>, which was recently installed and received an incentive of <INCENTIVE AMOUNT> from ComEd. We are calling to do a follow-up study about your firm's participation in this incentive program, which is called the Smart Ideas for Your Business Program. 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, 2011 and May 31, 2012 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 energy efficient <END USE> you installed through the Smart Ideas for Your Business Program at <ADDRESS>.

- A3. I’d like to confirm some information in ComEd’s database. Our records show that you implemented the following <ENDUSE> measures through the Smart Ideas for Your Business Program. Is this correct?

[ASK A3a IF MEASD1 < BLANK]

- A3a <MEASD1>
- 1 (Yes)
  - 3 (No, did not install)
  - 8 (Don’t know)
  - 9 (Refused)



[ASK A3b IF MEASD2 <> BLANK]

A3b <MEASD2>

- 1 (Yes)
- 3 (No, did not install)
- 8 (Don't know)
- 9 (Refused)

[ASK A3c IF MEASD3 <> BLANK]

A3c <MEASD3>

- 1 (Yes)
- 3 (No, did not install)
- 8 (Don't know)
- 9 (Refused)

IF A3A=3,8,9 AND A3B=3,8,9 AND A3C=3,8,9: Thank and Terminate, Record Dispo as "Could Not Confirm Measures"

IF QA3A=1 OR 2 THEN MEAS1=1, IF QA3B=1 OR 2 THEN MEAS2=1, IF QA3C=1 OR 2 THEN MEAS3=1

## LIGHTING MODULE [ASK IF LIGHT=1, ELSE SKIP TO NON-LIGHTING MODULE]

IF QA3A=1 OR 2 THEN MEAS1=1, IF QA3B=1 OR 2 THEN MEAS2=1, IF QA3C=1 OR 2 THEN MEAS3=1

PL1 Who was the most influential in identifying and recommending that you install the <ENDUSE> project you completed through the Smart Ideas Program?

- 1. (me/respondent)
- 2. (contractor)
- 3. (engineer)
- 4. (architect)
- 5. (manufacturer)
- 6. (distributor)
- 7. (Owner)
- 8. (Supplier)
- 9. (ComEd representative/program staff)
- 10. (Project manager)
- 00. (Other, specify)
- 98. (Don't know)
- 99. (Refused)

PL2 And who informed you about the availability of an incentive through ComEd 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)
- 10. (Supplier)
- 11. (ComEd representative/program staff)
- 00. (Other, specify)
- 98. (Don't know)
- 99. (Refused)

- L0 When did you implement this project (IF NECESSARY, PROBE FOR BEST GUESS)
- a Month [Precodes for Jan through Dec., DK, REF]
  - b Year [Precodes for 2010 and 2011, DK, REF]

### **Measure Loop**

[Loop 1: ASK IF MEAS1=1. Loop 2: ASK IF MEAS2=1. Loop 3: ASK IF MEAS3=1.]

[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

[LMSR=1: LINEAR]

[LMSR=2: INTERIOR OTHER]

[LMSR=3: CONTROLS]

[LMSR=4: EXIT SIGNS]

[LMSR=5: DELAMP WITH LINEAR]

[LMSR=6: DELAMPING ONLY]

[LMSR=9: EXTERIOR]

[IF LMSR=3,5 SKIP TO NEXT LIGHTING MEASURE]

The following questions are about the <MEASD1> you installed through the Smart Ideas for Your Business Program.

### **REMOVED EQUIPMENT**

[SKIP TO EX1 if LMSR=4]

I'd like to ask you a few questions about the equipment that was removed when you installed the <MEASD1>...

[SKIP ER11 AND L7 if LMSR=6]

ER11. Which of the following statements best describes the performance and operating condition of the lighting equipment you replaced through the program?

- 1 Existing equipment was fully functional and without significant problems
- 2 Existing equipment had failed or did not function.
- 00 Other (RECORD VERBATIM)

- 98 (Don't know)
- 99 (Refused)

- L7 What type of lighting was removed when you installed <MEASD1> through the Smart Ideas for Your Business program? (READ LIST) [MULTIPLE RESPONSE, UP TO 3]
- 1 Linear fluorescent lights
  - 2 Metal Halide Fixtures
  - 3 High Pressure Sodium Fixtures
  - 4 Compact fluorescent lights
  - 5 Incandescent bulbs
  - 6 (Did not replace anything - new equipment)
  - 00 (Other, specify)
  - 98 (Don't know)
  - 99 (Refused)

[ASK L7a IF L7=1 or LMSR=6]

- L7a What type of linear fluorescent lights were removed? (READ LIST) [MULTIPLE RESPONSE, UP TO 3]
- 1 High performance T8 lighting (1" diameter bulbs)
  - 2 Standard performance T8 fluorescent lighting (1" diameter bulbs)
  - 3 BLANK
  - 4 T12 lighting (1.5" diameter bulbs)
  - 5 T5 lighting (5/8" diameter)
  - 00 (Other, specify)
  - 98 (Don't know)
  - 99 (Refused)

[ASK L7b IF L7a=4]

- L7b What types of ballasts were in use on the linear fluorescent lighting you removed?
- 1 Electronic Ballasts
  - 2 Magnetic Ballasts
  - 3 A mix of electronic and magnetic ballasts
  - 00 (Other, specify)
  - 98 (Don't know)
  - 99 (Refused)

[ASK L7c IF L7b=3]

- L7c About what percent of the ballasts were electronic?
- 00 (Percent Value)
  - 98 (Don't know)
  - 99 (Refused)

[ASK L10 IF L7a=4]

- L10 If you had not participated in the program, when would you have replaced your T-12 lighting?
- 1 (Within one year)
  - 2 (Between 1 and 2 years)
  - 3 (2 or more years later)
  - 8 (Don't know)
  - 9 (Refused)

[SKIP L9 IF LMSR=9]

- L9 Was the new lighting equipment installed in an air conditioned (cooled) space?
- 1. (Yes)
  - 2. (No)
  - 3. (Some of the lighting was and some wasn't)
  - 8. Don't know
  - 9. Refused

- L4 After you completed the installation of the new fixtures, did you install additional lighting fixtures in that same space at a later time to increase the amount of lighting?
- 1 Yes
  - 2 No
  - 8 (Don't know)
  - 9 (Refused)

[ASK IF L4=1, ELSE GO TO NEXT LIGHTING MEASURE]

- L5 How many of these additional new fixtures did you install? [NUMERIC OPEN END, 1 TO 3000; 98=Don't know, 99=Refused]

## EXIT SIGNS

[ASK IF LMSR=4; ELSE GO TO NEXT LIGHTING LOOP]

- EX1 What type of exit signs were removed? (READ LIST) [MULTIPLE RESPONSE, UP TO 3]
- 1 Incandescent exit signs
  - 2 Compact fluorescent exit signs
  - 3 LED exit signs
  - 00 (Other, specify)
  - 98 (Don't know)
  - 99 (Refused)

[End of Measure Loop; GO TO NEXT LIGHTING MEASURE]

## EQUIPMENT INTO STORAGE

L6 Was any of the lighting equipment for which you received an incentive placed into storage or installed at another facility?

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

[SKIP L6a AND L6b IF L6<1]

L6a What percentage of the lighting equipment for which you received an incentive was placed in storage? [NUMERIC OPEN END, 0 TO 100; 998=Don't know, 999=Refused]

L6b And what percentage was installed at another facility? [NUMERIC OPEN END, 0 TO 100; 998=Don't know, 999=Refused]

## HOURS OF USE – LIGHTING

[ASK IF LMSR1=1,2 OR LMSR2=1,2 OR LMSR3=1,2; ELSE SKIP TO NTG MODULE]

Now we'd like to talk about the hours that your interior lighting equipment is in operation.

LH1a Are you typically open every day, Monday through Friday?

- 1 Yes
- 2 No
- 8 Don't know
- 9 Refused

[ASK LH1b IF LH1a=2]

LH1b How many days are you CLOSED Monday through Friday?

- 1 One
- 2 Two
- 3 Three
- 4 Four
- 5 Five
- 8 Don't know
- 9 Refused

[IF LH1b=5, SKIP TO LH4]

LH2 At what time do your indoor lights currently turn on during weekdays (Monday - Friday)?  
(Enter 2400 for 24-hour operation, enter 0 for never on)

LH2a Enter hours and minutes, e.g., 0530 for 5:30

- LH2b
1. AM
  2. PM

[SKIP LH3 IF LH2=24hr or never]

LH3 At what time do your indoor lights currently turn off during weekdays (Monday - Friday)?

(Enter 2400 for 24-hour operation, enter 0 for never on)

LH3a Enter hours and minutes, e.g., 0530 for 5:30

LH3b 1. AM  
2. PM

LH4 Does the lighting equipment operate on a different schedule on weekends (Saturday and Sunday)?

1 Yes  
2 No  
8 Don't know  
9 Refused

[ASK IF LH4=1, ELSE SKIP TO LH9]

LH5 On Saturdays, at what time does the indoor lighting equipment turn on? (Enter 2400 for 24-hour operation, enter 0 for never on)

LH5a Enter hours and minutes, e.g., 0530 for 5:30

LH5b 1. AM  
2. PM

[SKIP LH6 IF LH5=24hr or never]

LH6 And when does the indoor lighting equipment turn off on Saturdays? (Enter 2400 for 24-hour operation, enter 0 for never on)

LH6a Enter hours and minutes, e.g., 0530 for 5:30

LH6b 1. AM  
2. PM

LH7 And on Sundays, at what time does the indoor lighting equipment turn on? (Enter 2400 for 24-hour operation, enter 0 for never on)

LH7a Enter hours and minutes, e.g., 0530 for 5:30

LH7b 1. AM  
2. PM

[SKIP LH8 IF LH7=24hr or never]

LH8 And when does the indoor lighting equipment turn off on Sundays? (Enter 2400 for 24-hour operation, enter 0 for never on)

LH8a Enter hours and minutes, e.g., 0530 for 5:30

LH8b 1. AM  
2. PM

LH9a During hours when your business is OPEN, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

[SKIP LH9b IF LH1a=1 AND LH2a = 2400 AND LH4 = 2]

LH9b During hours when your business is CLOSED, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 to 100; 998=Don't know, 999=Refused]

LH10a Are there any months during the year when the operating schedule for the indoor lighting differs significantly from what you just described?

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

[ASK LH10b-e IF LH10a=1; ELSE SKIP TO PROCESS MODULE]

LH10b How many hours per day does the indoor lighting typically operate during the periods with different operating schedules?

[NUMERIC OPEN END, 0 TO 24; 98=DON'T KNOW, 99=REFUSED]

LH10c And how many days per week?

[NUMERIC OPEN END, 0 TO 7; 8=DON'T KNOW, 9=REFUSED]

LH10d How many months per year does the equipment run on the alternative schedule? [NUMERIC OPEN END, 0 TO 12; 98=DON'T KNOW, 99=REFUSED]

LH10e During hours when your business is OPEN, on the alternative schedule, approximately what percentage of the indoor lighting is kept on? [NUMERIC OPEN END, 0 TO 100; 998=DON'T KNOW, 999=REFUSED]

[SKIP LH10f IF LH10b = 24]

LH10f During hours when your business is CLOSED on the alternative schedule, approximately what percentage of the indoor lights are kept on? [NUMERIC OPEN END, 0 to 100; 998=Don't know, 999=Refused]

[ASK THE PY4 NET-TO-GROSS MODULE, THEN RETURN]

[ASK THE PY4 SPILLOVER MODULE, THEN RETURN]

## **NON-LIGHTING MODULE** [ASK IF NONLIGHT=1]

PNL1 Who was the most influential in identifying and recommending that you install the <ENDUSE> project you completed through the Smart Ideas Program?

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)

PNL2 And who informed you about the availability of an incentive through ComEd 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)

NL0 When did you implement this project (IF NECESSARY, PROBE FOR BEST GUESS)

- a Month [Precodes for Jan through Dec.]
- b Year [Precodes for 2011 and 2012]

### **Measure Loop**

[Loop 1: ASK IF MEAS1=1. Loop 2: ASK IF MEAS2=1. Loop 3: ASK IF MEAS3=1.]

[For Loop 2, replace "1" at the end of read-ins with "2"; for Loop 3, replace "1" with "3".]

The following questions are about the <MEASD1> installed through the Smart Ideas for Your Business Program.



## REMOVED EQUIPMENT

NL1 Did the <MEASD1> you installed through the Smart Ideas for Your Business Program replace old or outdated equipment at this facility, or was it an addition of new equipment?

- 1 (Addition of new equipment - did not replace anything)
- 2 (Replacement of old or outdated equipment)
- 00 (Other, specify)
- 98 (Don't know)
- 99 (Refused)

[SKIP NL2 NL3 AND NL4 IF NL1=1,98,99]

NL2. Approximately how old was the existing equipment? [NUMERIC]

- \_\_\_ Estimated Age
- 98 (Don't know)
- 99 (Refused)

IF RESPONDENT HAS TROUBLE ESTIMATING AGE OF EQUIPMENT, ASK:

NL2a. Approximately in what year was the existing equipment purchased? [NUMERIC]

- \_\_\_ Estimated Year of Purchase
- 98 (Don't know)
- 99 (Refused)

NL3. How much longer do you think it would have lasted? [NUMERIC]

- \_\_\_ Estimated Remaining Useful Life
- 98 (Don't know)
- 99 (Refused)

NL4. Which of the following statements best describes the performance and operating condition of the equipment you replaced through the ComEd program?

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

[End of Measure Loop; GO TO NEXT NON-LIGHTING MEASURE]

[ASK PY4 NET-TO-GROSS MODULE, THEN RETURN]

[ASK PY4 SPILLOVER MODULE, THEN RETURN]

## **PY4 NET-TO-GROSS MODULE**

*Variables for the net-to-gross 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)

<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.)

<FINCRIT1> (Variable to be calculated based on responses. Equals 1 if payback period WITHOUT incentive is shorter than company requirement. See instructions below.)

<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)

## **VENDOR INFORMATION**

[SKIP TO V4 IF NTG=B]

I would like to get some information on the VENDORS that may have helped you with the implementation 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)

[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)

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 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 or was it added to control or work directly with existing equipment?

- 1 Replaced existing equipment
- 2 Added to control or work directly with existing equipment
- 3 Other (record VERBATIM)
- 8 (Don't know)
- 9 (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 implement this project? 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 a rebate 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 implementing this measure? (NOTE TO INTERVIEWER: "this measure" 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 implement the measure that was installed? (NOTE TO INTERVIEWER: "the measure" 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 the program as well as other factors that might have influenced your decision to implement this measure. Think of the degree of importance as being shown on a scale with equally spaced units from 0 to 10, where 0 means not at all important and 10 means extremely important. Now using this scale please rate the importance of each of the following in your decision to implement the measure at this time.

[FOR N3a-n, RECORD 0 to 10; 96=Not Applicable; 98=Don't Know; 99=Refused]

(If needed: How important in your DECISION to implement the project was...)

[SKIP N3a IF NTG=B]

N3a. The age or condition of the old equipment

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

[SKIP N3cc IF NTG=B]

[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 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 this MEASURE?

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]

Thinking about this differently, I would like you to compare the importance of the PROGRAM with the importance of other factors in implementing the <ENDUSE> project.

[SKIP TO N3p IF NTG=B]

[READ IF (N3A, N3D, N3E, N3I, N3J, N3L, N3M, OR N3N)=8,9,10; 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]

(N3A) Age or condition of old equipment,

(N3D) Equipment Vendor recommendation

(N3E) Previous experience with this measure

(N3I) Recommendation from a design or consulting engineer

(N3J) Standard practice in your business/industry

(N3L) Corporate policy or guidelines

(N3M) Payback on investment

(N3N) Other factor

N3p 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 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)
- 98 (Don't know)
- 99 (Refused)

[IF INC1=2, 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 this equipment. 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 UTILITY 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 this equipment. 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?

Now I would like you to think about the action you would have taken with regard to the installation of this equipment if the utility program had not been available.

IF A2aa=1 (MEASURE=REPLACEMENT), THEN ASK:

N5 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? [RECORD 0 to 10; 98=Don't know; 99=Refused]

IF A2aa=2 (MEASURE=ADD-ON) THEN ASK:

N5aa Using a likelihood scale from 0 to 10, where 0 is “Not at all likely” and 10 is “Extremely likely”, if **PROGRAM** had **not** been available, what is the likelihood that you would have installed exactly the same item/equipment at the same time as you did? [RECORD 0 to 10; 98=Don't know; 99=Refused]

IF A2aa=1 (MEASURE=REPLACEMENT), THEN ASK:

Next, I'd like to ask a couple of questions to help us estimate at what point in the future you would definitely have replaced your existing equipment. We understand that you can't know exactly when you would have done this, especially so far into the future. We're just trying to get a sense of how long you think the current equipment or process would have kept serving your company's needs before you had to or chose to replace it

N5ab. If the program had not been available, how likely is it that you would have replaced your existing equipment within **one** year of when you did?

- 1 Definitely would have
- 2 Probably would have
- 3 50-50 chance
- 4 Probably not
- 5 Definitely not
- 98 (Don't know)
- 99 (Refused)

IF N5ab=3,4,5 THEN ASK:

N5ac. In the absence of the program, how likely is it that you would have replaced your existing equipment within **three** years of when you did?

- 1 Definitely would have
- 2 Probably would have
- 3 50-50 chance
- 4 Probably not
- 5 Definitely not
- 98 (Don't know)
- 99 (Refused)

IF N5ac=3,4,5 THEN ASK:

N5ad. In the absence of the program, how likely is it that you would have replaced your existing equipment within **five** years of when you did?

- 1 Definitely would have
- 2 Probably would have
- 3 50-50 chance
- 4 Probably not
- 5 Definitely not
- 98 (Don't know)
- 99 (Refused)

N5ae. Now I would like you to think one last time about what action you would have taken if the program had not been available. Supposing that you had not installed the program qualifying equipment, which of the following alternatives would you have been MOST likely to do?

- a. Install fewer units
- b. Install standard efficiency equipment or whatever required by code



- c. install equipment more efficient than code but less efficient than what you installed through the program
- d. repair/rewind or overhaul the existing equipment
- e. do nothing (keep the existing equipment as is)
- f. something else (specify what \_\_\_\_\_)

## 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 implement the project) [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 N3>7]

N6 In an earlier question, you rated the importance of STANDARD PRACTICE in your industry very highly in your decision making. Could you please rate the importance of the PROGRAM, relative to this standard industry practice, in influencing your decision to install this measure. Would you say the program was much more important, somewhat more important, equally important, somewhat less important, or much less important than the standard practice or policy?

- 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)

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

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

- 1 Within 6 months?
- 2 6 months to 1 year later
- 3 1 - 2 years later
- 4 2 - 3 years later?
- 5 3 - 4 years later?
- 6 4 or more years later
- 8 Don't know
- 9 Refused

[ASK N7b IF N7a=6]

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

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

**PAYBACK BATTERY** [ASK N8-N10e IF N3m=6,7,8,9,10]

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 implement projects 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 implement projects that meet the required financial cut-off point?

00 [Record VERBATIM]

98 (Don't know)

99 (Refused)

N10a Did the rebate play a big role in moving your project within the acceptable payback cutoff point?

1 (Yes)

2 (No)

8 (Don't know)

9 (Refused)

[CREATE VARIABLE FINCRIT1. SET FINCRIT1 = BLANK IF: N9=8,9 OR N10b=998,999. SET FINCRIT1 = 1 IF: (N9=1 AND N10b<7) OR (N9=2 AND N10b<13) OR (N9=3 AND N10b<25) OR (N9=4 AND N10b<37) OR (N9=5 AND N10b<61) OR (N9=6). ELSE, SET FINCRIT1 = 0.]

[ASK N10c IF FINCRIT1=1]

N10c Even without the incentive, the <ENDUSE> project met <COMPANY>'s financial criteria.

Would you have gone ahead with it even without the incentive?

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

N10d The incentive seemed to make the difference between meeting your financial criteria and not meeting them, but you are saying that the incentive didn't have much effect on your decision, why is that?

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

N10e. The incentive didn't cause this <ENDUSE> project to meet <COMPANY>'s financial criteria, but you said that the incentive had an impact on the decision to install the <ENDUSE>. Why did it have an impact?

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

**CORPORATE POLICY BATTERY [ASK N11-N17 IF N3L=6,7,8,9,10]**

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 energy efficient <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 energy efficient <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 energy efficient <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=6,7,8,9,10]

N18 Approximately, how long has use of energy efficient <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 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)

## BONUS INCENTIVE [ASK IF BONUS=1]

- BI1a Are you aware that the incentive you received for this project included a bonus amount that ComEd offered for a limited period of time? This payment was part of a special offer from ComEd that paid additional Bonus incentives for new T5 and T8 fluorescent lamps and fixtures, and most T12 retrofit measures. To receive the higher incentives, you would have used specially marked application forms and submitted the final application between June 1, 2011 and March 31, 2012.
- 1 (Yes)
  - 2 (No) [SKIP TO SPILLOVER]
  - 8 (Don't know) [SKIP TO SPILLOVER]
  - 9 (Refused) [SKIP TO SPILLOVER]
- BI1b Were you aware of the bonus incentive when you decided to implement the <ENDUSE> project?
- 1 (Yes)
  - 2 (No)
  - 8 (Don't know)
  - 9 (Refused)
- BI2 How did you find out about the bonus incentive?
- 1 (ComEd website)
  - 2 (Bill insert)
  - 3 (ComEd Newsletter)
  - 4 (Contractor)
  - 5 (Account Manager)
  - 00 (Other, specify)
  - 98 (Don't know)
  - 99 (Refused)
- BI3 If you had only received the regular incentive amount for your <ENDUSE> project, how likely would you have been to still implement the exact same project? Please use a scale from 0 to 10 where 0 means "not at all likely" and 10 means "extremely likely".



## **PY4 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 your participation in the ComEd program, did you implement 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 SP2 IF SP1=1, 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]

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 implemented? (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 implement any measures)
- 98 (Don't know)
- 99 (Refused)

[SKIP TO S0 IF SP2=96, 98, 99]

- SP3 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: <SP2 RESPONSE>). Why did you purchase this equipment without the incentive available through the Smart Ideas program? [MULTIPLE RESPONSE, UP TO 3]
- a.
- 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]

SP6. 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)

SP5f.

## **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 S1d IF S1c<4]

S1d Why did you rate it that way?

1. (Difficult to understand)
2. (Long process)
00. (Other, specify)
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. (Trade Ally)
4. (Contractor)
5. (Supplier/Distributor/Vendor)
6. (Engineer)
7. (Consultant)
00. (Other, specify)
98. (Don’t know)
99. (Refused)

[IF S1=3, SKIP TO S8]

S4a Did you use a contractor for your <ENDUSE> project?

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

[ASK S4b IF S4a=1]

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)

[ASK S5 IF S4a=1 ELSE SKIP TO S7]

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]

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 ELSE SKIP TO S7]

S6b Why not?

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

S8 During the course of your participation in the program, did you place any calls to the Smart Ideas for Your Business Call Center?

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

[ASK S9 IF S8=1]

S9 On a scale of 0 to 10, where 0 is "very dissatisfied" and 10 is "very satisfied;" how would you rate your satisfaction with the Call Center's ability to answer your questions? [SCALE 0-10; 98=Don't know, 99=Refused]

[ASK S10 IF S9<4]

S10 Why did you rate it that way?

1. (Provided inconsistent information)
2. (Didn't understand the question)
3. (Hard to reach the right person/person with the answer)
00. (Other, specify)
98. (Don't know)
99. (Refused)

- S11 On a scale of 0 to 10, where 0 is very dissatisfied and 10 is very satisfied, how would you rate your satisfaction with... [SCALE 0-10; 96=not applicable, 98=Don't know, 99=Refused]
- the incentive amount
  - the communication you had with the Smart Ideas program staff
  - the measures offered by the program (If needed: this is the equipment that is eligible for an incentive under the program)
  - the Smart Ideas program overall
  - ComEd overall

[ASK S12a IF S11a<4]

- S12a You indicated some dissatisfaction with the incentive amount, why did you rate it this way? [MULTIPLE RESPONSE; UP TO 3]
- (Better rebates in other states)
  - (Too small)
  - (Equipment didn't qualify)
  00. (Other, specify)
  98. (Don't know)
  99. (Refused)

[ASK S12b IF S11b<4]

- S12b You indicated some dissatisfaction with the communication you had with the Smart Ideas staff, why did you rate it this way?
- (Provided inconsistent information)
  - (Didn't understand the question)
  - (Hard to reach the right person/person with the answer)
  00. (Other, specify)
  98. (Don't know)
  99. (Refused)

[ASK S12b IF S11c<4]

- S12c You indicated some dissatisfaction with the measures offered by the Smart Ideas program, why did you rate it this way? [OPEN END; 98=Don't know, 99=Refused]

[ASK S12d IF S11d<4]

- S12d You indicated some dissatisfaction with the Smart Ideas Program overall, why did you rate it this way?
- (Not as easy as other states)
  - (No clear guidance)
  00. (Other, specify)
  98. (Don't know)
  99. (Refused)

[ASK S12e IF S11e<4]

- S12e You indicated some dissatisfaction with ComEd overall, why did you rate it this way?
- (Rates are too high)

- 2. (Took too long to get rebate)
- 3. (Poor customer service)
- 4. (Poor power supply/service)
- 00. (Other, specify)
- 98. (Don't know)
- 99. (Refused)

## Marketing and Outreach

[IF S1<>1, SKIP TO B1A]

MK0 I'm now going to ask you about several specific ways in which you might have seen or heard information about the Smart Ideas for Your Business program. Have you ever... [1=Yes, 2=No, 8=(Don't know), 9=(Refused)]

- a. Received information about the program in your monthly utility bill?
- b. Attended a ComEd customer event where the program was discussed?
- c. Discussed the program with a ComEd Account Manager?
- d. Discussed the program with a Contactor or Trade Ally?
- e. Seen information about the program on the ComEd Website?
- f. Received information about the program in an Email?
- g. Heard about the program from a colleague, friend or family member?
- h. Attended a meeting, seminar or workshop where the program was presented?
- i. Attended a webinar where the program was discussed?
- j. Read about the program in a ComEd Newsletter?
- k. Been directly contacted by a ComEd or KEMA outreach staff?

MK1b How useful were the program's marketing materials in providing information about the program? Would you say they were...

- 1. Very useful
- 2. Somewhat useful
- 3. Not very useful
- 4. Not at all useful
- 8. (Don't know)
- 9. (Refused)

[ASK MK1c IF MK1b=3,4]

MK1c What would have made the materials more useful to you? [MULTIPLE RESPONSE, UP TO 3]

- 1. (More detailed information)
- 2. (Where to get additional information)
- 00. (Other, specify)
- 98. (Don't know)
- 99. (Refused)

- MK2 In general, what is the best way of reaching companies like yours to provide information about energy efficiency opportunities like the Smart Ideas for Your Business program? [MULTIPLE RESPONSE, UP TO 3]
1. (Bill inserts)
  2. (Flyers/ads/mailings)
  3. (e-mail)
  4. (Telephone)
  5. (ComEd Account Manager)
  8. (Trade allies/contractors)
  00. (Other, specify)
  98. (Don't know)
  99. (Refused)

### Benefits and Barriers

- B1a What do you see as the main benefits to participating in the Smart Ideas for Your Business program? [MULTIPLE RESPONSE, UP TO 3]
1. (Energy Savings/Saving money)
  2. (Good for the Environment)
  3. (Lower Maintenance Costs)
  4. (Better Quality/New Equipment)
  5. (Rebate/Incentive)
  9. (Able to make improvements sooner)
  00. (Other, Specify)
  98. (Don't know)
  99. (Refused)
- B1b What do you see as the drawbacks to participating in the program? [MULTIPLE RESPONSE, UP TO 3]
1. (Paperwork too burdensome)
  2. (Incentives not high enough/not worth the effort)
  3. (Program is too complicated)
  4. (Cost of equipment)
  5. (No drawbacks)
  00. (Other, specify)
  98. (Don't know)
  99. (Refused)
- B2 BLANK
- B3 Was the scope of your project limited by the any of the following program incentive caps?
- a. T8/T5 per fixture cap
  - b. A per-premise cap of \$200,000 (\$100,000 at beginning of PY4)
  - c. A tiered cap for project incentives above \$200,000 (50% above \$200,000)



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

### Feedback and Recommendations

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)

R2 How could the Smart Ideas for Your Business Program be improved? [MULTIPLE RESPONSE, UP TO 4]

1. (Higher incentives)
2. (More measures)
3. (Greater publicity)
4. (Better Communication/Improve Program Information)
8. (Simplify application process)
11. (Quicker processing times)
00. (Other, specify)
96. (No recommendations)
98. (Don't know)
99. (Refused)

### Firmographics

I only have a few general questions left.

F1 BLANK

F2 Which of the following best describes the ownership of this facility?

1. <COMPANY> owns and occupies this facility
2. <COMPANY> owns this facility but it is rented to someone else
3. <COMPANY> rents this facility
8. (Don't know)
9. (Refused)

F6 And which of the following best describes the facility? This facility is...

1. <COMPANY>'s only location
2. one of several locations owned by <COMPANY>
3. the headquarters location of <COMPANY> with several locations

F4a How old is this facility? [NUMERIC OPEN END, 0 TO 150; 998=Don't know, 999=Refused]

F5a How many employees, full plus part-time, are employed at this facility? [NUMERIC OPEN END, 0 TO 2000; 9998=Don't know, 9999=Refused]

[SKIP F7 IF F2=2]

F7 In comparison to other companies in your industry, would you describe <COMPANY> as...

1. A local company
2. A regional company
3. A national company
4. An international company
5. (Not applicable)
8. (Don't know)
9. (Refused)

## 5.5.2 Interview Guide for ComEd Account Managers

### ComEd Smart Ideas for Your Business C&I Programs: Account Manager Interviews FINAL

Hello, this is \_\_\_\_\_ from Opinion Dynamics. We are the independent contractor hired by ComEd to conduct the evaluation of the Smart Ideas for Your Business Program. We are doing a brief survey with ComEd Account Managers. We are interested in your experience with the <Prescriptive and/or Custom> Program and any feedback you may have received about the program from your customers.

Is now still a good time or is there a more convenient time when I could call back?

*Alert interviewee that the call will be recorded.*

*Note that responses will remain confidential and only be reported in aggregate with other responses.*

#### **Background**

1. What kind of customers do you serve? [*Probe for business sector, size, chains*] Approximately how many customers do you serve?
2. How frequently do you interact with your customers? What is the primary mode of communication? [*Probe for if they visit location, call, send out emails, letters*] Does this vary by customer type or size?
3. How many Tier 1 customers do you have? [IF NEEDED: Tier 1 Customers are using over a megawatt of power] Of your Tier 1 customers, how many were already aware of the Smart Ideas Program?
4. One of the account manager goals for PY4 to present a slide deck about the Smart Ideas program to all Tier 1 customers. How did you feel about this goal? Was it realistic? In your opinion was this a good way to inform the customers of the programs? Do you have any recommendations for communication to customers about the Smart ideas program?

#### **NTG Battery**

5. According to our records <SCOMP> is a customer of yours who implemented a <EUSE> project through the <CUSTOM/PRESCRIPTIVE/BOTH> Program at <ADDR>. Were you aware of their participation?
6. Is this customer one of your Tier 1 customers? Did you present the program to them? If so, how do you think the presentation was received by the customer?

7. **[If the customer is NOT a Tier 1 customer]** Did you ever promote the Smart Ideas for Your Business Program to <SCOMP>? How frequently did you discuss the program with them? *(Probe for when the first began discussing the program, use <DATE> as a reference point)*
8. Did you play a role in their decision to implement <EUSE> project? Please explain. From your perspective, what were the main factors in <SCOMP> decision to install high efficiency equipment and participate in the program?
  - a. If promote it/involved: Without your involvement, how likely would they have been to implement the project through the program? *(Probe for very likely, somewhat likely, not at all likely)*
9. To the best of your knowledge, has <SCOMP> had either a Smart Ideas Opportunity Assessment or a Facility Assessment? If so, which one?
10. Have you discussed the assessment with <SCOMP>? How satisfied do you think <SCOMP> was with the assessment?

#### ***Program Awareness***

11. How familiar would you say you are with the Smart Ideas for Your Business Program? *[Probe: very, somewhat, not very, not at all familiar]* How familiar would you say you are with the trade ally network?
12. How often would you say you have reached out to the trade ally network to help complete a project?
13. During the PY4 cycle, [IF NEEDED: From June 2011 to May 2012], Have you attended any lunch-and-learn presentations? How useful did you find these presentations? How did you use the information from the Lunch N Learns? Please explain.
14. How often do you discuss energy efficiency with your customers? How often do you promote the program?
 

If not often: why not?
15. What do you find to be the best way to reach your customers about energy efficiency opportunities? Does this vary by customer type or size?
16. What information about the program do you typically provide? *[probe for fact sheets, case studies]*

If provide materials: How useful have you found these marketing materials to be? What could make them more useful?

17. Do you use the website as a resource for program information? Do you find that the materials on the website are easily accessible? Do you have any suggestions on how to make program materials more accessible?
18. Do you feel you have enough information about the program to effectively promote it and assist customers in getting started with their participation?
19. Is there anything that the program could do to help you be more effective in promoting the program? (*probe for better marketing materials, more training, ...*)
20. Do you use a formal process for tracking leads? Do you keep track of your communications with your customers with respect to the Smart Ideas program? Is this information passed along to Program staff?
  - a. Do you find this process is working? Why/Why not?

***Customer Awareness/Interest/Participation***

21. What percentage of your customers, do you think, are aware of the Smart Ideas for Your Business Program? What percentage is interested? Why or why not? Does this vary by customer type or size?
22. How aware are you of your customers' participation and status in the program? Do you find that the weekly updates are useful? Do they provide enough information? Do you prefer to get updates in any other way? Do you use the Frontier Tracking Database? Is it helpful in tracking project status? Project impact? Why or why not?
23. Approximately what percentage of your customers has participated in the Smart Ideas Program? Does this vary by customer type or size?
24. Have you gotten any feedback from customers about the Smart Ideas Program? What is the nature of that feedback? Does this vary by customer type or size?
25. In your view, what are the major barriers to participating in the Smart Ideas for Your Business program?
26. What are the major barriers to your customers in installing energy efficient equipment?

*Those are all the questions I had. Thank you very much for your time today!*

### 5.5.3 Interview Guide for Participating Trade Allies

#### Trade Ally Survey for the ComEd Prescriptive/Custom Program FINAL

Hello, this is \_\_\_\_ from Opinion Dynamics calling on behalf of ComEd. THIS IS NOT A SALES CALL. We are doing a brief survey with program allies who have been involved in projects supported by the Smart Ideas for Your Business Program.

We are interested in your experience with the program and any feedback you may have received from your customers about the program. ComEd plans to use the information to improve the energy efficiency programs and services it offers to its business customers.

*[If name does not match name on list]* Who might be the best person to speak with about the Smart Ideas for Your Business Program?

*[If name matches name on list]* Would you be willing to speak with me for about 15 minutes? Is now a good time or is there a more convenient time when I could call back?

*Alert interviewee that the call will be recorded.*

*Note that responses will remain confidential and only be reported in aggregate with other responses.*

### Firmographics

I first have a few general questions about your company.

- F1 What is your business category? (Probe for: contractor, engineer, ESCO, equipment vendor, architect)
- F2 What type of equipment, if any, would you say is your company's area of expertise? (Probe, if necessary: lighting, HVAC, refrigeration, motors, food service)
  - a. If multiple areas: What is the MAIN area? → [RECORD THIS AREA AS "ENDUSE"]
  - b. Approximately how many total commercial or industrial [ENDUSE] projects does your company implement in a typical year?
- F3 Would you consider your company to be local, regional, national or international in size?
- F4 What are the key business sectors your company serves? (Probe for light/heavy industry, retail, office, restaurant, etc.)

### Freeridership Module [\[ASK ONLY IF IDENTIFIED BY CUSTOMER\]](#)

I now have a few specific questions about your firm's recent involvement in <%CUSTOMER>'s installation of <%MEASURE> through the Smart Ideas for Your Business Program at <%ADDRESS> in <%MONTH/YEAR>.

FR1 <%CUSTOMER> has indicated that your firm was involved in the implementation of this project. Is this correct? Are you the person that is most knowledgeable about your firm's involvement in this project?

[IF NO, PROBE TO SEE IF THERE IS SOMEONE ELSE IN FIRM WHO MAY HAVE KNOWLEDGE OF THIS PROJECT, ELSE SKIP TO FR4]

FR2 Can you please describe your firm's role in the selection and installation of <%MEASURE> at <%CUSTOMER>'s facility? (Probe if firm merely supplied or installed equipment or if they had a role in selecting it. Probe about perceived level of influence firm's recommendation had on customers choice.)

FR2a At what stage in the project did you get involved with <%CUSTOMER>'s project? When do you typically get involved with customer projects?

[IF NO ROLE IN SELECTING EQUIPMENT, SKIP TO FR4]

FR3a On a scale of 0 to 10 where 0 is NOT AT ALL IMPORTANT and 10 is EXTREMELY IMPORTANT, how important was the PROGRAM, including incentives as well as program services and information, in influencing your decision to recommend that <%CUSTOMER> install the energy efficiency MEASURE at this time? [SCALE 0-10]

FR3b And using a 0 to 10 likelihood scale where 0 is NOT AT ALL LIKELY and 10 is EXTREMELY LIKELY, if the PROGRAM, including incentives as well as program services and information, had not been available, what is the likelihood that you would have recommended this specific MEASURE to <%CUSTOMER>? [SCALE 0-10]

FR4 Do you know of any other vendors that worked with <%CUSTOMER> during their implementation and/or installation of <%MEASURE>, for example engineers or designers? If so, do you have their name and phone number?

## Market Trends & Effect of Program on Business

I now have a few questions about the market for commercial and industrial [ENDUSE] equipment and the influence of the Smart Ideas for Your Business Program on your business practices.

M1 Over the last 12 months, approximately what percentage of your [ENDUSE] equipment sales in ComEd's service territory were energy efficient models?

- Of these energy efficiency models, approximately what percentage would qualify for incentives from the program?
- And of the installations that would qualify for incentives, approximately what percentage did NOT receive an incentive? Why do you think they did not receive an incentive? (*Probe for other reasons, if only one is mentioned.*)

- M2 You just told me that about \_\_\_\_% of your [ENDUSE] sales involve high efficiency equipment. Do more of your sales today involve high efficiency equipment compared with what you sold four years ago?  
If increase:  
 a. How important was the Smart Ideas Program in this change? (*Probe for specific program components: incentives, training, program website, other program components.*)  
 b. How important are other factors not related to the program? What are these other factors? (*Probe for tax credits/gov't rebates, general EE awareness, change in codes or standards.*)
- M3 In what percent of sales situations do you recommend high efficiency [ENDUSE] products?  
 a. [If not 100%] When you don't recommend high efficiency products, what are the reasons?
- M4 Has the frequency with which you recommend high efficiency [ENDUSE] equipment changed in the past four years? How?  
If change noted:  
 a. How important was the Smart Ideas Program in this change? (*Probe for specific program components: incentives, training, program website, other program components.*)  
 b. How important are other factors not related to the program? What are these other factors? (*Probe for tax credits/gov't rebates, general EE awareness, change in codes or standards.*)
- M5 As a result of the Smart Ideas Program...  
 a. have you changed the type of equipment you supply and sell?  
 b. have you changed any other business practices as a result of the program? (*Probe for: hired more staff, opened up new offices, changed marketing.*)  
 c. Has the program caused an increase in business?
- M6 How aware, would you say, are your customers of energy efficiency and options available to make their facilities more energy efficient? How interested would you say are they? (*Probe for very, somewhat, not very, not at all aware/interested*)  
 Has this (awareness/interest) changed over time?
- M7 What do you view as the main barriers to the installation of energy efficient equipment for your customers? Does this vary by customer type or size? Anything else? What could be done to overcome these barriers?

## Process Module

- P1 How aware, would you say, are your customers of the Smart Ideas for Your Business program? How interested are they in it? Does this vary by customer type or size?
- P2 How frequently do you promote the program to your customers? (Always, most of the time, sometimes, rarely, never?) If sometimes/rarely/never: Why? Does this vary by customer type or size?



- P3 Have you received any marketing materials from the program? If so, what did you receive? *(Probe for fact sheets, case studies, The Wire newsletter, “toolkit” from training session)* Do you provide these materials to your customers?
- If yes: How useful do you think are these materials in providing information about the program and encouraging customers to participate? If not useful, what would make them more useful?
  - If no: why not?
  - Are there any specific promotional materials that you would like ComEd to provide? If yes, what are they (e.g., case studies, point-of-sale technical handouts, website tools/enhancements)?

[IF REGISTERED TRADE ALLY]

- P4 Our records show that you are a registered Trade Ally, is that correct?
- Has the designation of “Trade Ally” changed any of your business practices? How?
  - What do you see as the main benefits of being a registered Trade Ally? *(Probe: marketing materials, listing on ComEd website, group training, application status, sales coaching, discount on technical training, eligibility for trade ally bonus)*

[IF NOT A REGISTERED TRADE ALLY]

- P5 Our records show that you are **not** a registered trade ally, is that correct?
- Why has your company not registered to become a Trade Ally?
  - Are you planning on becoming a registered trade ally?
  - What, if any, do you see as the main benefits of being a registered Trade Ally? *(Probe: marketing materials, listing on ComEd website, group training, application status, sales coaching, discount on technical training)*
  - What Trade Ally benefits could the Smart Ideas Program add that may convince you to become a registered trade ally? *(Probe for trade ally bonus)*

- P6 Were you aware that ComEd offered trade ally bonuses in the fall of 2010, where registered trade allies were awarded bonuses based on the number of projects they completed through the program?

[IF REGISTERED TRADE ALLY]

If aware:

- Did your company receive a bonus?
- Did the bonus offering lead to an increased promotion of the program on your behalf? Did it lead to any other changes in your business practices? Do you think it resulted in more or bigger projects?
- How did you feel about the restrictions/rules of the bonus? Was the bonus amount adequate?

- d. What changes, if any, would you make to a trade ally bonus offering to make it more effective at bringing in more large projects? *(Probe: timing of bonus, length of promotion)*
  
- P7 What do you view as the main barriers to customer participation in the Smart Ideas for Your Business program? What could be done to overcome these barriers?
  
- P8 How satisfied are you with your participation in the Smart Ideas for Your Business program? *(Ask very, somewhat, not very, not at all satisfied.)* If not very satisfied or not at all satisfied: why?
  - a. measures offered
  - b. incentive amounts
  - c. communication with Smart Ideas program staff
  - d. the program overall
  
- [ask if total # of proj<4]
  
- P9 Our records indicate that you only participated in [X] project(s) through the program between June 2011 and May 2012. Can you briefly describe what prevented you from more active participation?
  
- P10 Do you have any recommendations of how the Smart Ideas for Your Business Program could be improved?
 

*This concludes our survey. On behalf of ComEd, thank you very much for your time today!*

#### 5.5.4 Interview Guide for Smart Ideas Opportunity Assessment (SIOA)

##### ComEd C&I Custom and Prescriptive Program –SOIA Participant Interview Guide July 2012

##### Smart Ideas Opportunity Assessment Participant Customers

Name of Interviewee: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_ Company: \_\_\_\_\_

*[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews with utility staff, implementation contractors, program participants and trade allies. The guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The interviews will be audio taped.*

#### Introduction

Hi, may I please speak with [name from list]?

My name is \_\_\_\_ and I'm calling from Opinion Dynamics, an independent research firm, on behalf of ComEd. We're talking to customers who recently received a Smart Ideas Opportunity Assessment through ComEd's Smart Ideas for your Business Program.

We are interested in your experience with the program and any recommendations you may have. ComEd plans to use this information to improve the energy efficiency programs and services it offers to its business customers.

Would you be willing to speak with me for about 15 minutes? Your responses will be kept strictly confidential.

#### I. Program Awareness and Marketing

1. How did you learn about the Smart Ideas Opportunity Assessment? *[PROBE FOR: ComEd Account Manager and Trade Ally (Contractor).]*
2. Before you heard about the assessment, were you aware of ComEd's energy efficiency programs known as the Smart Ideas for Your Business program? If so, how did you learn about the Smart ideas program? Had you spoken with your account manager about Smart Ideas before discussing the Smart Ideas Opportunity Assessment?
3. What is the best way to reach businesses like yours with information about Smart Ideas program offerings?

#### II. Assessment Program Satisfaction

1. How satisfied have you been with the overall process of the assessment? *[PROBE FOR: Scheduling, Conducting, Time to Completion, and Receipt of Report]*
2. How satisfied were you with the technical information you received about opportunities for energy efficiency improvements at your facility? Was the assessment report explained clearly?
3. Is there anything ComEd could do to improve the Smart Ideas Opportunity Assessment Program?

### **III. Audit Information**

1. What was the most important factor that influenced you to receive the assessment? Cost of the assessment (it is free)? Lack of staff time/expertise to conduct a similar assessment? Other available resources? Desire to reduce energy costs?
2. Were you aware of the projects that were identified by the assessment before you had the assessment? Did the assessment provide you with additional information you did not know about your facility's opportunities for incentives?
3. Is there any additional information you would have liked to see in the assessment report?

### **IV. Impact**

1. Have you participated in any of ComEd's Smart Ideas for Your Business programs prior to taking part in a Smart Ideas Opportunities Assessment? Please explain your participation.
2. Since the assessment have you completed any of the projects that were identified? Why or why not?
3. Were any of the identified projects delayed? Why or why not?
4. Do you intend to complete these projects in the future? If so, when? Why or why not?
5. Did you receive or apply for any incentives for the installed measures you received from the projects you did complete?
6. Did you complete any projects for which you will not be receiving an incentive? Can you describe the projects? Why did you not pursue an incentive?
7. Has the assessment had any impact on your interest in participating in the Smart Ideas program?
8. Since you completed the assessment have you visited the ComEd website to learn more about the program? Downloaded program materials or applications? Contacted a vendor to receive a quote? Contacted ComEd or KEMA staff to find out more information? Called the ComEd Smart Ideas hotline?

### **V. Importance of Energy**

1. How much and in what ways does energy use impact your business? Would you consider your business to be energy intensive? Are energy costs a concern to you? If so, how much?
2. Do you have staff that manages your facility's energy usage? [*PROBE FOR:* Dedicated or Specialized Energy Management Staff]

### **VI. Barriers to Participation**

1. What do you view as the main barriers to completing the projects listed in the assessment overview you received?
2. What were the main factors contributing to delaying or not completing the projects identified by the assessment? [*PROBE FOR:* First cost? ROI? Payback? Performance risk of the new equipment? Hassle factor/Difficulty in completing the projects?]
3. What are your thoughts on what ComEd could do to help you complete the projects identified in the assessment?

### **VII. Program Feedback and Recommendations**

1. In general, how satisfied are you with the ComEd Smart Ideas Opportunity Assessment you received? Did it meet your expectations? Do you have any additional comments or recommendations?

*Thank you for taking the time to discuss the Smart Ideas Opportunity Assessments.  
Your insights have been very helpful.*

### 5.5.5 Interview Guide for Facility System Assessment (FSA)

#### ComEd C&I Custom and Prescriptive Program –FAS Participant Interview Guide

June 26, 2012

#### Facility Assessment Participant Customers

Name of Interviewee: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_ Company: \_\_\_\_\_

*[Note to Reviewer] The Interview Guide is a tool to guide process evaluation interviews with utility staff, implementation contractors, program participants and trade allies. The guide helps to ensure the interviews include questions concerning the most important issues being investigated in this study. Follow-up questions are a normal part of these types of interviews. Therefore, there will be sets of questions that will be more fully explored with some individuals than with others. The interviews will be audio taped.*

#### Introduction

Hi, may I please speak with [name from list]?

My name is \_\_\_\_ and I'm calling from Opinion Dynamics, an independent research firm, on behalf of ComEd. We're talking to customers who recently received a Facility Assessment (FAS) through ComEd's Smart Ideas for your Business Program.

We are interested in your experience with the program and any recommendations you may have. ComEd plans to use this information to improve the energy efficiency programs and services it offers to its business customers.

Would you be willing to speak with me for about 15 minutes? Your responses will be kept strictly confidential.

#### VIII. Program Awareness and Marketing

4. How did you learn about the Facility Assessment? *[PROBE FOR: ComEd Account Manager and Trade Ally (Contractor).]*
5. Before you heard about the assessment, were you aware of ComEd's energy efficiency programs known as the Smart Ideas for Your Business program? If so, how did you learn about the Smart ideas program? Had you spoken with your account manager about Smart Ideas before discussing the Smart Ideas Opportunity Assessment?
6. What is the best way to reach businesses like yours with information about Smart Ideas program offerings?

#### IX. Assessment Program Satisfaction

7. How satisfied have you been with the process for receiving the assessment? Was the assessment explained clearly?
8. How satisfied were you with the technical information you received about opportunities for energy efficiency improvements at your facility?
9. Do you recall the name of the assessment provider(s) that you worked with on your project?
10. How satisfied were you with the assessment provider who conducted your facility assessment?
11. Is there anything ComEd could do to improve the Facility Assessment Program?

#### X. Audit Information

4. What was the most important factor that influenced you to receive the assessment? Cost of the assessment? Lack of staff time/expertise to conduct a similar assessment? Other available resources?

5. Were you aware of the projects that were identified by the assessment before you had the assessment? Did the assessment provide you with additional information you did not know about your facility's opportunities for incentives?
6. When the program first presented a proposal to you for the full-cost of the recommended changes, what did you think of the cost? [*PROBE FOR: Was it much lower than you expected, somewhat lower than you expected, about what you expected, or much higher than what you expected?*]
7. Is there any additional information you would have liked to see in the assessment report?

#### **XI. Impact**

9. Have you participated in any of ComEd's Smart Ideas for Your Business programs before? Please explain your participation.
10. Since the assessment have you completed any of the projects that were identified? Why or why not?
11. Were any of the identified projects delayed? Why or why not?
12. Do you intend to complete these projects in the future? If so, when? Why or why not?
13. Did you receive or apply for any incentives for the projects you did complete?
14. Did you complete any projects for which you will not be receiving an incentive? Can you describe the projects? Why did you not pursue an incentive?
15. [*IF INCENTIVES RECEIVED ASK*]Would you have completed the projects recommended by the assessment provider had you not received incentives from ComEd's Smart Ideas for Your Business Facility Assessment Program? Why or why not?
16. Has the assessment had any impact on your interest in participating in the Smart Ideas program?
17. Since you completed the assessment have you visited the ComEd website to learn more about the program? Downloaded program materials or applications? Contacted a vendor to receive a quote? Contacted ComEd or KEMA staff to find out more information? Called the ComEd Smart Ideas hotline?

#### **XII. Importance of Energy**

3. How much and in what ways does energy use impact your business? Would you consider your business to be energy intensive? Are energy costs a concern to you? If so, how much?
4. Do you have staff that manages your facility's energy usage? [*PROBE FOR: Dedicated or Specialized Energy Management Staff*]

#### **XIII. Barriers to Participation**

4. What do you view as the main barriers to completing the projects listed in the assessment overview you received?
5. What were the main factors contributing to delaying or not completing the projects identified by the assessment? [*PROBE FOR: First cost? ROI? Payback? Performance risk of the new equipment? Hassle factor/Difficulty in completing the projects?*]
6. What are your thoughts on what ComEd could do to help you complete the projects identified in the assessment?

#### **XIV. Program Feedback and Recommendations**

2. In general, how satisfied are you with the ComEd Facility Assessment you received? Did it meet your expectations? Do you have any additional comments or recommendations?

*Thank you for taking the time to discuss the Facility Assessment Program.  
Your insights have been very helpful.*