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Energy Efficiency / Demand Response Plan: Plan Year 2 (6/1/2009-5/31/2010)

Evaluation Report: Smart Ideas for Your Business Business Prescriptive Program

Presented to

Commonwealth Edison Company

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Section E. Executive Summary

E.1 Evaluation Objectives

The goal of this report is to present a summary of the findings and results from the evaluation of the Program Year 2 Business Prescriptive program[1]. The primary objectives of this evaluation are to quantify gross and net impacts and to determine key process-related program strengths and weaknesses and identify ways in which the program can be improved.

The Commonwealth Edison Company (ComEd) Smart Ideas for Your Business program provides incentives for business customers who upgrade their facilities with energy efficient equipment. There were two specific program elements that were available to ComEd customers during program year 2: a Custom program and a Prescriptive program.

- Custom program incentives are available to customers for less common or more complex energy-saving measures installed in qualified retrofit and equipment replacement projects.
- The Prescriptive program provides an expedited application approach for nonresidential customers interested in purchasing efficient technologies. The program targets discrete retrofit and replacement opportunities in lighting, HVAC, motor, and refrigeration systems. A streamlined incentive application and quality control process is intended to facilitate ease of participation. Relationships with trade allies are a key strategy for promoting prescriptive incentive availability to customers.

Some tasks within the Prescriptive and Custom program evaluations involved close coordination between the two efforts, but the evaluations were otherwise conducted through separate approaches. The Prescriptive and Custom programs have evaluation results reported separately.

E.2 Evaluation Methods

ComEd's three-year Energy Efficiency and Demand Response Plan, filed in November 2007 and approved in February 2008,[2] anticipated that the Prescriptive program will provide 57% of the business portfolio nonresidential energy savings.

[1] The Program Year 2 (PY2) program year began June 1, 2009 and ended May 31, 2010.
[2] Commonwealth Edison Company's 2008 – 2010 Energy Efficiency and Demand Response Plan, Docket No. 07-0540, ComEd Ex. 1.0, November 15, 2007.

Table E-0-1 provides a summary of the principal data sources contributing to the impact and process evaluation of the PY2 Prescriptive program. For each data element listed the table provides the targeted population, the sample frame, sample size and timing of data collection.

Table E-0-1. Principal Data Sources Contributing to the PY2 Evaluation

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	Prescriptive Program Customers, Projects and Measures	Tracking Database July 5, 2010 Extract	-	All	Ongoing
In-depth Phone Interviews	ComEd Prescriptive Program Staff	Contact from ComEd	C&I Prescriptive Program Manager	1	March 2010
	Participating and Non-Participating Market Actors	ComEd Trade Ally List	Purposeful sample of most active; random sample of others	6 active lighting; 6 in-active lighting, 6 active non-lighting; 6 inactive non-lighting, 6 non-light non participants	August/ September 2010
CATI Phone Survey	Prescriptive Program Participants	Tracking Database, May 10, 2010 Extract	Stratified Random Sample of Program Participants	90	July 2010
Follow-up Calls	Prescriptive Program Participants and Vendors	Selected Net-to-Gross Sample	Selected Projects Where Warranted	Selected Projects Where Warranted	August - September 2010
Project Application File Review	Projects in the Prescriptive Program	Tracking Database, July 5, 2010 Extract	Stratified Random Sample by Prescriptive Project-Level kWh (3 Strata)	72	July – September 2010
On-Site Visit M&V		Project Application File Review Sample	Spillover Candidates and Larger Projects	8	

E.3 Key Findings

The Prescriptive program's second year (PY2) began in June 2009 and ended May 31, 2010. The Prescriptive program continued to far exceed planned levels of participation and impacts due to continued high subscription rates for lighting measures. Together the Custom and Prescriptive programs have claimed accomplishments in PY2 that substantially exceed their combined goals.

Table E-0-2 below provides an overview of planned, reported ex ante, and evaluation-adjusted net savings impacts for the PY2 Prescriptive program. As shown in Table E-0-3 and Table E-0-4, the PY2 evaluation found that verified gross energy savings were 21 percent higher than savings in ComEd's tracking system, as indicated by the realization rates (realization rate = verified gross / tracking system gross). The verified net-to-gross ratio (NTGR), 0.74, was slightly lower than ComEd's planning value of 0.80.

Table E-0-2. PY2 Prescriptive Program Net Savings

Net Savings Estimates	MWH	MW
ComEd Plan Target	86,510	24.70
ComEd Reported for PY2 (ex ante)	149,465	31.95
Total Second-Year Evaluation-Adjusted Net Savings (ex post)	191,896	33.41

Source: Plan target: Commonwealth Edison Company's 2008 – 2010 Energy Efficiency and Demand Response Plan, Docket No. 07-0540, ComEd Ex. 1.0, November 15, 2007 that include a net-to-gross ratio of 0.8 and a gross realization rate of 0.95. Reported: ComEd program tracking data and communication from ComEd that their NTG ratio for reporting equals 0.70.

Table E-0-3. Program-Level Evaluation-Adjusted Net kWh Impacts for PY2

Segment	Ex Ante Gross kWh	Ex Post Gross kWh	kWh RR	Ex Post Net kWh	NTGR (ex post gross)
Total	213,521,873	259,093,058	1.21	191,895,792	0.74

Source: Tracking savings from ComEd online tracking system, July 5, 2010.

Table E-0-4. Program-Level Evaluation-Adjusted Net kW Impacts for PY2

Segment	Ex Ante Gross kW	Ex Post Gross kW	kW RR	Ex Post Net kW	NTGR (ex post gross)
Total	45,641	45,106	0.99	33,409	0.74

Source: Tracking savings from ComEd online tracking system, July 5, 2010.

The relative precision at a 90% confidence level for the Prescriptive projects in the sample is ± 9% for the kWh Realization Rate and 7% for the kW Realization Rate. The relative precision at a 90% confidence level for the program NTG ratio is ± 6%.

1.1.1 Key Impact Findings

- The realization rate for energy savings was 1.21. The primary reason for this being greater than one is that verified annual hours of use were higher than default values for many projects. Annual hours of use were verified through a CATI survey with program participants or through on-site M&V. The hours of use adjustments increased and decreased impacts, depending on the project, but similar to PY1, there were a substantial number of industrial and warehouse business types with verified hours that exceeded default values.

- A factor that reduced both the energy savings and demand savings realization rates was a finding that a substantial number of sites had installed lighting in non-cooled spaces, and ComEd includes an HVAC interaction factor by default in most lighting measures.

- Adjustment factors that increased or decreased ex post impacts, depending on the project, included quantity adjustments and baseline equipment not matching default assumptions. The overall impact of these adjustments on the realization rate was less than the hours of use and non-cooled installation adjustments.

- The realization rate for demand savings was 0.99, reflecting that ComEd's quality control and verification procedures for the Prescriptive Program are rigorous and ensure high quality projects and tracking data. These procedures should be maintained.

- ComEd is to be commended for improving estimates of HVAC full load hours from PY1 to PY2. The PY2 default savings review identifies a number of further updates that could be addressed through an iterative process between the evaluation team, ComEd, and the program implementer in PY3.

- Comparing PY1 and PY2, the mean NTG ratio increased significantly from PY1 (0.68) to PY2 (0.74). The primary driver in this increase was substantially lower free-ridership in the large project group. Mean free-ridership was higher for the smaller project size category (32% free-ridership, 0.68 NTGR for the small project sample stratum) than for medium and large size projects (NTGR of 0.76 and 0.77 respectively).

- For large projects, the mean NTG ratio increased from 0.59 in PY1 to 0.77 in PY2. The increase was due to much higher component scores for factors that indicate the program had a higher influence on the decision to implement a project and to implement that project sooner than would have occurred without the program. The No-Program score for large projects increased from 0.40 in PY1 to 0.67 for PY2. With the qualitatively lower amount of spillover in PY2 than in PY1, one could speculate this was due economic conditions limiting investment in large discretionary projects, and these customers not intending to implement big energy efficiency projects until after contact by the program.

- There were 10 projects in the sample of 114 that had a NTG ratio below 0.5, and most were small projects. The impact of these 10 projects with NTG ratios below 0.5 is to lower the overall NTG ratio for the program from 0.78 to 0.74. Only 1 of 23 (4%) of large projects had a NTG ratio below 0.5, while 3 of 38 (8%) medium sized projects had a NTG ratio below 0.5, but 6 of 53 (11%) of small projects had a NTG ratio below 0.5. Within the small project strata, 4 of the 6 projects with a NTG below 0.5 were scored greater than 90% free-ridership, where the participant had learned about the program after the decision to implement the project had already been made.

- The NTG ratio estimate for PY2 included a more complex "standard rigor" level of analysis conducted on larger projects, defined as those with incentives greater than $50,000 for a single project or multiple projects under a single contact name. The effect of including standard rigor analysis in the sample was to raise the NTG ratio for large projects from 0.76 to 0.77 (estimated by removing all standard rigor adjustments), and to raise the overall program NTG ratio from 0.73 to 0.74. The expanded standard rigor analysis included additional questions regarding non-program influence factors and the possibility of triggering an interview with the vendor to determine the extent of program influence on the vendor, if the participant said the vendor was important to the decision to proceed with the project. In PY1, the NTG survey and analysis was conducted at a simpler "basic rigor" level of analysis.

- For PY2, 66 of 850 contacts in our sample frame met the standard rigor definition, and 27 of 90 respondents in our sample went through the standard rigor approach, and 11 of the 27 standard rigor interviews had responses that triggered follow-up interviews with 10 different vendors. One reason for the small increase in NTG ratio from adding standard rigor to the analysis was that end-user participants with large projects had already given ComEd relatively high scores for program influence, particularly on the availability of the incentive.

- For the 11 standard rigor projects that triggered vendor interviews, the average vendor influence score was 0.97, based on the 7 interviews that resulted in a vendor score (3 of the interviewed vendors did not provide responses that could be scored, and one vendor responded on only 1 of 2 projects). This indicates a high level of program influence through the vendor (i.e., only 3% free-ridership for one-third of the total free-ridership score for these 7 projects).

- Relatively few spillover candidates were identified through the PY2 participant phone survey. Only 6 respondents pursuing 8 measures indicated a strong influence by the ComEd program. While participating customers are installing other energy efficiency improvements outside of the program, they attribute little influence to the program in their decision to install these additional measures and further state that these actions

generally would have been implemented regardless of their program participation experiences.

- There was stronger evidence for spillover in PY1 than in PY2. In PY2, only 15 of 90 survey respondents answered "Yes" (17%) to the screening question of whether they had implemented any additional energy efficiency measures without incentives. In PY1, 33 of 85 respondents answered "Yes" (39%). In PY2, only 8 respondents gave their ComEd program experience a rating or 7 or higher in their decision to implement potential spillover measures, compared with 17 respondents in PY1.

- An effort to quantifying spillover savings, limited to the on-site M&V sample, identified 885,314 kWh and 136 peak kW that were added to ComEd's net PY2 Prescriptive savings.

- The PY2 evaluation interviews with market actors provided evidence for program influence on vendors, and provide some evidence of the potential for non-participant spillover. To quantify non-participant spillover would require a much more detailed interview supported by sales data figures, to allow an estimate of the increase in high efficiency sales in the past two years, that were influenced by ComEd, sold in the service territory, and did not go through the Prescriptive program.

1.1.2 Key Process Findings

Program Participation

Participation in the Prescriptive Program substantially increased in PY2, with 958 unique companies completing 1,739 projects. Participation by more national retailers/chain companies – particularly in the retail/service sector (73 projects in PY1, 462 projects in PY2) – contributed significantly to this increase. Light industry represented the largest share of participants (28%), energy savings (32%), and demand savings (36%) and had the greatest impact on program savings, with almost four-fold increases in both energy and demand savings compared to PY1.

Despite the attempt to diversify the program away from lighting measures, 85% of projects, 94% of energy savings, and 96% of demand savings in PY2were still associated with the implementation of lighting measures, almost identical to PY1.

Overall, the strong participation gains in PY2 resulted in the program far exceeding both energy and demand savings goals, even though these goals had also substantially increased from PY1.

Participant Satisfaction

Satisfaction with the Prescriptive Program and various program processes remains very high. Notably, 97% of participants are satisfied with the Prescriptive Program overall (a rating of 7 or higher, on a scale of 0 to 10). Compared to PY1, PY2 participants are significantly more satisfied with the measures offered (97% up from 87%) and ComEd overall (91% up from 76%). Very few participants encountered problems while participating, and about three-quarters (74%) plan on participating again.

Interviewed contractors were likewise largely satisfied with the program and participation processes. All interviewed contractors expressed satisfaction with the measures offered and found the incentives to be reasonable and fair. All plan to participate in the future.

Program Oversubscription

Similar to PY1, the Smart Ideas for Your Business program experienced strong demand for prescriptive measures in PY2. However, unlike in PY1, only prescriptive *lighting* measures were subject to waitlisting in PY2. Program staff decided to keep available non-lighting incentives in an attempt to diversify the program away from its heavy reliance on lighting.

Program staff seemed to manage the oversubscription process better in PY2. There was more proactive communication with trade allies, and the addition of a fund-o-meter on the website was helpful in keeping all parties informed of funding status. As a result, significantly fewer participating customers in PY2 were aware of the waitlist (38% vs. 63% in PY1). According to program staff, all waitlisted projects were able to participate before the end of the program year.

While nearly all interviewed lighting contractors were aware of the waitlist, they believe it was communicated effectively by program staff. However, the oversubscription still presented a problem for many contractors, as the availability of program incentives affects their business volume.

Trade Ally Network

Contractors play an integral role in the Prescriptive Program. Eighty-six percent of PY2 prescriptive projects were implemented with contractor support. Notably, only 31% of contractors who implemented a project in PY2 are registered trade allies. However, these trade allies account for 62% of contractor-implemented projects. Contractors also remain vital for program promotion: Almost a third (32%) of participants named their contractor as the most influential in specifying the details of the project, and 37% report that it was the contractor who indentified the opportunity for the program incentive. Overall, participants are very satisfied with their contractor, and 96% would recommend their contractor to others.

Contractor interviews show that the Smart Ideas for Your Business Program did not influence the business practices of lighting contractors. Many had already adopted business models that focused on energy efficiency and were recommending energy efficient equipment before participating in the program.[3] Many non-lighting contractors, however, are more frequently recommending energy efficient models as a result of the program.

Almost all of the interviewed contractors who are registered trade allies have attended training. Overall the contractors found the training events to be useful in explaining the program requirements.

Marketing and Outreach

Similar to PY1, prescriptive goals were exceeded with minimal marketing efforts. According to participants, contractors remain the most important source of program information. All interviewed contractors reported that they always promote the program when applicable to a specific project. Contractor involvement should further increase with the contractor bonus implemented in PY3.

Email remains the best way to reach participants (53%) and is also a commonly cited source of program information (50%). Interviewed contractors generally believe that awareness of the program varies by business characteristics, with large companies and companies in urban settings being more aware.

Increased marketing – already planned and implemented by the program – will likely be necessary to meet the significantly increased goals for PY3.

Account Managers

While program staff report that Account Managers have become more active in the Smart Ideas for Your Business Program in PY2, additional opportunities for Account Managers to help increase participation in the program appear to exist. In general, program staff would still like to see increased involvement by Account Managers. Specific Account Manager goals planned for PY3 – bringing customers to the Energy Efficiency Expo, bringing in a certain volume of projects, and attending a certain number of lunch-and-learns – plus incentives if these goals are met, should help the program in future years.

[3] While the program did not influence the frequency with which most lighting contractors recommend energy efficient equipment, it does influence the business volume of those most active in the program. See also "Program Oversubscription" Section 3.2.4.

Section 1. Introduction to the Program

This evaluation report covers the Prescriptive program element of the ComEd Smart Ideas for Your Business incentive 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. There were two specific program elements that were available to ComEd customers during program year 2 (PY2) under the ComEd Smart Ideas for Your Business incentives program:

- **Prescriptive Incentives** were available for energy-efficiency equipment upgrades and improvements including lighting, cooling, refrigeration, and motors. Incentives were paid based on the quantity, size, and efficiency of the equipment. Incentives were provided for qualified equipment commonly installed in a retrofit or equipment replacement situation.

- **Custom Incentives** were available to customers for less common or more complex energy-saving measures installed in qualified retrofit and equipment replacement projects. Custom measure incentives were paid based on the first year energy (kWh) savings. All projects were required to meet ComEd's cost-effectiveness and other program requirements.

Measures that are available through the Prescriptive program are not eligible for custom incentives. However, the applicant has the option to apply for a custom incentive if the entire project involves a combination of prescriptive and custom measures. The Prescriptive and Custom programs continued into program year 3, with minor changes to prescriptive incentive levels and rebate options.

Additional ComEd program offerings are provided under the Smart Ideas business program umbrella, including retrocommissioning and new construction services. The Illinois Department of Commerce and Economic Opportunity (DCEO) is responsible for delivering programs to ComEd customers targeted towards public nonresidential buildings such as government, municipal, and public schools.[4] These ComEd and DCEO programs are evaluated and reported separately.

[4] For more information on the DCEO programs please refer to (www.illinoisenergy.org).

The Smart Ideas for Your Business program is a key part of ComEd's overall portfolio of programs approved by the Illinois Commerce Commission (ICC) as part of ComEd's Energy Efficiency and Demand Response Plan, filed in November 2007 and approved in February 2008.[5] The program is funded on an annual basis from June 1 to May 31 of each year.[6] Funding in any given program year is limited to that year's budgeted amount and, therefore, incentives are paid on a first-come, first-served basis until the program year's incentive funds are exhausted.

It should be noted, however, that no Custom applicants or Prescriptive applicants with non-lighting measures were wait-listed in PY2 based on available funding. Prescriptive lighting projects were wait-listed beginning in December 2009, but by March 2010 wait-listing ended and lighting projects were allowed again for PY2. Lighting projects placed on the PY2 wait list were offered the opportunity to participate in PY2 or in PY3.

The original plan net MWh savings goals and budgets for the 2010 (PY2) Prescriptive and Custom incentives program are presented in Table 1-1.

Table 1-1. Smart Ideas for Your Business PY2 Planned Savings Goals and Budgets

Program Element	Plan Target Net MWh	Plan Target Net MW	Plan Target Total Cost
Prescriptive Incentives	86,510	24.7	$13,900,000
Custom Incentives	74,475	13.7	$10,500,000
Total	160,985	38.4	$24,400,000

Source: Commonwealth Edison Company's 2008 – 2010 Energy Efficiency and Demand Response Plan, Docket No. 07-0540, ComEd Ex. 1.0, November 15, 2007. The program's net savings goals include a net-to-gross ratio of 0.8 and a gross realization rate of 0.95.

1.1.1 Implementation Strategy

ComEd retained KEMA Services Inc. as its program administrator responsible for day-to-day operations. The Prescriptive program launched in June 2008.

ComEd has provided the evaluation team with a detailed Operations Manual and a Policies and Procedures Manual that describe the details of program implementation. Important aspects of program implementation are summarized below.

[5] Commonwealth Edison Company's 2008 – 2010 Energy Efficiency and Demand Response Plan, Docket No. 07-0540, ComEd Ex. 1.0, November 15, 2007.
[6] Program year 2 ran from June 1, 2009 through May 31, 2010.

Incentive Caps: Incentives are subject to annual limits or caps that are set per facility per year. A facility is defined as contiguous property for which a single customer is responsible for paying the ComEd electricity bill. The Prescriptive incentive cap for PY2 ending May 31, 2010 was $100,000 per facility, the Custom incentive cap was $200,000 per facility, and the combined cap was $300,000 per facility.

Incentive Limits: Project incentives cannot exceed 50 percent of the total project cost (includes costs of equipment and contractor labor; excludes in-house labor) and 100 percent of the incremental measure cost.

Pre-approval Application Submittal: Pre-approval is required for some Prescriptive projects, depending on the measures installed. Measures that require pre-approval include permanent lamp removal and T8/T5 new fluorescent fixtures with electronic ballasts.

Pre-Review: The program reviews pre-approval applications for eligibility and completeness. The program contacts the customer or contractor to clarify details or obtain further information, to discuss the overall process and timelines, and to explain the process for inspections where they are required.

Pre-Inspection: Pre-inspections provide the program with the opportunity to verify the existing conditions at the site. They are performed as defined by quality assurance procedures based on the type of measures that the participant submits.

Reservation: The program reserves the project funds once the pre-inspection report and/or initial project review is approved. Prescriptive lighting projects placed on a waiting list from December 2009 through February 2010 were offered in March 2010 the opportunity to participate in PY2 or PY3. In the event that a project is not completed within 90 days of the reservation and an extension has not been requested and granted, then the project is cancelled.

Final Application Submittal: The Final Application requires the submittal of documentation to demonstrate the installation of each energy efficiency improvement, including project invoices to document the costs to procure and install the project. Final applications must be submitted within 60 days of project completion and include the appropriate back-up documentation to verify the project is complete and meets the program requirements. ComEd reserves the right to request additional information from the sponsoring customer that demonstrates the effectiveness of the technology deployed. The program reviews final applications for eligibility and completeness.

Final Inspection: The program performs final inspections as defined by quality assurance/quality control procedures to verify the measure installations.

Incentive Payment: Once the program accepts a project for payment, incentives are processed and delivered.

Cancellation: When a project either does not meet the program guidelines or is cancelled by the customer, the project is moved to a cancelled status. The project details remain in the database, but the project no longer counts towards the active program goals.

Wait List: Prescriptive lighting projects were wait-listed beginning in December 2009, but by March 2010 wait-listing ended and lighting projects were allowed again for PY2. Lighting projects placed on the PY2 wait list were offered the opportunity to participate in PY2 or in PY3.

Hold: Projects are placed on hold when a customer with a reserved project decides not to move forward in the current program year and indicates that they may move forward with their project in the following year. Projects on hold are not included in the active program totals.

1.1.2 Measures and Incentives for PY2

ComEd's Smart Ideas for Your Business Prescriptive incentive program provides incentive payments for eligible energy efficiency projects. Prescriptive program incentives are intended for common energy-saving measures installed in qualified retrofit and equipment replacement projects.

The PY2 program application forms are provided in Appendix 5.2.1, and include a listing of project eligibility criteria, incentive levels and the general application process.

1.2 Evaluation Questions

The evaluation sought to answer the following key researchable questions. Some of the researchable questions can be addressed in Program Year 3.

Impact Questions:

1. What are the gross impacts from this program?
2. What are the net impacts from this program?
3. Did the program meet its energy and demand goals? If not, why not?

Process questions:

The process evaluation questions focused on the following key areas:

1. Program participation
2. Effectiveness of program design and processes
3. Effectiveness of program implementation
4. Marketing and outreach
5. Barriers to and benefits of participation
6. Participant satisfaction

The full list of researchable questions can be found in the Evaluation Plan.

Section 2. Evaluation Methods

This section describes the analytic methods and data collection activities implemented as part of the PY2 process and impact evaluation of the Prescriptive program, including the data sources and sample designs used as a base for the data collection activities.

A total of 3,967 Prescriptive measures were installed. These measures were submitted for incentive payments in a total of 1,739 applications. Lighting measures dominated PY2 activity on a relative basis with 88 percent of measures installed, but HVAC, motors, and refrigeration were also represented. There were 330 HVAC related measures installed. Each of ComEd's twelve business types was represented in PY2.

The final PY2 evaluation plan called for 72 projects selected for engineering review of files, with on-site visits for a subset of 8 projects to address the gross impact evaluation objectives, plus telephone surveys with 90 Prescriptive projects to address evaluation process and net-to-gross objectives. The key evaluation activities were:

- Conduct an engineering review of project files and energy savings estimates on a sample of 72 projects selected randomly from the population of 1,739 projects to support gross impact evaluation.
- Conduct on-site visits and M&V activities on a sample of 8 Prescriptive projects, selected as a subset from the 72 projects in the file review sample, to support gross impact evaluation and spillover analysis.
- Conduct CATI telephone surveys for 90 Prescriptive projects to support the net impact approach (as described in greater detail in the Net Program Savings section, 2.1.2 below). For PY2, the Basic rigor NTG approach was predominantly used, but the PY2 Prescriptive project population was large enough so that 27 of the 90 projects in the sample were evaluated through the Standard rigor approach.
- A brief set of questions in the CATI survey was asked regarding installed measures, removed equipment, and lighting hours of use to support the gross impact evaluation, but gross impacts were adjusted *only* for those projects in the engineering file review group. Of the 90 completed phone surveys, 28 covered projects that were also in the file review sample and provided data relevant to the gross impact evaluation.
- CATI survey data were also collected to support the process evaluation.

The sections that follow provide greater detail on the methods deployed.

2.1 *Analytical Methods*

2.1.1 Impact Evaluation Methods

Gross Program Savings

The objective of this element of the impact evaluation is to verify the veracity and accuracy of the PY2 ex ante gross savings estimates in the Prescriptive program tracking system. The savings reported in ComEd's online tracking system was evaluated using the following steps:

1. Engineering review at the measure-level for a sample of 72 project files, with the following subcomponents:
    a. Engineering review and analysis of measure savings based on project documentation, default assumptions, and tracking data.
    b. Review and application (if appropriate) of participant phone survey impact data (reported hours of use, reported baseline equipment, installation in non-air-conditioned space) to projects in the engineering review sample.
    c. On-site verification audits at 8 project sites selected from the engineering review sample. Performance measurements included spot measurements and run-time hour data logging for selected measures.
    d. Calculation of a verified gross savings value (kWh and kW) for each project within sample, based on measure-level engineering analysis.
2. Carry out a quality control review of the ex post impact estimates and the associated draft site reports and implement any necessary revisions.

A verified gross realization rate (which is the ratio of the ex post gross savings-to-reported tracking savings) was then estimated for the sample, by sampling stratum, and applied to the population of reported tracking savings, using sampling-based approaches that are described in greater detail in Sections 2 and 3 below. The result is an ex post 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, consideration of CATI interview response data, 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, and important email and memoranda. Where projects covered by the participant phone survey overlapped with the engineering review sample, relevant impact data from the phone survey (reported hours of use, reported baseline equipment, installation in a non-air-conditioned space) was applied to projects.

On-Site Data Collection

On-site surveys were completed for a subset of 8 of the 72 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 all equipment required to conduct the planned activities. They check in with the site contact upon arrival at the building, 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 building 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 building and equipment. All information is recorded and checked for completeness before leaving the site.

Conduct Site-Specific Impact Calculations and Prepare Site Reports

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 senior engineer 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.

Net Program Savings

Net Program Savings

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 reliably be attributed to the program.

For PY2, 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 phone surveys, was used to estimate the free-ridership for this evaluation. The existence of participant spillover was estimated by identifying spillover

candidates through questions asked in the participant phone surveys, and conducting follow-up data collection on those indicating potential to quantify spillover impacts.

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

NTG Ratio = 1 – Free-ridership Rate + 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 phone surveys 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 is identical to that used by the Ameren Illinois evaluators with the exact same questions.

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 survey 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, 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 recommendations is incorporated into the Timing and Selection score, if a vendor 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.

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 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 are provided in Appendix 5.1.2, and are the basis for estimating a Vendor Score, calculated as follows:

> The Vendor Score is the maximum (on a scale of 0 to 10) of the following four 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>?

3. [Score = %NOW minus %BEFORE, converting delta percent to a scale of 0 to 10] How important, would you say, has the program been on how frequently you recommend high efficiency [lighting/HVAC] equipment to your commercial and industrial customers?

   a) BEFORE participating in the program, in what percent of sales situations did you recommend high efficiency [lighting/HVAC] products?

   b) How about NOW, that you have worked with the Smart Ideas for Your Business Program?

4. [Score = response converted to a 0 to 10 scale] What are the most important reasons that you recommend high efficiency [lighting/HVAC] equipment more often now? How important is the Smart Ideas for Your Business Program in this change? *(Probe for specific program components: incentives, training, program website, other program components.)*

The algorithm above provides a Vendor Score on a scale of 0 to 10, where 10 is associated is with no free-ridership due to program influence on the vendor. The Vendor 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.

Spillover

For the PY2 Prescriptive program evaluation, a battery of questions was asked to qualitatively assess spillover. 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 that did NOT receive incentives through any utility or government program?
2. What specifically were the measures that you implemented?
3. Why are you not expecting an incentive for these measures?
4. Why did you not install this measure through the ComEd Program?
5. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of these measures.
6. Please describe the EFFICIENCY of these measures.
7. Please describe the QUANTITY installed of these measures.
8. Were these measures specifically recommended by a program related audit, report or program technical specialist?
9. How significant was your experience in the ComEd Program in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all significant and 10 is extremely significant?
10. Why do you give the ComEd program this influence rating?
11. If you had not participated in the ComEd program, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?

Responses to these questions allow us to assess whether spillover may be occurring and the type of equipment involved, but do not offer enough detail to quantify the spillover. In the PY2 Prescriptive evaluation, an attempt to quantify spillover was made through follow-up questioning and site visits on potential spillover occurrences reported by the participants.

NTG Scoring

The net-to-gross scoring approach is summarized in Table 2-1.

Table 2-1. Net-to-Gross Scoring Algorithm for the PY2 Prescriptive Program

Scoring Element	Calculation
Timing and Selection score. The maximum score (scale of 0 to 10 where 0 equals not at all influential and 10 equals very influential) among the self-reported influence level the program had for: A. Availability of the program incentive B. Recommendation from utility program staff person C. Information from utility or program marketing materials D. Endorsement or recommendation by utility account manager E. Other factors (recorded verbatim) F. Information provided through technical assistance received	Basic Rigor: Maximum of A, B, C, D, and E Standard Rigor: Maximum of A, B, C, D, E, F, and G

Scoring Element	Calculation
from utility or KEMA field staff G. Vendor Score (when triggered)	
Program Influence score. "If you were given a TOTAL of 100 points that reflect the importance in your decision to implement the <ENDUSE>, and you had to divide those 100 points between: 1) the program and 2) other factors, how many points would you give to the importance of the PROGRAM?"	Points awarded to the program (divided by 10) Divide by 2 if the customer learned about the program AFTER deciding to implement the measure that was installed
No-Program score. "Using a likelihood scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely," if the utility program had not been available, what is the likelihood that you would have installed exactly the same equipment?" The NTG algorithm computes the Likelihood Score as 10 minus the respondent's answer (e.g., the likelihood score will be 0 if extremely likely to install exactly the same equipment if the program had not been available). Adjustments to "Likelihood score" are made for timing: "Without the program, when do you think you would have installed this equipment?" Free-ridership diminishes as the timing of the installation without the program moves further into the future.	Interpolate between Likelihood Score and 10 to obtain the No-Program score, where If "At the same time" or within 6 months then the No Program score equals the Likelihood Score, and if 48 months later then the No Program Score equals 10 (no free-ridership)
Project-level Free-ridership (ranges from 0.00 to 1.00)	1 – Sum of scores (Timing & Selection, Program Influence, No-Program)/30
"Our records show that <COMPANY> also received an incentive from <UTILITY> for a <different end use> project at <same ADDRESS>. Was the decision making process for the <different end use> project the same as for the <ENDUSE> project we have been talking about?"	If participant responds "same decision," assign free-ridership score to other end-uses of the same project
"Our records show that <COMPANY> also received an incentive from <UTILITY> for <number> other <ENDUSE> project(s). Was it a single decision to complete all of those <ENDUSE> projects for which you received an incentive from <UTILITY> or did each project go through its own decision process?"	If participant responds "single decision," assign free-ridership score to same end-use of the additional projects (projects with separate project ID's)
PY2 Project level Net-to-Gross Ratio (ranges from 0.00 to 1.00)	1 – Project level Free-ridership + Project-Level Participant Spillover

2.1.2 Process Evaluation Methods

Three research activities were conducted in support of the process evaluation: (1) an interview with the program manager, (2) in-depth interviews with participating and non-participating market actors, and (3) a quantitative telephone survey with 90 participating customers. These activities are further described in the section below.

2.2 Data Sources

Table 2-2 provides a summary of the principal data sources contributing to the process and impact evaluation of the PY2 Prescriptive Program. For each data element listed, the table provides the targeted population, the sample frame and design, the sample size, and the timing of data collection.

Table 2-2. Principal Data Sources Contributing to the PY2 Evaluation

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	Prescriptive Program Customers, Projects and Measures	Tracking Database July 5, 2010 Extract	-	All	Ongoing
In-depth Phone Interviews	ComEd Prescriptive Program Staff	Contact from ComEd	C&I Prescriptive Program Manager	1	March 2010
	Participating and Non-Participating Market Actors	ComEd Trade Ally List	Purposeful sample of most active; random sample of others	6 active lighting; 6 in-active lighting, 6 active non-lighting; 6 inactive non-lighting, 6 non-light non participants	August/ September 2010
CATI Phone Survey	Prescriptive Program Participants	Tracking Database, May 10, 2010 Extract	Stratified Random Sample of Program Participants	90	July 2010
Follow-up Calls	Prescriptive Program Participants and Vendors	Selected Net-to-Gross Sample	Selected Projects Where Warranted	Selected Projects Where Warranted	August - September 2010
Project Application File Review	Projects in the Prescriptive Program	Tracking Database, July 5, 2010 Extract	Stratified Random Sample by Prescriptive Project-Level kWh (3 Strata)	72	July – September 2010
On-Site Visit M&V		Project Application File Review Sample	Spillover Candidates and Larger Projects	8	

2.2.1 Tracking Data

The tracking data for this evaluation was extracted from a copy of the ComEd online database uploaded to the evaluation team SharePoint site on a periodic basis. The final ex ante tracking data used to support this evaluation was uploaded on July 5, 2010. For gross impact evaluation, 63 of the 72 impact sample projects were drawn from a database extract dated February 22, 2010 to allow an early start of the impact efforts; the remaining 9 of the sample projects were drawn from the extract dated July 5, 2010. The Prescriptive phone survey sample was drawn from a database extract dated May 10, 2010, to allow the phone survey to be completed with sufficient time to complete follow-up vendor interviews and on-site data collection with spillover candidates. The Prescriptive projects show no substantive differences between the May 10, 2010 version (1,562 paid applications) and the final July 5, 2010 version (1,739 applications).

2.2.2 Program and Implementer Staff Interviews

The evaluation team conducted one 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 PY2.

Furthermore, the Prescriptive and Custom evaluation teams participated in a collaborative meeting in January 2010 with the implementers to discuss evaluation methods and approaches and the applicability or not of those methods to ex ante impact claim developments.

The evaluation team also reviewed program materials developed by KEMA and ComEd, including: KEMA's operations manual, a policies and procedures manual, Prescriptive participant application documents, trade ally application and outreach materials, and program tracking database documentation.

2.2.3 CATI Phone Survey

A CATI 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 July of 2010.

The CATI survey was directed toward unique customer contact names drawn from the tracking system for PY2 paid Prescriptive projects. The survey data collected supports PY2 free-ridership estimation, process evaluation inputs (including business demographics), and a qualitative assessment of spillover. The CATI survey instrument used for this evaluation is included in Appendix 5.1.

2.2.4 Market Actor In-Depth Interviews

We interviewed 30 market actors as part of the PY2 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 PY2 projects,[7] (3) barriers to installation of energy efficient equipment and customer participation in the program, and (4) satisfaction with the program and participation processes.

We interviewed six market actors in each of the following groups: active lighting, inactive lighting, active non-lighting, inactive non-lighting,[8] and non-participant non-lighting. The interviews with active lighting contractors included three of the five most active contractors in the Prescriptive Program in PY2 (measured by the number of projects implemented). Market actors in the non-participant group are registered trade allies who did not implement a prescriptive project in PY2.

Nineteen of the 30 market actors interviewed are registered trade allies. About half of the "non-lighting" market actors work with HVAC whereas the rest focus on refrigeration, motors, or controls. Most of the interviewed market actors work with commercial and industrial businesses in general, without a focus on a particular sector, but some specialize in the heavy industry, office, retail, medical, or sectors grocery. The size of the contracting company varies between very small (2 to 3 employees) to large worldwide firms (100,000 or more employees).

A majority of the market actors we interviewed are contractors (21 of the 30); the remaining nine are engineers, manufacturers, or distributors. The remainder of this report we will refer to the 30 interviewed market actors as "contractors."

2.2.5 Project Application File Review

To support Final Application file review, project documentation in electronic format was obtained from the online tracking system for each sampled project and several others that were randomly inspected. Documentation included some or all of scanned files of hardcopy application forms and supporting documentation from the applicant (ex ante impact calculations, invoices, measure specification sheets, vendor proposals), pre-inspection reports and photos (when required), post inspection reports and photos (when conducted), and important email and memoranda.

[7] Please refer to Section 2.1.1 on how these questions were used as an input to the NTG algorithm.
[8] Contractors who completed 5 or more projects in PY2 were classified as active.

2.2.6 On-Site Visits and Measurement

On-site surveys were completed for 8 of the applications sampled for M&V. During each on-site visit, 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 a careful description of site conditions that might contribute to baseline selection.

2.3 Sampling

ComEd's tracking database extract dated February 22, 2010 was used to select 63 gross impact evaluation sample points. The decision to allocate 63 of the 72 sample points to this sample was based on analysis of paid and pending PY2 projects in the February 22 sample, where the ratio of 63 to 72 approximates the ratio of paid to projected total PY2 program savings. The tracking database extract dated July 5, 2010 was used to select nine more sample points, for a total of 72. All sample points for the participant telephone survey were selected using the May 10, 2010 database extract.

2.3.1 Profile of Population

Program-level Prescriptive savings data were analyzed by project size, end-use, and business type to inform the sample design for this population. Using the February 22, 2010 tracking extract, Prescriptive records were sorted and placed in three strata using ex ante savings kWh to create roughly equal contributions to total program savings. When the July 5, 2010 extract became available, the strata boundaries defined on February 22, 2010 were preserved.

Sampling for the Prescriptive program was completed for ex post gross M&V-based evaluation, and the strata boundaries were preserved for the telephone survey supporting ex post net impact evaluation and the process evaluation.

Table 2-3 presents each of three strata developed for sampling within the Prescriptive Program, which consists of a total of 1,739 Prescriptive applications. The number of records is presented by strata, along with ex ante gross kWh claimed, ex ante gross kW claimed, and the amount of incentive paid.

Table 2-4 and Table 2-5 show the population profile analyzed by end-use and business type.

Table 2-3. PY2 Prescriptive Program Participation by Sampling Strata

Sampling Strata	Ex Ante kWh Impact Claimed	Ex Ante kW Impact Claimed	Projects	Incentive Paid to Applicant
1	69,950,322	15,042	63	$3,801,902
2	75,361,039	16,352	239	$5,054,277
3	68,210,513	14,246	1,437	$5,613,274
TOTAL	213,521,873	45,641	1,739	$14,469,452

Source: Evaluation analysis of tracking savings from ComEd online tracking system, July 5, 2010.

Table 2-4. PY2 Prescriptive Program Participation by End-use Type

End Use	Measure Count	%	Ex Ante kWh Impact Claimed	%
LIGHTING	3,478	88%	199,658,382	94%
HVAC_VSD	273	7%	9,871,589	5%
HVAC	57	1%	1,739,164	1%
REFRIGERATION	76	2%	1,993,694	1%
MOTORS	71	2%	173,907	0%
ICE_MAKER	12	0%	85,138	0%
Total	3,967	100%	213,521,873	100%

Source: Evaluation analysis of tracking savings from ComEd online tracking system, July 5, 2010.

Table 2-5. PY2 Prescriptive Program Participation by Business Type

End Use	Project Count	%	Ex Ante kWh Impact Claimed	%
Light Industry	306	18%	68,083,515	32%
Warehouse	157	9%	38,677,646	18%
Heavy Industry	100	6%	27,672,859	13%
Retail/Service	462	27%	23,137,763	11%
Miscellaneous	172	10%	16,069,987	8%
Office	239	14%	15,390,223	7%
Medical	49	3%	13,665,747	6%
Grocery	157	9%	4,302,694	2%
Hotel/Motel	10	1%	3,088,478	1%
College / University	34	2%	2,161,249	1%
Restaurant	36	2%	756,950	0%
K-12 School	17	1%	514,763	0%
Total	1,739	100%	213,521,873	100%

Source: Evaluation analysis of tracking savings from ComEd online tracking system, July 5, 2010.

The most commonly installed lighting measures were New T8/T5 fixture with 692 measures accounting for 123.3 million kWh (58% of program ex ante savings), High performance T8 lamp and ballast (691 measures, 20.7 million kWh, 10% of program ex ante savings), Occupancy sensors (524 measures, 16 million kWh, 7% of program ex ante savings), and delamp 4 foot fixtures and install reflectors (309 measures, 14 million kWh, 7% of program ex ante savings). The most common non-lighting measure was HVAC variable speed drives with 273 measures, 9.9 million kWh (5% of program ex ante savings). These top 5 measures accounted for 86% of program ex ante kWh savings (183.7 million kWh). All other measures combined contributed approximately 14% to overall program ex ante kWh savings, and none provided more than 5% the total program ex ante energy savings.

2.3.2 Gross Impact M&V Sample

Before final sample selection, the tracking extract was reviewed to check for outliers and missing values, and then matched to ComEd's reported energy savings. Some projects contain both Custom and Prescriptive measures (combined projects). The Custom and Prescriptive programs were evaluated through different approaches by necessity, so the evaluation team included all custom measures within the Custom evaluation, and all prescriptive measures within the Prescriptive evaluation. As a result, 173 combined projects have measures within each of the two evaluations. Site visits and phone surveys were coordinated by assigning combined projects to one evaluation or the other to avoid multiple contacts.

Using the February 22, 2010 extract, projects were stratified at tracking record level for projects using the ex ante kWh impact claim. Records were sorted from largest to smallest Prescriptive kWh claim, and placed into one of three strata such that each contains one-third of the program total kWh claim. The project distribution changed between February 22, 2010 and the final extract dated July 5, 2010, but the strata boundaries defined using the February 22 extract were preserved for all future gross impact, net impact, and process samples. In the final extract, the largest 63 project records were assigned to "strata 1," the next largest 239 records were assigned to "strata 2," and the smallest 1,437 records were assigned to "strata 3."

A sampling approach that splits lighting and non-lighting measures was examined during the PY2 sample design process, but not pursued due to the high portion of lighting energy savings in the program. Alternative sampling strategies will be considered during the PY3 planning process.

The Prescriptive evaluation plan called for a target sample of 72 projects in the ex post gross impact M&V sample to receive project application file review. This sample was drawn such that an equal number of projects were randomly selected for each stratum. Each of the 72 records selected represents just one Prescriptive application which may have multiple measures. The 8 projects in the on-site M&V sample were selected as a subset of the file review sample. The

criteria for selecting on-sites were not random; preference was given to spillover candidates, larger projects, and new measures added to the program for PY2.

Profile of the Gross Impact M&V Sample

Table 2-6 provides a profile of the gross impact M&V sample for the Prescriptive program in comparison with the Prescriptive program population. Shown is the resulting sample that was drawn, consisting of 72 applications, responsible for 39.9 million kWh of ex ante impact claim and representing 19% of the ex ante impact claim for the program population. Also shown are the ex ante-based kWh sample weights for each of three strata.

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

Prescriptive Population Summary				File Review Sample		
Sampling Strata	Number of Applications (N)	Ex Ante kWh Impact Claimed	kWh Weights	n	Ex Ante kWh	Sampled % of Population
1	63	69,950,322	33%	24	31,661,953	15%
2	239	75,361,039	35%	24	6,864,330	3%
3	1,437	68,210,513	32%	24	1,341,497	1%
TOTAL	1,739	213,521,873	100%	72	39,867,780	19%

Table 2-7 provides a profile of the 8 sites selected from the project file review sample for on-site M&V.

Table 2-7. Profile of the Gross Impact M&V On-Site Sample by Strata

On-Site Sample (Subset of File Review Sample)				
Sampling Strata	Number of Sites	Business Types	Ex Ante kWh Impact Claimed	Sampled % of Population
1	5	Heavy Industry, Light Industry, Warehouse, Medical, Retail/Service	12,573,517	6%
2	2	Retail/Service, Office	725,168	<1%
3	1	Retail/Service	63,640	<1%
TOTAL	8		13,362,325	6%

2.3.3 CATI Telephone Survey

A CATI telephone survey was implemented with a stratified random sample of Prescriptive Program participants, resulting in 90 completed interviews.

Sampling

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.[9] The CATI sample used the same stratum boundaries as the gross impact M&V sample described in the previous section.

The sampling unit for the CATI telephone survey was the unique program participant. When the sample was developed, there were 850 unique participants who had completed 1,560 projects. Projects associated with duplicate contact names were removed from the sample (in cases where a single person was involved in more than one project application). In general, projects with larger savings were retained in the sample. 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).

It should be noted that at the time when the sample was developed, using the May 10, 2010 version of the program tracking database, not all PY2 final applications had been processed and paid out. Therefore, only 850 unique contacts were included in the sample frame (compared to a total of 956 unique contacts with 1,739 projects in the final program database). Ninety of them were interviewed, which resulted in a precision level of +/-6% for net-to-gross questions and a precision level of +/-8% for process questions (at a 90% confidence level).[10]

Table 2-8 provides a summary of the sampling approach used for the net impact analysis, by stratum. The table shows that the 90 completed interviews represent 20% of program savings.

[9] Stratum 1: large savers (>588,730 kWh); Stratum 2: medium savers (between 187,605 and 588,730 kWh); Stratum 3: small savers (<=187,605).

[10] The difference in precision between net-to-gross questions and process questions is the result of net-to-gross findings being based on savings and process findings being based on respondents. Since larger projects were oversampled, precision levels are slightly higher for net-to-gross results.

Table 2-8. 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	63	69,950,322	33.5%	23	29,584,289	42%
2	239	75,361,039	34.2%	36	11,522,965	15%
3	1,437	68,210,513	32.3%	31	2,274,827	3%
TOTAL	**1,739**	**213,521,873**	100.0%	**90**	**43,382,081**	**20%**

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 weights in Table 2-9 were applied to respondents in the three strata:[11]

Table 2-9. Process Weights

Stratum	Population	Completes	Weight
1	57	23	0.233
2	207	36	0.541
3	692	31	2.101
TOTAL	**956**	**90**	

Survey Disposition

Table 2-10 below shows the final disposition of the 850 unique contacts included in the original sample frame for the participant survey. Contact with 39% of the sample was attempted at least once, resulting in 90 completed surveys.

Overall the response rate for this survey was 28% computed as the number of completed surveys divided by the number of eligible respondents.[12]

[11] Process weights were calculated using the entire prescriptive population of 956 unique contacts, not the original 850 contacts from which the sample was developed.

[12] Eligible respondents include the following dispositions: a) Completed Surveys, b) Unable to Reach, c) Callback, and d) Refusal.

Table 2-10. Sample Disposition for NTG and Process Analysis

Sample Disposition	Customers	%
Population of Unique Customers	850	100%
Completed Survey	90	11%
Not Dialed	517	61%
Unable to Reach	130	15%
Callback	81	10%
Refusal	15	2%
Phone Number Issue	9	1%
Knowledgeable Person No Longer There	6	1%
Mistakenly Reported Survey Done Online	2	0%
Response Rate	*28%*	

Source: ODC CATI Center.

Profile of Survey Respondents

The highest number of survey respondents is from the light industry sector (33%), followed by the warehouse (18%) and heavy industry (12%) sectors. These three sectors are somewhat overrepresented in the survey, compared to all companies in the population. This is not surprising given that the sampling strategy focused on projects with the highest savings, and projects in these three sectors tend to be larger than projects in the other sectors. On the other hand, the office sector is somewhat underrepresented in the survey, and the restaurant, grocery, and K-12 school sectors are not represented at all. All four sectors have among the smallest per project savings and were therefore not as heavily targeted in the sample. Overall, however, the distribution is largely similar to that of all 958 companies that participated in the Prescriptive Program in PY2.[13]

Table 2-11 presents the comparison of business sectors for survey respondents and the overall population of participating companies.

[13] Note that the number of unique *companies* (958) is slightly different than the number of unique *contacts* (956). This is due to the fact that, in some cases, the same person was listed as the project contact for more than one company and, in other cases, one company has more than one contact person.

Table 2-11. Business Sector of Survey Respondents

Sector	Respondents (n=90)	Population (N=958)
Light Industry	33%	28%
Warehouse	18%	14%
Heavy Industry	12%	8%
Office	10%	17%
Retail/Service	8%	9%
Medical	4%	4%
Hotel/Motel	2%	1%
College / University	1%	1%
Restaurant	0%	3%
Grocery	0%	2%
K-12 School	0%	2%
Miscellaneous	11%	12%

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

Section 3. Program Level Results

This section presents the Prescriptive program impact and process evaluation results.

3.1 Impact

3.1.1 Tracking System and Default Savings Review

Tracking System Review

To support the impact evaluation, the evaluation team was given direct access to ComEd's on-line tracking system and data. The on-line system was easy to work with and provided viewing access to the project tracking data plus downloading rights to project documentation in electronic format for each project. This documentation was complete and greatly facilitated the evaluation, while removing a step that commonly impedes evaluation progress: a data request for the very information that ComEd made available in the tracking database itself. This level of access and documentation is highly commendable and represents best practice in this area for a Prescriptive program.

The evaluation team worked off of a copy of the tracking system data uploaded by ComEd to their secure SharePoint site on a periodic basis. ComEd's tracking system provides on-line access to standard reports developed for internal program reporting and management functions. Several reports are similar to datasets analyzed in the evaluation process, and with some modification the reports could serve EM&V functions as well.

The tracking system records for Prescriptive ex ante peak demand impact (kW) were correctly populated at the measure level, however, project-level kW variables in the ComEd tracking system appeared to be missing measure component values for projects consisting of Custom and Prescriptive measures. We summed measure level impacts to develop project and program ex ante demand impacts.

Complete documentation that explains the field names and how they are used in tracking data reporting would be useful. This recommendation was also made in the PY1 report, and continues to be valid for PY2.

Default Savings Review

The memo included in Appendix 5.2.2 provides the evaluation team's technical review of ComEd's measure default savings for PY2 as documented in Appendix A of the C&I

Prescriptive program operations manual.[14] The purpose of the review was to assess the underlying algorithms, assumptions, and calculated default savings proposed by ComEd for PY2.

ComEd is to be commended for improving estimates of HVAC full load hours from PY1 to PY2. The memo identifies a number of further updates that could be addressed through an iterative process between the evaluation team, ComEd, and the program implementer in PY3.

3.1.2 Gross Program Impact Parameter Estimates

Ex post gross program impacts were developed for this evaluation for the Prescriptive program based on engineering file review, participant interviews, and detailed M&V for a sample of applications.

Gross Impact Adjustments Triggered by the Participant Phone Survey

A brief set of questions in the CATI survey was asked regarding installed measures, removed equipment, installation in non-air-conditioned space, and lighting hours of use to support the gross impact evaluation. Gross impacts were adjusted *only* for those projects in the engineering file review group. Of the 90 completed phone interviews, 28 covered projects that were also in the file review sample for gross impact evaluation.

Table 3-1 identifies the survey question (paraphrased) or issue that was addressed, the participant responses, and conclusions. As noted, the evaluation team only adjusted impacts based on participant responses when additional follow-up through engineering review of project files, conversations with site personnel, or on-site inspection could be conducted. Responses may be used to inform future adjustments to default savings and identify issues for PY3 EM&V activities.

[14] ComEd *Smart Ideas for Your Business, KEMA Operations Manual, Updated August 18, 2009, Appendix A* (file provided: "Appendix A – Prescriptive Measures 090826.doc"). This document is sometimes referred to as a Technical Reference Manual (TRM).

Table 3-1. Participant Reponses to CATI Impact Questions

Survey Question	Participant Responses	EM&V Conclusion
Just to confirm, between June 1, 2009 and May 31, 2010 did <COMPANY> participate in ComEd's Smart Ideas for Your Business Program at <ADDRESS>?	81 participated as described. Of the survey respondents, 28 were also in engineering file review sample.	Gross impact adjustments indicated by participant responses are made only for the 28 projects that were also selected for the engineering file review process.
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: 1 of 27 respondents added fixtures. Respondent added 6 additional "New T5/T8 fixtures"	Project 1288 impacts reduced 2.5% (adjusted 0.813 kW lower, based on 6 fixtures of the average new wattage for the project)
What types of linear fluorescent lights were removed?	Of 24 respondents: 5 reported T8s only; 13 reported T12s only; 1 reported T5s, T8s, and T12s; 2 reported other; and 3 did not know any of the removed fluorescent types	All 6 of the projects reporting T8s or T5s were allowable in the baseline by the measure definition (e.g. New T8/T5 fixture measure bases savings on a delta watts, High performance T8 and reduced wattage T8 allows standard T8s as the baseline)
If the type of linear fluorescent lights removed were T12 fixtures: "What types of ballasts were in use on the linear fluorescent fixtures you removed?"	Of 14 respondents who report T12 fixtures, 7 were able to identify a ballast type: 1 said electronic, 5 said magnetic ballast, 1 said both types	For the respondent that claimed electronic ballasts, installed measures allowed electronic ballasts in the baseline
Placed lighting equipment in storage	Yes: 2 of 81 (1 placed 25% in storage, 1 did not know)	Do not adjust impacts without direct verification
Installed lighting equipment at another location	Yes: 7 of 81 (percentages: 2%, 20%, 40%, 75%, 100%, 100%, 1 did not know)	Do not adjust impacts without direct verification - respondents may have been referring to removed equipment
Was the new lighting equipment installed in air conditioned (cooled) space?	(29 yes, 38 no, 11 some was/some wasn't, 3 blank)	Adjust impacts for 14 projects in engineering review sample where respondent answered "no"
Type of exit sign removed	4 incandescent, 2 CFL	Adjust impacts for project 1040 in engineering review sample

Table 3-2 and Table 3-3 below provide the un-weighted average annual equivalent full load hours (EFLH) of operation for lighting among all respondents (68) who provided complete responses to the lighting hours of operation questions.

Table 3-2. Participant Reponses to Lighting EFLH Questions by Business Type

Business Type	Respondent Count	Un-weighted Average Annual Lighting EFLH
Light Industry	27	5,217
Warehouse	13	4,457
Heavy Industry	8	4,676
Retail/Service	6	4,088
Miscellaneous	6	5,554
Office	4	5,060
Medical	3	6,564
College / University	1	4,693
Total	68	4,980

Table 3-3. Participant Reponses to Lighting EFLH Questions by Measure

Primary Measure Type	Respondent Count	Un-weighted Average Annual Lighting EFLH
New T5/T8 Fixture	52	4,835
Delamp 4' with reflector	5	5,765
HP T8 (4') and ballast	3	3,647
Occupancy Sensor Lighting	2	5,771
Reduced Wattage T8 (4') and Ballast	2	4,551
Reduced Wattage T8 (4') Lamp Only	2	5,471
Delamp 8' with reflector	1	7,160
HW CFL 30W +	1	8,760
Total	68	4,980

Realization Rates for the Prescriptive Program

There are two basic statistical methods for combining individual realization rates from the sample projects into an estimate of verified gross kWh savings for the population when stratified random sampling is used. These two methods are called “separate” and “combined”

ratio estimation.[15] In the case of a separate ratio estimator, a separate gross kWh savings realization rate is calculated for each stratum and then combined. In the case of a combined ratio estimator, a single gross kWh savings realization rate is calculated directly without first calculating separate realization rates by stratum.

The separate ratio estimation technique was used to estimate verified gross kWh savings for the Prescriptive program. The separate ratio estimation technique follows the steps outlined in the California Evaluation Framework. 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 verified gross kWh. The results are summarized in Table 3-4, Table 3-5, and Table 3-6 below.

The realization rate for demand savings is slightly less than 1.0, while the realization rate for energy is much greater, at 1.21. The energy realization rate of 1.21 reflects a consistent pattern across all strata.

Table 3-4. Gross Impact Realization Rate Results for the Prescriptive Sample

Sampling Strata	Sample-Based Ex Ante kWh Impact Claimed	Sample-Based Ex Ante kW Impact Claimed	Sample-Based Ex Post Gross kWh Impact	Sample-Based Ex Post Gross kW Impact	Sample-Based Ex Post Gross kWh Realization Rate	Sample-Based Ex Post Gross kW Realization Rate
1	31,661,953	7,079	41,328,168	6,875	1.31	0.97
2	6,864,330	1,439	8,317,427	1,558	1.21	1.08
3	1,341,497	289	1,502,270	268	1.12	0.93
TOTAL	39,867,780	8,807	51,147,865	8,702	1.21	0.99

[15] A full discussion and comparison of separate vs. combined ratio estimation can be found in Sampling Techniques, Cochran, 1977, pp. 164-169.

Table 3-5. Gross kWh Realization Rates and Relative Precision at 90% Confidence Level

Sampling Strata	Relative Precision ± %	Low	Mean	High
Stratum 1	11%	1.17	1.31	1.45
Stratum 2	18%	0.99	1.21	1.43
Stratum 3	18%	0.92	1.12	1.32
Total kWh RR	9%	1.11	1.21	1.32

Table 3-6. Gross kW Realization Rates and Relative Precision at 90% Confidence Level

Sampling Strata	Relative Precision ± %	Low	Mean	High
Stratum 1	4%	0.94	0.97	1.01
Stratum 2	16%	0.91	1.08	1.26
Stratum 3	13%	0.81	0.93	1.05
Total kW RR	7%	0.92	0.99	1.05

3.1.3 Gross Program Impact Results

Based on the gross impact parameter estimates described previously, gross program impacts were derived for the PY2 Prescriptive program. The results are provided in Table 3-7.

Table 3-7. Gross Parameter and Savings Estimates

Segment	kWh, Ex Ante	kWh, Ex Post	kWh RR	kW, Ex Ante	kW, Ex Post	kW RR
Total	213,521,873	259,093,058	1.21	45,641	45,106	0.99

Some general observations from the gross impact sample:

- The realization rate for kWh was 1.21. The primary reason for being greater than one is that verified annual hours of use were higher than default values for many projects. Annual hours of use were verified through a CATI survey with program participants or through on-site M&V. The hours of use adjustments increased and decreased impacts, depending on the project, but similar to PY1, there were a substantial number of industrial and warehouse business types with verified hours that exceeded default values.

- A factor that reduced both the kWh and kW realization rates was a finding that a substantial number of sites had installed lighting in non-cooled spaces, and ComEd includes an HVAC interaction factor by default in most lighting measures.

- Adjustment factors that increased or decreased ex post impacts, depending on the project, include quantity adjustments and baseline equipment not matching default assumptions. The overall impact of these adjustments on realization rate was less than the hours of use and non-cooled installation adjustments.

- The realization rate for demand was 0.99, reflecting that ComEd's quality control and verification procedures for the Prescriptive Program are rigorous and ensure high quality projects and tracking data. These procedures should be maintained.

3.1.4 Net Program Impact Parameter Estimates

Once gross program impacts have been estimated, net program impacts are calculated by multiplying the gross impact estimate by the program Net-to-Gross (NTG) ratio. As mentioned above, the NTG ratio for the PY2 Prescriptive program was estimated using a customer self-report approach supplemented by vendor interviews and on-site data collection. This approach relied on responses provided by program participants during the CATI phone survey to determine the fraction of measure installations that would have occurred by participants in the absence of the program (free-ridership). For participants receiving more than $50,000 of incentives in PY2, vendor interviews were conducted to assess program influence on vendors identified by the participant as influential the decision to install program measures. 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 and included in the sample.

A quantification of spillover was included in the calculation of NTG ratio for PY2 for spillover candidates identified through the participant phone survey. However spillover effects estimated in this manner were found to be quite small as discussed below.

The relative precision at a 90% confidence level is provided in Table 3-8.

Table 3-8. NTG Ratio and Relative Precision at 90% Confidence Level

Sample Strata	Population (N=1739)	NTG Interviews (n=90)	NTG Sample (n=114)	Sample kWh Wgts.	Relative Precision ± %	Low	NTGR Mean	High
1	63	23	23	33.5%	5%	0.73	0.77	0.81
2	239	36	38	34.2%	5%	0.72	0.76	0.80
3	1437	31	53	32.3%	8%	0.63	0.68	0.73
Total	1739	90	114	100.0%	6%	0.69	0.74	0.78

Comparing PY1 and PY2, the mean NTG ratio increased significantly from PY1 (0.68) to PY2 (0.74). The primary driver in this increase was substantially lower free-ridership in the large project group. For large projects, the mean NTG ratio increased from 0.59 in PY1 to 0.77 in PY2. The increase was due to much higher component scores for factors that indicate the program had a greater influence on the decision to implement a project and to implement that project sooner than would have occurred without the program. The No-Program score for large projects increase from 0.40 in PY1 to 0.67 for PY2. One could speculate this was due economic conditions limiting investment in large discretionary projects, and these customers not intending to implement big energy efficiency projects until after contact by the program or trade allies.

Mean free-ridership was higher for the smaller project size category (32% free-ridership, 0.68 NTGR for the small project sample stratum) than for medium and large size projects (NTGR of 0.76 and 0.77 respectively). There were 10 projects in the sample of 114 that had a NTG ratio below 0.5, and most were small projects. Only 1 of 23 (4%) of large projects had a NTG ratio below 0.5, while 3 of 38 (8%) medium sized projects had a NTG ratio below 0.5, but 6 of 53 (11%) of small projects had a NTG ratio below 0.5. Within the small project strata, 4 of the 6 projects with a NTG below 0.5 were scored greater than 90% free-ridership, where the participant had learned about the program after the decision to implement the project had already been made. The impact of these 10 projects with NTG ratios below 0.5 is to lower the overall NTG ratio for the program from 0.78 to 0.74.

The NTG ratio estimate for PY2 included a more complex "standard rigor" level of analysis conducted on larger projects, defined as those with incentives greater than $50,000 for a single project or multiple projects under a single contact name. The expanded standard rigor analysis included additional questions regarding non-program influence factors and the possibility of triggering an interview with the vendor to determine the extent of program influence on the vendor, if the participant said the vendor was important to the decision to proceed with the

project. For PY2, 27 of 90 respondents in our sample went through the standard rigor approach, and 11 of the 27 standard rigor interviews had responses that triggered follow-up interviews with 10 different vendors.

No adjustments were made to increase to 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. For example, 4 projects mentioned "green" or reducing carbon footprint, but their other responses indicated strong program influences (rating 10 of 10). For standard rigor projects, the simple average of program influences in the Timing and Selection score for PY2 was very high, at 0.94, while non-program influences averaged only 0.68 for the standard rigor group.

The effect of including 10 vendor interviews in the sample was to raise the NTG ratio for large projects from 0.76 to 0.77 (estimated by removing adjustments), and to raise the overall program NTG ratio from 0.73 to 0.74. This is a relatively small change. One reason for this small increase was that end-user participants with large projects had already given ComEd relatively high scores for program influence, particularly the availability of the incentive. However, the average vendor influence score was 0.97, based on the 7 interviews that resulted in a vendor score (3 of the interviewed vendors did not provide responses that could be scored, and one responded on only 1 of 2 projects).

One national retail/service chain was captured among participants reporting that multiple projects went through the same decision process. This national chain responded on behalf of 12 stores, and had a free-ridership score of 0.57. This participant said that if the program had not been available, it was very likely that they would have installed exactly the same equipment within 6 months (scoring a 9 out of 10 where 10 equals extremely likely). This particular participant was not asked the standard rigor questions, which might have provided further insights (the sum of their incentives fell just under the $50,000 threshold). The standard rigor questions ask about standard practice in the industry and corporate policies and guidelines. Other multiple-project respondents had only one to three other local facilities and had free-ridership near or less than the average.

Participant Spillover

The existence of participant spillover was estimated by identifying spillover candidates through questions asked in the participant phone survey and conducting follow-up data collection on those indicating potential to quantify spillover impacts. The effort to quantifying spillover savings, limited to the on-site M&V sample, identified 885,314 kWh and 136 peak kW that were added to ComEd's net PY2 Prescriptive savings.

The evidence of spillover from the CATI participant survey for the Prescriptive program is presented in Table 3-9 below.

Table 3-9. Evidence of Spillover in PY2 Prescriptive from Participant Phone 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 90 survey respondents that responded to this question, 15 said "Yes" (17%). These respondents identified a total of 25 energy efficiency measures, 1 renewable measure, and 2 studies.
What type of energy efficiency measure was installed without an incentive?	(10) T5 or T8 lamps or Lighting upgrades (3) CFLs or LED lamps (1) VSD in HVAC (1) Automation controls (5) Efficient motors (3) Lighting controls (2) Programmable thermostats (1) Solar panels (2) Energy efficiency studies
On a scale of 0 to 10, where 0 means "not at all significant" and 10 means "extremely significant," how significant was your experience in the ComEd program in your decision to implement this energy efficiency measures?	For the 28 implemented measures and studies: (16) Rating of 0 (3) Rating between 1 and 3 (1) Rating between 4 and 6 (8) Rating between 7 and 10
If you had not participated in the ComEd program, how likely is it that your organization would still have implemented this measure? Use a 0 to 10, scale where 0 means you definitely would NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?	For the 28 implemented measures and studies: (8) Rating between 0 and 3 (1) Rating between 4 and 6 (19) Rating between 7 and 10
Why did you purchase this energy efficiency measure without the financial assistance available through the ComEd's program?	For the 8 implemented measures indicating strong ComEd influence: (2) Decided not to apply (1) Rebate too small (1) Lack of knowledge of the program (1) Were told the money had run out (2) Installed at out of state location (1) Don't know

These findings suggest that spillover effects for PY2 are relatively small, with only 6 respondents pursuing 8 measures where a strong influence was indicated for the ComEd

program. While participating customers are installing other energy efficiency improvements outside of the program, they attribute little influence to the program in their decision to install these additional measures and further state that these actions generally would have been implemented regardless of their program participation experiences.

Aligning the spillover candidates with the engineering file review sample created a list of only three sites that we classified as spillover candidates. Only two of the three sites agreed to schedule a site visit. One of the two sites did have a spillover project, and it was quite substantial. The project consisted of increasing the scope of a metal halide to T8 fixture conversion project in a large industrial plant. The customer received an incentive for converting the lighting in the manufacturing plant, and added a warehouse/shipping area to the project without applying for rebate. The project involved 480 fixtures for which a rebate was not requested. The on-site M&V quantified 885,314 kWh and 136 peak kW that were added to ComEd's net PY2 Prescriptive savings.

There appeared to be stronger evidence for spillover in PY1 than in PY2:

- In PY2, only 15 of 90 survey respondents answered "Yes" (17%) to the screening question of whether they had implemented any additional energy efficiency measures without incentives. In PY1, 33 of 85 respondents answered "Yes" (39%).
- In PY2, only 8 respondents gave their ComEd program experience a rating or 7 or higher in their decision to implement potential spillover measures, compared with 17 respondents in PY1.

Considering the higher scores found for the importance of the program and incentives in PY2 than in PY1, one could speculate that reduced spillover was due economic conditions limiting investment in discretionary projects. The EM&V team will likely collect spillover data in this same manner for the PY3 evaluation.

Non-Participant Spillover Qualitative Review

A brief set of questions in the market actor interviews focused on changes in sales over the past two years of efficient and less efficient equipment. To check for the potential of non-participant spillover, respondents were asked to score the importance of ComEd's program versus other factors that brought about any changes reported. The questions did not include questions to accurately quantify program participating versus non-participating sales, which would be needed to quantify non-participant spillover.

In lighting, 12 lighting market actors responded to some or all of the questions in the "Lighting Module" (refer to the trade ally survey instruments in Appendix 5.1.2), and five HVAC market actors responded to the HVAC module. They were split roughly half active in ComEd's program, and half not active. Notable responses are provided below:

- Four of the 12 lighting vendors scored ComEd program importance at 9 or greater in the changes they reported in the last two years for linear fluorescent lighting sales. Of these four, three were active in the program (total reported commercial projects per year, in and out of program) :
    - One active vendor (22 projects per year) reported shifting from 95% HP T8 and 5% T5 to 90% HP T8 and 10% T5. This vendor also reported a shift from 85% CEE qualified ballasts for high performance or reduced wattage two years ago to 100% qualified currently.
    - One active vendor (under 100 projects per year) reported shifting from 5% T5, 47.5% HP T8, and 47.5% Standard T8 to 30% T5, 35% HP T8, and 35% standard T8. This vendor also reported a shift from 50% CEE qualified ballasts two years ago to 100% qualified currently.
    - One active vendor (20 projects per year) reported shifting from 20% T5 and 80% standard T8 to 20% T5, 40% HP T8, and 40% standard T8 (half of T8 sales are now HP T8). This vendor also reported a shift from 80% to 90% CEE qualified ballasts two years ago to 100% qualified currently.
    - One inactive vendor (5 to 6 projects per year) reported shifting from 50% standard T8 and 50% T12s to 100% HP T8. This vendor also reported a shift from 40% CEE qualified ballasts two years ago to 100% qualified currently.
- Of 11 lighting vendors responding, none reports selling magnetic ballasts currently, and none report selling magnetic ballasts in the past two years.
- Four of the five HVAC vendors scored ComEd program importance at 6 to 8 in the changes they reported in the last two years for high efficiency HVAC. Of these four, three were active in the program (total reported commercial projects per year, in and out of program) :
    - One active vendor ($35 million in sales) reported that 40% of sales were high efficiency currently, but wasn't sure what they were 2 two years ago.
    - One active vendor reported shifting from 50% high efficiency HVAC to 100% high efficiency in the past two years.
    - One active vendor reported shifting from 10% to 20% high efficiency HVAC to 25% high efficiency in the past two years.
    - One inactive vendor reported shifting from 10% high efficiency HVAC to 20% high efficiency in the past two years.

These results provide evidence for program influence on vendors, and provide some evidence of the potential for non-participant spillover. To quantify non-participant spillover would require a much more detailed interview supported by sales data figures, to allow an estimate of the increase in high efficiency sales in the past two years, that were influenced by ComEd, sold in the service territory, and did not go through the Prescriptive program. The PY3 evaluation will explore approaches to quantify non-participant spillover.

3.1.5 Net Program Impact Results

Net program impacts were derived by multiplying gross program savings by the estimated NTG ratio. Table 3-10 and Table 3-11 provide the program-level evaluation-adjusted net impact results for the PY2 Prescriptive program. The NTG ratio is the same for energy and demand savings, 0.74, due to the use of the identical responses from each contributing participant (and other sources) and the nearly identical sample-based weights for both calculations.

The chained realization rate (gross RR * NTG Ratio) is 0.90 for kWh and 0.73 for kW.

Table 3-10. Program-Level Evaluation-Adjusted Net kWh Impacts for PY2

Segment	Ex Ante Gross kWh	Ex Post Gross kWh	kWh RR	Ex Post Net kWh	NTGR (ex post gross)
Total	213,521,873	259,093,058	1.21	191,895,792	0.74

Table 3-11. Program-Level Evaluation-Adjusted Net kW Impacts for PY2

Segment	Ex Ante Gross kW	Ex Post Gross kW	kW RR	Ex Post Net kW	NTGR (ex post gross)
Total	45,641	45,106	0.99	33,409	0.74

3.2 *Process Evaluation Results*

The process component of the Smart Ideas for Your Business Prescriptive Program evaluation focused on program design and processes, program implementation, marketing and outreach, and participant satisfaction. The primary data sources for the process evaluation were a telephone survey with 90 program participants and 30 in-depth interviews with participating and non-participating contractors and trade allies. Please refer to Section 2.2 for more information on the primary research conducted in support of this evaluation.

3.2.1 Program Theory and Logic Model

Based on information provided by the program manager, there were no significant changes to the desired outcomes of the program nor to the activities undertaken to achieve these outcomes. As a result, the program theory/logic model was not revised for PY2. Please refer to the PY1 report for more information on this topic and the program theory and logic model for the Prescriptive Program.

3.2.2 Participant Profile

In PY2, 958 companies completed 1,739 projects that accounted for 213.5 GWh of ex ante gross savings.[16] PY2 participants represent a range of business sectors. Key observations, by business sector, are:

- Light industry represents the largest share of participants (28%), energy savings (32%), and demand savings (36%).
- The retail/service sector accounts for the largest share of projects (27%).
- Hotels/motels account for the smallest number of projects in any one sector (10) but have the largest kWh savings per project.
- The grocery sector has the highest number of projects per participant[17] (9.2) but one of the smallest energy savings per project (27.4 MWh). This is driven by one grocery chain, which completed 121 of the 157 PY2 projects in this sector.
- Colleges/Universities and the retail/service sector also have a high average number of projects per participant (5.7 and 5.2, respectively), again driven by a few companies with a large number of projects.

Table 3-12 summarizes the distribution of PY2 participants, projects, and energy savings by business sector.

[16] Ex ante gross savings reported in this section are based on the program tracking database.
[17] Participants that completed projects in more than one sector are classified in the sector with the highest number of projects.

Table 3-12. Participants, Projects, and Ex Ante Gross Savings by Business Sector

Sector	Projects		Participants		Projects/ Partic.	Ex Ante Gross Energy Savings		kWh / Project	Ex Ante Gross Demand Savings	
	#	%	#	%		kWh	%		kW	%
Light Industry	306	18%	267	28%	1.1	68,083,515	32%	222,495	16,418	36%
Warehouse	157	9%	134	14%	1.2	38,677,646	18%	246,354	8,038	18%
Heavy Industry	100	6%	81	8%	1.2	27,672,859	13%	276,729	6,608	14%
Retail/Service	462	27%	89	9%	5.2	23,137,763	11%	50,082	5,040	11%
Office	239	14%	161	17%	1.5	15,390,223	7%	64,394	3,552	8%
Medical	49	3%	37	4%	1.3	13,665,747	6%	278,893	1,662	4%
Grocery	157	9%	17	2%	9.2	4,302,694	2%	27,406	488	1%
Hotel/Motel	10	1%	9	1%	1.1	3,088,478	1%	308,848	461	1%
College / University	34	2%	6	1%	5.7	2,161,249	1%	63,566	410	1%
Restaurant	36	2%	24	3%	1.5	756,950	0%	21,026	120	0%
K-12 School	17	1%	15	2%	1.1	514,763	0%	30,280	108	0%
Miscellaneous	172	10%	118	12%	1.5	16,069,987	8%	93,430	2,737	6%
TOTAL	**1,739**		**958**		**1.8**	**213,521,873**		**122,784**	**45,641**	

Source: PY2 Program Tracking Database. "Miscellaneous" is a "BUS_TYPE" category from the tracking database, and is not broken out further in the database. We used the categories as they are tracked by ComEd.

Overall, program participation increased substantially compared to PY1, from 455 projects completed by 346 participating companies to 1,739 projects completed by 958 companies. In PY1 the program became oversubscribed in September, and all projects had to be waitlisted after this time. Although oversubscription was also an issue in PY2, the waitlist was not started until December, and only lighting measures were subject to waitlisting. Because of the increased budget in PY2, the program was able to accept applications for a longer time and complete significantly more projects. This resulted in overall energy and demand savings that more than doubled from PY1.

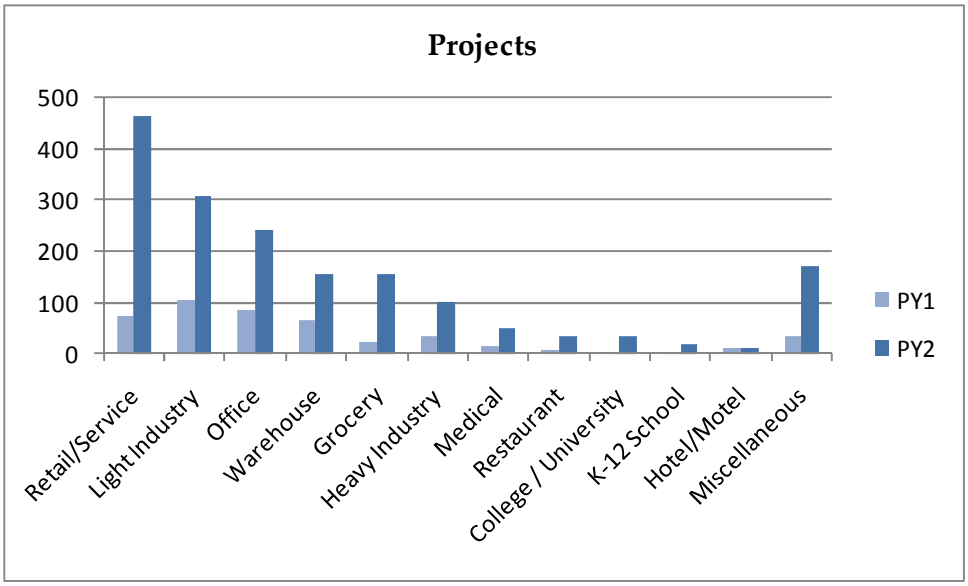
Key changes in participation between PY1 and PY2 include:

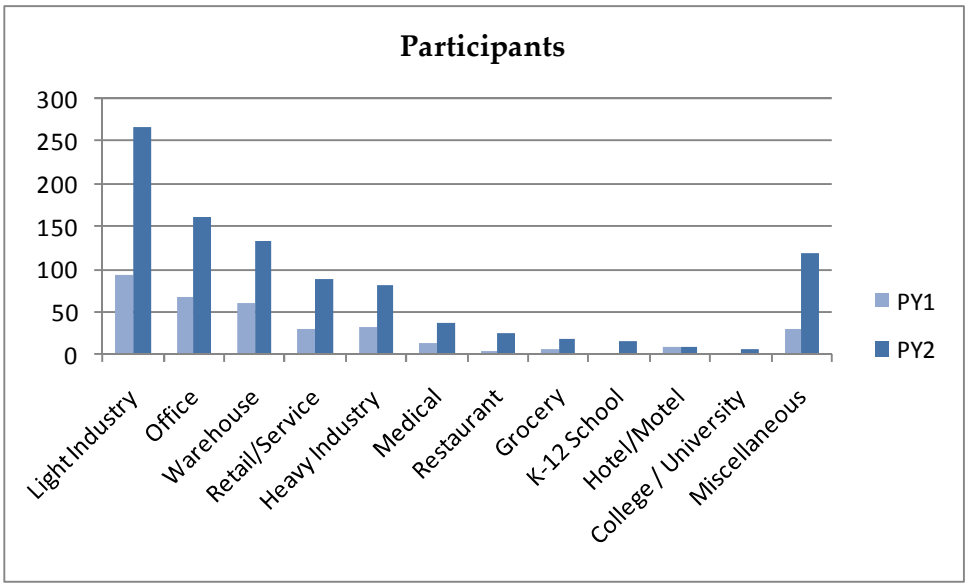
- The retail/service sector had the largest increase in the number of projects, from 73 in PY1 to 462 in PY2. This increase was largely driven by heavier involvement of chain companies. One company completed 92 projects in PY2, and three other participants completed over 30 projects. However, because projects in this sector tend to be small, the overall impact on program savings is smaller than for other sectors.
- The increased participation of customers in the light industry sector had the most impact on program savings. The number of light industry projects in PY2 nearly tripled (103 in PY1 and 306 in PY2), resulting in an almost four-fold increase in energy and demand

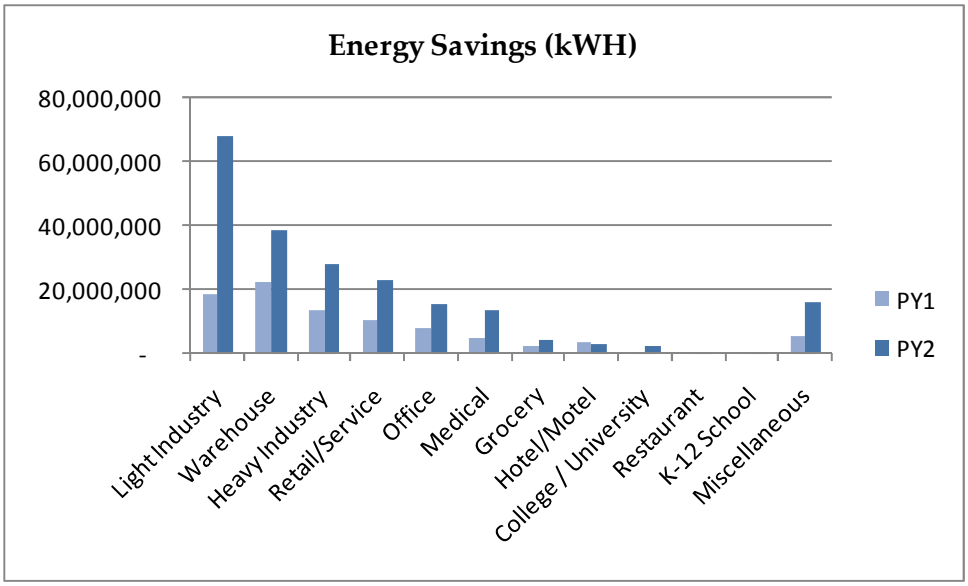
savings. As a result, the light industry sector accounted for 32% of program energy savings in PY2 (up from 21% in PY1) and for 36% of program demand savings (up from 24% in PY2).

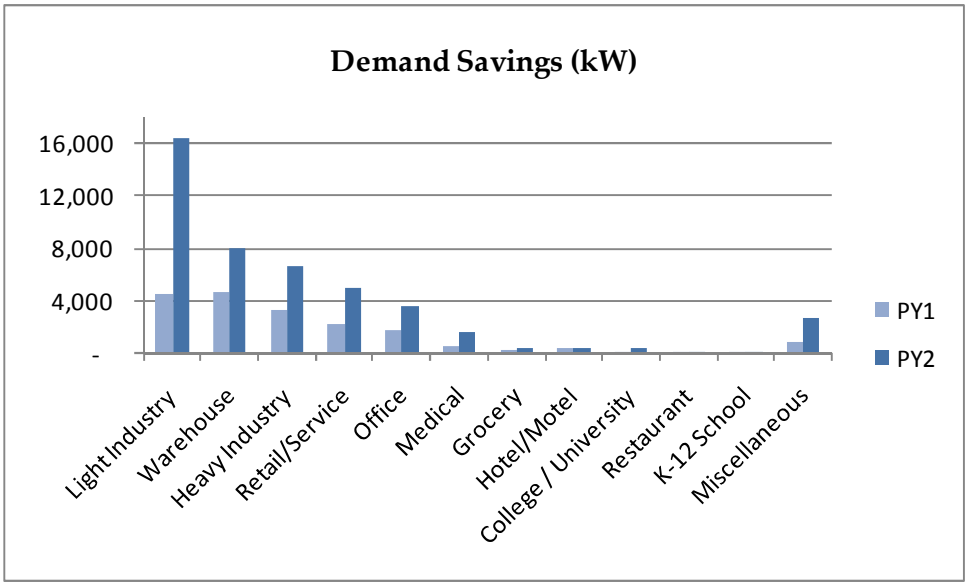
Figure 3-1 compares the number of projects, participants, and ex ante gross energy and demand saving by business sector and program year.

Figure 3-1. Projects, Participants, and Ex Ante Gross Savings by Business Sector and Program Year





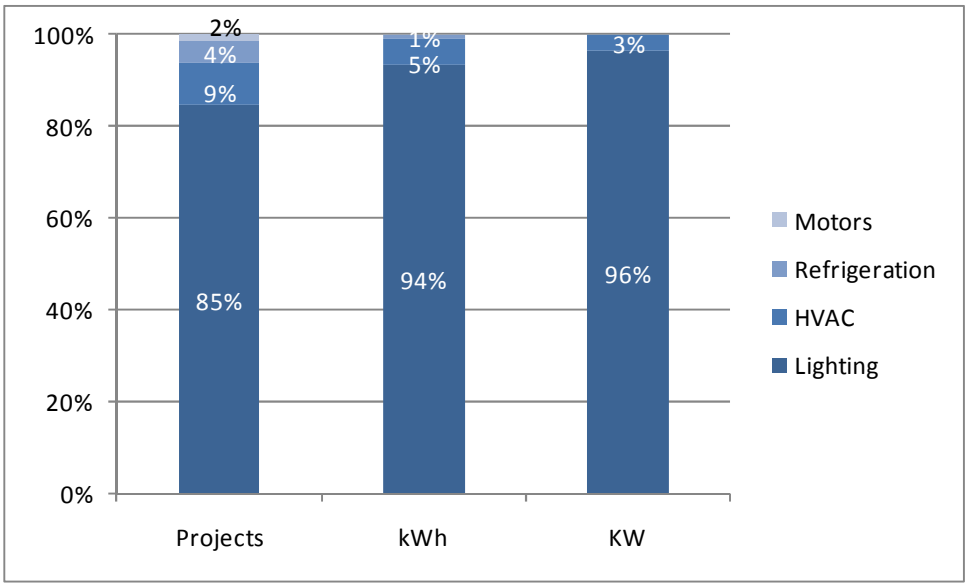




Source: PY2 Program Tracking Database.

In PY2, the vast majority of projects (85%), energy savings (94%), and demand savings (96%) were associated with the implementation of lighting measures. HVAC measures accounted for 9% of projects, 5% of energy savings, and 3% of demand savings. Refrigeration and motors accounted for 4% and 2%, respectively, of projects, but less than 1% of energy and demand savings. The distribution of PY2 projects and savings by end use is almost identical to PY1 where lighting accounted for 85% of projects, 92% of energy savings, and 95% of demand savings. It is worth noting that in the combined Prescriptive and Custom programs, the lighting percentage dropped from PY1 to PY2, but the Prescriptive lighting percentage remained high in part because ComEd moved many lighting measures from Custom to Prescriptive.

Figure 3-2: Distribution of Projects and Savings by End Use



Source: PY2 Program Tracking Database.

Other characteristics of program participants, based on telephone survey results, include:

- A majority (72%) of participants own and occupy the facility at which the project was implemented, while 21% rent the facility and 4% own it but rent it to another company.
- About half (49%) of program participants report that the participating facility is one of several locations owned by the company.
- The distribution of reported company size is relatively even: 40% consider their company as large, 32% as medium, and 26% as small, compared to other companies in the same sector.

3.2.3 Program Design and Processes

ComEd's Smart Ideas for Your Business Prescriptive Program offers incentives designed to encourage the implementation of energy-efficiency measures. The Prescriptive Program targets specific retrofits and replacements opportunities in lighting, HVAC, refrigeration, and motor systems.

Application Process

The application process did not change compared to PY1. The application process includes both a pre-approval and final approval application. Unlike the Custom Program, where the pre-approval application is required of all projects, pre-approval applications are only required for

prescriptive projects where the review team must verify the pre-existing conditions.[18] However, while not mandatory, pre-applications are strongly encouraged for all prescriptive projects in order to reserve funding. Program guidelines stipulate that projects must be completed within 90 days of pre-approval (if applicable); however, many projects apply for and are granted an extension. The length of extensions is based on the need of the customer and can be significant. Program participants must submit the final approval application within 60 days of project completion.

Overall, a majority of respondents filled out either the initial or final program application themselves (63%). Fifty percent of those who did not fill out the paperwork had it done by a contractor. Most participants who completed the paperwork themselves feel that the application forms clearly explain the program requirements and participation process (87%) and rate the application process as easy (73%).[19]

However, some participating contractors think that the Prescriptive Program application is still rather onerous and time-consuming. Both active and inactive contractors recommended simplifying the applications. As one active trade ally put it:

> *"Going back to the application, the simpler, the better. The less wordy, you know, just as simple as possible and easy to calculate is really going to be your most customer friendly"*

Participation Process

The participation process has not changed since PY1. Program implementers still have several project milestones at which they communicate with the participant, including a reservation letter following receipt of the pre-approval application, a reminder letter and phone call when it is getting close to the date of the reservation expiring, an extension letter when an extension is granted, a cancellation letter if the reservation expires, and a final letter with the rebate check to close out completed projects.

One participating lighting trade ally found that while the pre-approval application is nice to help determine what level of funding the project would receive, in the end his project received a lower than expected rebate because the preapproval was too high due to a mistake by one of the field reps. This problem, however, does not appear to be widespread, nor was it mentioned as a problem in the participant telephone survey. Program staff has noted that the implementation team added a new position dedicated to quality control.

[18] This includes applications that desire an incentive for Permanent Lamp Removal and/or New T8/T5 fixtures.
[19] A score of 7 or higher on a scale from 0 to 10, where 0 is "very difficult" and 10 is "very easy."

Customers were asked if they experienced any problems during the participation process. Only 4% of interviewed participants reported that they did. The only complaint was that the process takes too long. When asked how the program could be improved, 46% had no recommendations. Additionally, 71% of participants believe there are no drawbacks to participating in the Prescriptive Program. Ten percent indicated that the incentives were not high enough or the equipment was still too expensive to warrant the effort needed to participate in the program.

A few trade allies, however, when asked how the program could be improved, recommended that the program utilize online tracking of application milestones. Program staff would update the status of the application electronically and thus help ease communication and allow for a smooth participation process.

Customer Service

The Smart Ideas for Your Business Program employs the ComEd call center to field questions from program participants. Thirty-one percent of PY2 participants report having called the call center during the participation process. Almost all (89%) of the customers who contacted the call center were satisfied with the call center's ability to answer questions.

3.2.4 Program Implementation

Program Oversubscription

Similar to PY1, the Smart Ideas for Your Business program experienced strong demand for prescriptive measures in PY2. However, unlike in PY1, only prescriptive *lighting* measures were subject to waitlisting in PY2. Program staff decided to keep available non-lighting incentives in an attempt to diversify the program away from its heavy reliance on lighting. Because recruitment of non-lighting projects was open all year, program staff hoped that more non-lighting projects would be completed. However, as discussed in Section 3.2.2 above, lighting still accounted for 85% of all PY2 projects, the same percentage as in PY1.

The waitlist for lighting measures in PY2 did not begin until December (in PY1, projects were waitlisted beginning in September), and program staff seemed to manage the process better. There was more proactive communication with trade allies, and the addition of a fund-o-meter on the website was helpful in keeping all parties informed of funding status. As a result, significantly fewer participants in PY2 were aware of the waitlist (38% vs. 63%, respectively). According to program staff, all waitlisted projects were able to participate before the end of the program year.

However, oversubscription in PY2 was a still a problem for many of the interviewed lighting contractors. Many expressed frustration with ebbs and flows of their business directly related to the availability of program incentives. Some of the most active lighting contractors explained

that they tend to be very busy in the beginning of the program year, but once funding runs out business drastically slows down. As one contractor explained:

> *"We're either extremely busy when ComEd has the money, and we're extremely slow when there is no money available because people choose to wait until the next program year. So that's created a little difficulty in our business model."*

Another inactive lighting contractor believed that the long waitlists and oversubscription that came early in both PY1 and PY2 is harmful to the overall success of the Prescriptive program:

> *"The problem is that if they come to you in December and want to do a lighting retrofit and they say well what's my Edison rebate? There is none, the money is gone. You know if you want to wait until June to put this in well then we might be able to get you some money. Ok we'll wait, you know that's stymieing the industry and I think it's actually harming the idea behind the whole rebate."*

Despite the problems that arise from early oversubscription, overall many of the interviewed lighting contractors understood this problem is inherent during the first years of a program. Recommendations from these contractors to alleviate this problem include: (1) more upfront information about future plans of the program so contractors can plan accordingly and prevent unwarranted promises to customers, and (2) an even allocation of program monies that will last throughout the entire program year. With significantly increased savings goals and budgets in PY3, oversubscription should not present a problem for participating customers or involved contractors in PY3.

Account Managers

During PY2, Account Managers were being engaged more closely in the Smart Ideas for Your Business Program. For example, ComEd reported to the evaluation team that the "Smart Ideas Team has developed a toolkit for Account Mangers, and provides training opportunities and 'Lunch and Learns' to educate and inform the Account Managers" (ComEd feedback on PY1 evaluation recommendations). However, C&I program staff also noted that Account Manager involvement is still moderate, and an increase in involvement continues to be a goal for the C&I programs.

One interviewed trade ally[20] thought that because Account Managers have direct access and an already strong working relationship with the largest users of electricity, they should serve a main role for program promotion. However, this contractor believes that there is disconnect

[20] While this trade ally is mainly involved in custom projects, this comment is also relevant to the Prescriptive Program, as the program tries to attract larger projects in PY3.

between trade allies, customers, and their Account Managers and that a more collaborative environment between trade allies and Account Managers would help the largest customers better understand the program and how to take advantage of incentives.

According to the program tracking database, 901 of the 1,739 PY2 projects (52%) were implemented by customers with an Account Manager. Similarly, 43 of the 90 interviewed PY2 participants (48%) have an Account Manager. Program participants report the following involvement of Account Managers during PY2:

- Overall, about 23% of interviewed participants indicate that their Account Manager assisted with the project. It should be noted, however, that participants' responses in some cases contradicted information in the program database: 12 out of 43 participants (28%) who, according to the database, have an Account Manager reported that they do not have one; on the other hand, 7 out of 47 participants (15%) who, according to the database, do not have an Account Manager reported that their Account Manager assisted with the project.
- In PY2, 10% of participants first heard about the Smart Ideas for your Business Program through a ComEd Account Manager, significantly fewer than in PY1 (24%).
- Surprisingly, only 22% of interviewed participants discussed the program with a ComEd Account Manager. This is significantly fewer than in PY1 (45%).

The C&I program managers have indicated that they plan to more fully integrate Account Managers in PY3. Account Managers will have goals and receive incentives for bringing in projects starting in PY3. This is a positive change to the program and should contribute to increasing overall participation levels.

ComEd Trade Ally Network

Trade allies continue to be an important part of the Prescriptive Program. Similar to PY1, to become a trade ally, market actors have to complete an application and attend a seminar or webinar that explains the program and program processes. Currently, there are over 300 registered trade allies on the ComEd website. However, about two-thirds of registered trade allies have completed no projects or only one project in PY2. Plans for trade allies in PY3 include the stipulation that they must complete at least one project through the program and attend a basic training in order to remain a registered trade ally.

Program staff noted that enrollment of non-lighting trade allies still falls short of expectations. For trade allies that implement lighting projects, the C&I programs have begun to increase the focus on the quality of contractor work, including submitted applications, rather than attempting to enroll additional trade allies. Focusing on the quality of trade allies and providing additional educational opportunities should help reduce the number of application mistakes and dissatisfaction among customers.

More than half of the interviewed contractors (63%) are registered trade allies. Almost all of the interviewed trade allies have attended training, including basic trainings, breakfast meetings, and kick-off events. Overall, the contractors found training events to be useful in explaining the program requirements. As one trade ally explained:

> *"I've been quite pleased with the couple of events I've been to. I actually came out of there feeling like I knew quite a bit."*

One non-lighting trade ally, however, found the trainings to be somewhat frustrating as they cover too many topics:

> *"Everyone had to sit through stuff that really didn't pertain to them".*

A few of the smaller trade allies mentioned that the new trade ally requirements disproportionally affect smaller companies. Some of the training events often require a contractor to take off time from work, which is not feasible for some of the smaller contracting companies.

Contractors remain an integral component for a successful program. Review of the program tracking database shows that 86% of prescriptive projects were implemented with contractor support (compared to 92% in PY1). Three hundred and twenty-five unique contractors participated in prescriptive projects in PY2, while there were only 156 unique contractors in PY1. While only 31% of participating contractors are registered trade allies, they account for 62% of PY2 contractor-implemented projects.

Almost three out of five contractors (58%) involved in prescriptive projects implemented a single project in PY2, while 14 contractors (4%) completed 20 or more projects. However, the contractors that completed 20 or more projects accounted for 52% of all contractor projects. While the most active contractors generally implemented projects for chain companies, most of them also served a number of other companies, suggesting high levels of program promotion among this small group of participating contractors.

Table 3-13. PY2 Contractor Projects

Contractors with…	Custom Projects		
	Number of Contractors	Percent of Contractors (n=325)	Percent of Contractor Projects (n=1,492)
1 project	190	58%	13%
2 projects	47	14%	6%
3 projects	25	8%	5%
4 projects	12	4%	3%
5-9 projects	27	8%	11%
10-19 projects	12	4%	10%
20+ projects	14	4%	52%

Source: PY2 Program Tracking Database.

The telephone survey with program participants included questions about their use of contractors, their contractors' affiliation with the ComEd Trade Ally Network, and satisfaction with their contractors. Seventy-eight percent of interviewed participants report having used a contractor to complete the project.[21] Almost all participants (97%) who completed multiple prescriptive projects in PY2 used a contractor. Responses to the survey show that contractors play an important role in the implementation of projects. However, many participants do not believe that it is important that the contractor is registered with the program. Specific findings from the survey include:

- **Participants are satisfied with their contractors:** Almost all interviewed program participants (99%) who used a contractor to install their project report that their contractor met their needs (a score of 7 or higher on a scale from 0 to 10). Ninety-six percent of participants would recommend their contractor to others.
- **Participants discuss the program with their contractor:** 72% of prescriptive participants have discussed the Prescriptive Program with a contractor or trade ally.
- **Participants find out about the program from a contractor:** 30% of participants first found out about the program through a contractor or trade ally, more than through any other source.
- **Participants do not believe it is important to use contractors that are registered trade allies:** 40% of participants who used a contractor report that the contractor is <u>not</u> affiliated with the Smart Ideas for Your Business program.[22] Notably, participants often

[21] Note a discrepancy with the program tracking database, which shows that 91% of projects were implemented with a contractor.

[22] Based on the program tracking database, the contractor actually was a registered trade ally for 17 of the 30 respondents who reported their contractor is not affiliated with the program.

do not know if their contractor is affiliated with the program (35%). Twenty-five percent of participants believe that when implementing an energy efficiency project it is not at all important (a score of 0 on a scale from 0 to 10) to use a contractor that is affiliated with the Smart Ideas for Your Business Program.

- **Contractors remain vital for program promotion.** Almost a third (32%) of participants report that the contractor was the most influential in specifying the details of the project, equal to the share of participants who report having specified the equipment themselves. In addition, 37% report that it was the contractor who identified the opportunity for the ComEd incentive.

Interviews with contractors largely indicate that they think the Smart Ideas for Your Business Program did not influence their business practices. Many had already adopted business models that focused on energy efficiency and were recommending energy efficient equipment before participating in the program.[23] Many non-lighting contractors, however, are more frequently recommending energy efficient models as a result of the program. This is the result of increased availability of an efficient product line combined with a sparked customer interest driven by The Smart Ideas for Your Business Program. These contractors noted the program was influential in this change.

3.2.5 Program Marketing and Outreach

As in PY1, the strong demand for prescriptive lighting projects in PY2 meant that the Smart Ideas for your Business Program met targets with minimal marketing. As a result, the PY2 evaluation did not focus on marketing and outreach.[24] Findings, based on the participant survey, include:

- Most participants (72%) have discussed the program with a contractor or trade ally. The ComEd website (51%) and email (50%) represent other common sources of information about the program.
- A significantly smaller percent of participants attended a ComEd customer event (16% vs. 32%) or discussed the program with an Account Manager (22% vs. 45%) in PY2 as compared to PY1.
- Participants with an Account Manager are significantly more likely to attend a ComEd event where the program is discussed (38%) or attend a meeting, seminar, or workshop

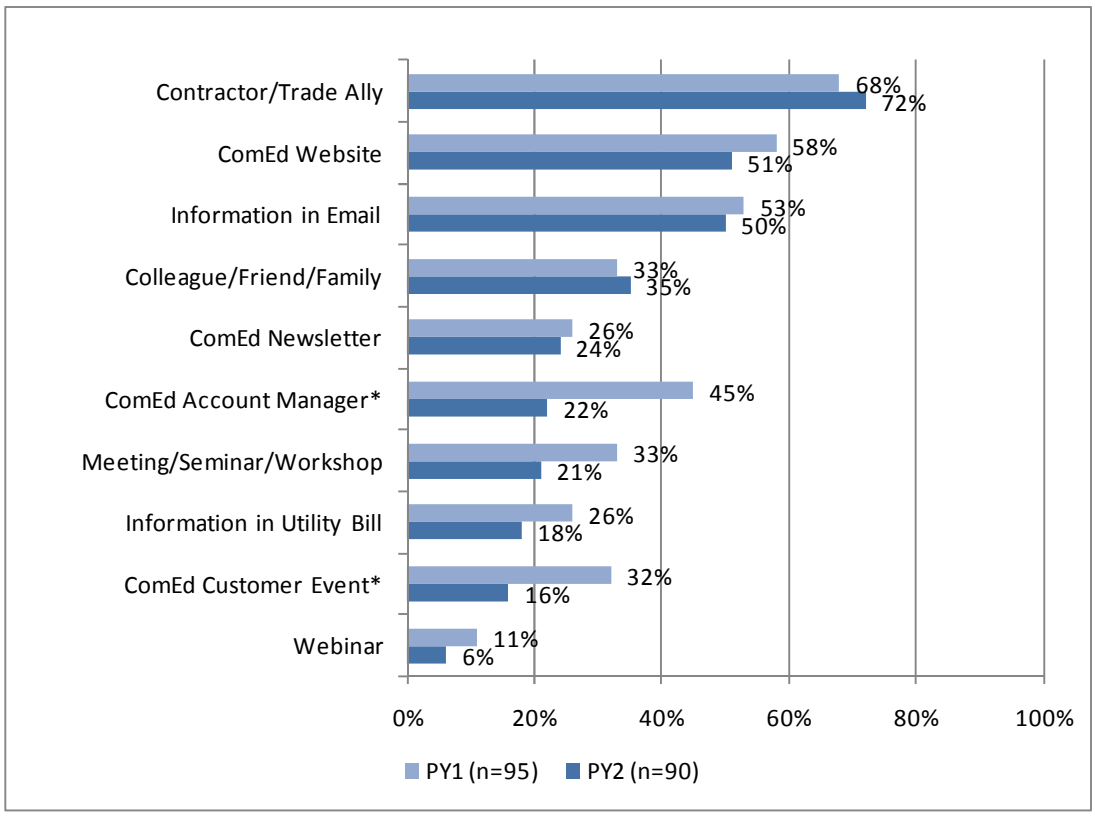
[23] While the program did not influence the frequency with which most lighting contractors recommend energy efficient equipment, it does influence the business volume of those most active in the program. See also "Program Oversubscription" in Section 3.2.4.

[24] Due to a dramatic increase in program goals for PY3, however, more robust marketing efforts are planned, and the PY3 evaluation should explore the effectiveness of these efforts in more detail.

where the program is presented (43%) compared to participants without an Account Manager (4% and 9%, respectively).

Figure 3-3 summarizes participant responses about program information sources.

Figure 3-3. Sources of Program Information (Prompted)

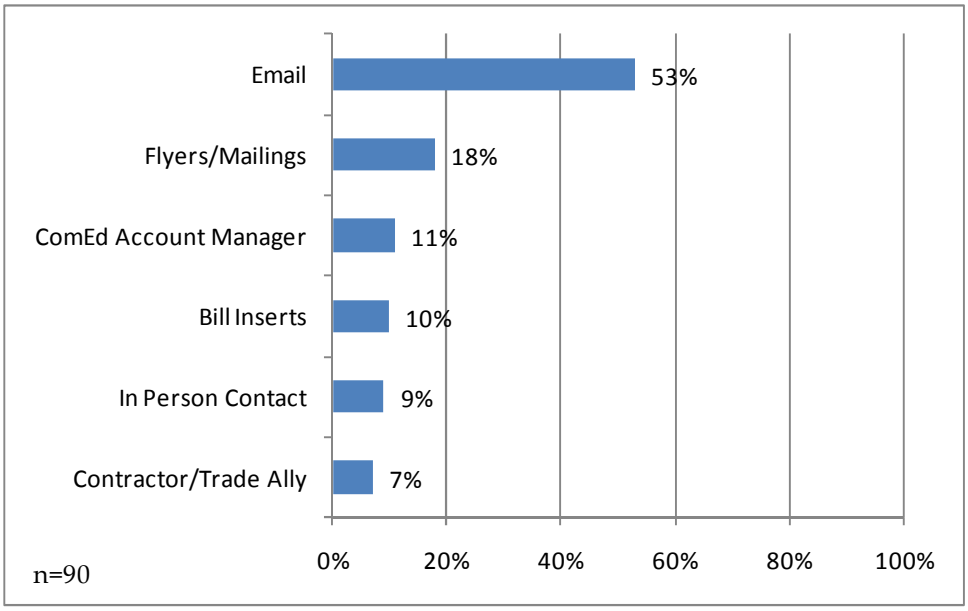


*Note: * denotes a significant difference between PY1 and PY2 at the 90% confidence level.*
Source: PY1 and PY2 CATI Participant Surveys.

Marketing was not a significant focus of program effort in PY2, and customer recall of most sources of information about the program slightly decreased compared to PY1 (although the difference was not statistically significant in most cases). In addition, only 18% of participants found the marketing materials "very useful", significantly fewer than in PY1 (26%). Participants with an Account Manager (30%), and those who only completed a single prescriptive project in PY2 (23%) are significantly more likely to find the program materials very useful than participants who do not have an Account Manager or completed multiple projects. Only a few participants noted that the program materials could have more detailed information.

Survey responses also confirmed that participants are generally receiving information through their preferred methods of contact. E-mail overwhelmingly remains the best way to reach participants (53%) and is a commonly recalled source of program information (50%).

Figure 3-4. Preferred Methods of Contact (Multiple Response, Unprompted)



Source: PY2 CATI Participant Survey, note that responses under 5% are not included.

Interviewed contractors were asked how aware customers are of the Smart Ideas for Your Business Program. Not surprisingly, inactive contractors more frequently cited that customers were only moderately or somewhat aware of the program, whereas the more active contractors found that their customers are more aware of the program. Independent of the activity level, however, almost all interviewed contractors thought that awareness varies by certain business characteristics. These include size (the larger the company the more likely they are aware of the program), the company contact person (executives tend to not know as much as building operators), and geographic location (awareness is higher in urban environments than in the more rural parts of Illinois).

All interviewed contractors reported that they always promote the program when discussing the possibility of implementing a project with customers that falls under the scope of the Smart Ideas for Your Business Program.

3.2.6 Barriers to and Benefits of Participation

Customer barriers

Interviews with contractors provide some context to both the barriers to the installation of energy efficient equipment and the barriers to participation in the Smart Ideas for Your Business Program. Cost and the ability to secure upfront capital overwhelmingly remains the largest barrier to the installation of energy efficient equipment, with almost all of the interviewed contractors citing this as the main barrier. About half of the interviewed contractors

think this is a universal problem for all companies, while others have found that the concern over upfront cost varies with business type and characteristics. Many contractors found that larger companies, while they may face other hurdles, are more apt to find opportunities and the budget to complete energy efficiency projects. To smaller companies, on the other hand, cost is of greater concern, and they are less likely to have financing options available to them. A few contractors have also commented that the burden is more severe for government entities or public sector buildings.

In addition to financial concerns, awareness and overall energy efficiency knowledge remains a large barrier to the installation of efficient equipment. Although all interviewed contractors found that both awareness and interest have increased in the past few years, the majority of contractors still felt that their customers are only somewhat aware of energy efficiency options.

> *"Everybody seems to think they flip a switch and the power goes on, and there's never going to be a problem with that, but I don't think they realize that maybe down the line there really is going to be a problem, maybe we need to educate the customers more that it is really important to save energy."*

One lighting trade ally has found that there is a general distrust of new technologies, stemming from lack of understanding:

> *"Some people are very wary of fluorescent technology because of the old technology that used to hum and flicker, which has kind of spoiled people's opinion of fluorescents in general. I still think cost is still by far the number one issue, but another major issue is just the disbelief of benefits".*

When asked specifically what prevented participation in the program after customers had already committed to the installation of energy efficient equipment, many contractors believed certain aspects of the program thwart full participation. A few contractors noted that customers may be confused as to how to apply for certain measures, while others found that customers believed the process to be "extremely bureaucratic." One trade ally found that the Prescriptive Program is very limited in what it incentivizes, compared to other programs around the country:

> *"Rather than making some of the lighting equipment categories that will be incentivized broad, they are so specific that it is very difficult to get products that fall into their categories; and it is also very difficult for the businesses trying to get those incentives to fit a particular product into a category".*

A lack of knowledge and awareness of the measures offered through the program was another frequently cited barrier to participation. Contractors also found that, for larger companies, the decision making and application process takes a long time preventing more participation in the program.

Additionally, three of the 30 interviewed contractors specifically noted that oversubscription and the calendar of the program year remains a large barrier to participation. While the Smart Ideas for Your Business Program begins taking final applications in the beginning of June, most businesses do not operate on a fiscal year that begins in the summer. Many decisions about equipment and building upgrades occur during the beginning of the year (January, March, April, etc.) when the program oversubscription was an issue. For these contractors, the timing of the program is not conducive nor does it line up with the typical business year.

Increased rebates and more thorough marketing efforts, which fully explain the program to all commercial customers, are the most commonly suggested solutions to overcome barriers to the installation of energy efficient equipment as well as participation in the program. It should be noted that four different contractors also mentioned the idea of energy sharing or financing the project through the achieved energy savings, either through an independent broker, the utility, or contractors themselves.

Similar to contractors, participants find that a lack of program awareness remains the largest cited barrier (55%) followed by financial reasons (33%). Program participants were also asked about the benefits to participating in the program. In both PY1 and PY2 a majority of participants (66% and 73%, respectively) cited energy savings as the main benefit to participation in the program, followed by the incentive (23% and 35%, respectively).

Contractor barriers

For most of the inactive contractors and non-participating trade allies, the program was not the cause of limited activity in PY2. In general, the economic conditions contributed to a slow business year for inactive contractors limiting their opportunities to participate in the program. However, all hope to continue participation in the future. Non-participating trade allies frequently noted that their area of expertise does not align with the Prescriptive program[25] or that they do not complete many projects in ComEd's service territory.

One non-participating and one inactive trade ally explained inactivity in PY2 by the fact that meeting program requirements is not worth it for certain projects, for example if the incentive is small.

> *"For very small projects and very small incentives, it is kind of onerous. When you look at it and you're only getting back $40 and you're spending over an hour or two of you own time to get this done, it is not worth it."*

[25] For example, one is a supplier who mistakenly thought they had to become a trade ally; another is a software firm who became a trade ally for the publicity.

A lack of client interest and customer doubts about the availability of program funds once a project is completed were also cited as barriers to participation for non-participating trade allies.

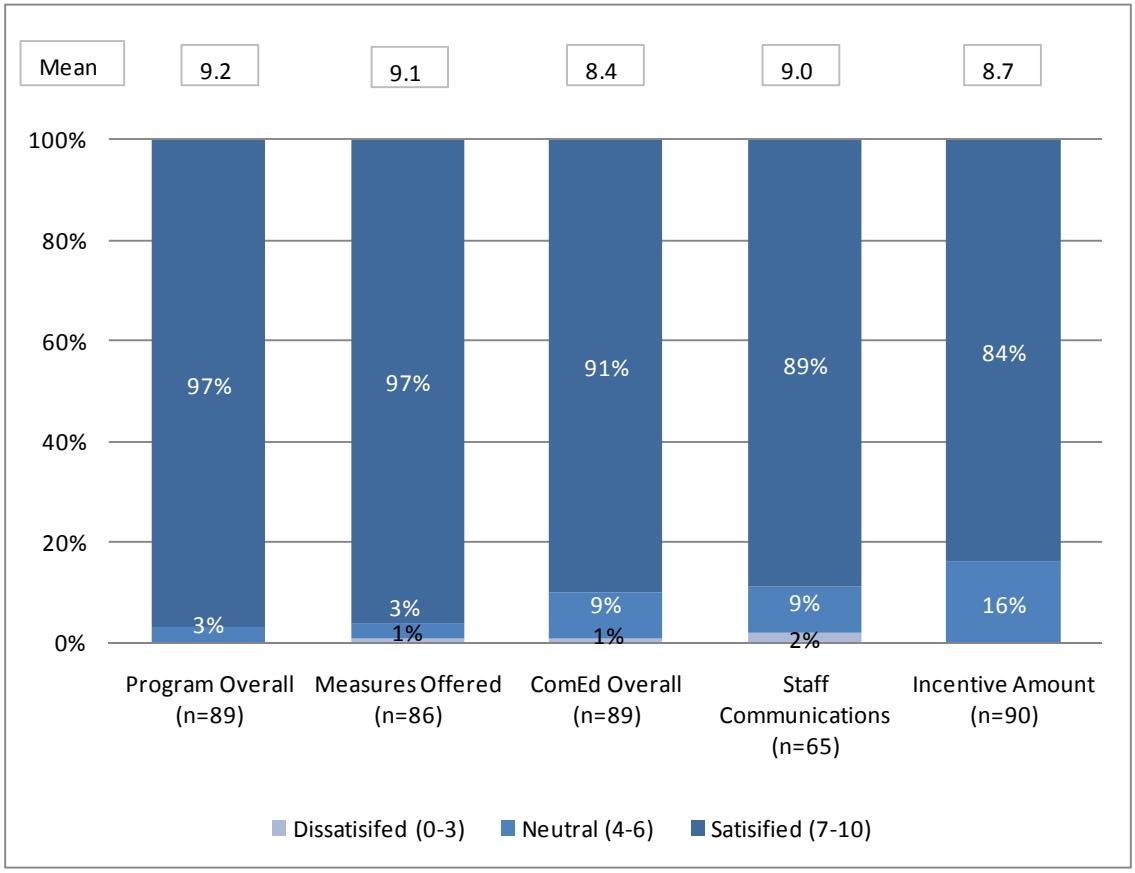
3.2.7 Participant Satisfaction

Customer satisfaction

Participants are satisfied with most aspects of the program. Customers were asked to rate – on a scale of 0 to 10, where 0 means "very dissatisfied" and 10 means "very satisfied" – several aspects of the program. The highest satisfaction comes from the program overall, where 97% of participants are satisfied, including 57% that report being very satisfied (a rating of 10). Participants are least satisfied with the incentive amounts (84%).[26] Although 91% of customers are satisfied with ComEd overall, the mean ranking was the lowest among all elements included in the survey. This is largely due to the fact that the smallest share of respondents (35%) are "very satisfied" with ComEd.

[26] "Satisfied" is defined as a rating of 7 or higher on the scale of 0 to 10.

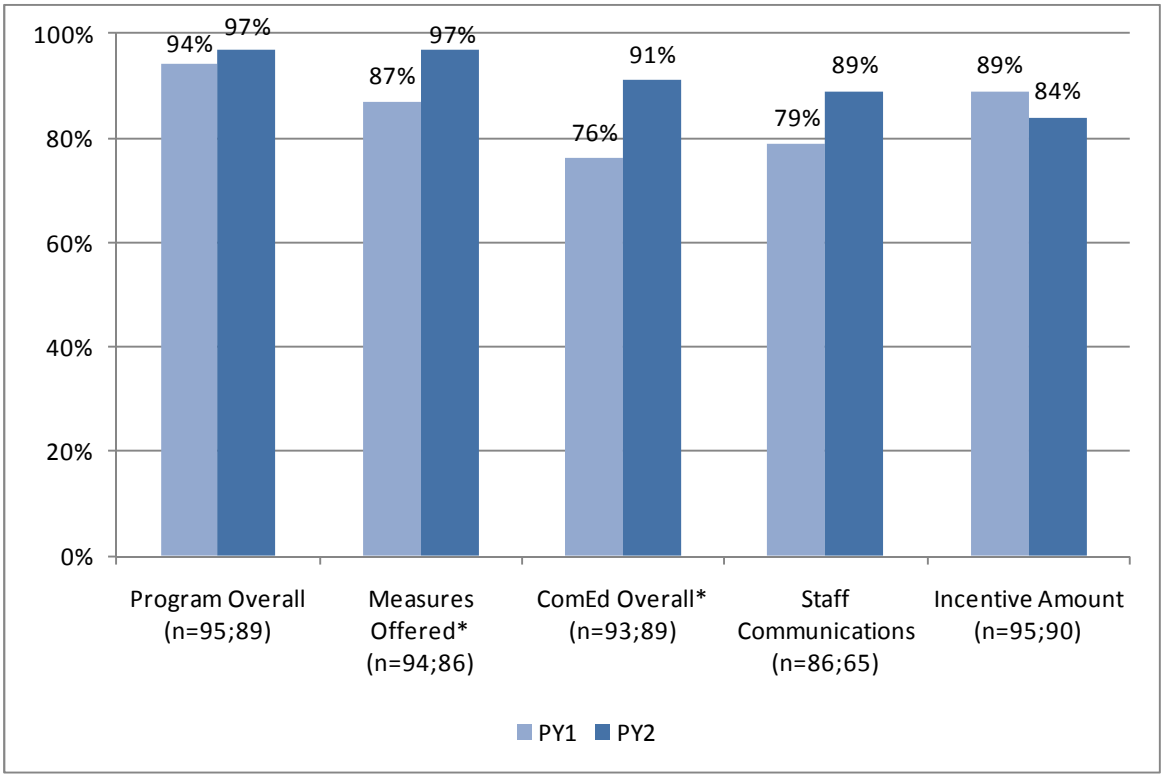
Figure 3-5. Program Satisfaction



Note: This graph presents valid percentages, i.e., don't know, refused, and not applicable responses are excluded. Individual values may not add up to 100% due to independent rounding.
Source: PY2 CATI Participant Survey.

Satisfaction with program elements tends to be higher in PY2 than in PY1, although the difference is only significant for satisfaction with the measures offered and ComEd overall.

Figure 3-6. Percent Satisfied by Program Year



*Note: * denotes a significant difference between PY1 and PY2 at the 90% confidence level.*
Source: PY1 and PY2 CATI Participant Surveys.

Given the high satisfaction scores, it is not surprising that 74% of participants plan to participate again in the future. When asked what could be done to improve the program, almost half of participants (46%) had no recommendations. The most common recommendations include increased rebates (24%) and better communications/improved program information (10%).

Contractor satisfaction

Contractors are likewise largely satisfied with the program and its participation processes. All participating contractors expressed satisfaction with measures offered and found the incentive levels to be reasonable and fair. A few contractors, both lighting and non-lighting, would like to see higher incentives but believed that they are generally sufficient for getting projects done.

Of the 24 participating contractors, only two expressed dissatisfaction with their communication with program staff. One found that communication with field staff responsible for pre-approval was largely limited. Another non-lighting trade ally found KEMA staff to be less cooperative than in PY1 and felt that they were being *"treated as if we are trying to dupe the Smart Ideas Program."* Overall, most contractors were pleased with their interaction with KEMA and other program staff.

All contractors were satisfied with the Smart Ideas for Your Business Program overall, and all plan to participate in the future. Seven of the twenty-four participating contractors offered no recommendations to improve the program, indicating that the program runs smoothly as is. The most common recommendations offered by participating contractors include: increased advertising efforts to help with overall public awareness, simplifying the application and adding more measures, offering some other financing options such as energy sharing, and managing oversubscription more effectively.

3.3 Cost Effectiveness Review

This section addresses the cost effectiveness of the C&I Prescriptive program. Cost effectiveness is assessed through the use of the Total Resource Cost (TRC) test. The TRC test is defined in the Illinois Power Agency Act SB1592 as follows:

> *" 'Total resource cost test' or 'TRC test' means a standard that is met if, for an investment in energy efficiency or demand-response measures, the benefit-cost ratio is greater than one. The benefit-cost ratio is the ratio of the net present value of the total benefits of the program to the net present value of the total costs as calculated over the lifetime of the measures. A total resource cost test compares the sum of avoided electric utility costs, representing the benefits that accrue to the system and the participant in the delivery of those efficiency measures, to the sum of all incremental costs of end-use measures that are implemented due to the program (including both utility and participant contributions), plus costs to administer, deliver, and evaluate each demand-side program, to quantify the net savings obtained by substituting the demand-side program for supply resources. In calculating avoided costs of power and energy that an electric utility would otherwise have had to acquire, reasonable estimates shall be included of financial costs likely to be imposed by future regulations and legislation on emissions of greenhouse gases."*[27]

ComEd uses DSMore™ software for the calculation of the TRC test.[28] The DSMore model accepts information on program parameters, such as number of participants, gross savings, free ridership and program costs, and calculates a TRC which fits the requirements of the Illinois legislation. Environmental benefits have been quantified for CO_2 reductions, using a value of $0.013875 per kWh.

One important feature of the DSMore model is that it performs a probabilistic estimation of future avoided energy costs. It looks at the historical relationship between weather, electric use and prices in the PJM Northern Illinois region and forecasts a range of potential future electric energy prices. The range of future prices is correlated to the range of weather conditions that

[27] Illinois Power Agency Act SB1592, pages 7-8.
[28] Demand Side Management Option Risk Evaluator (DSMore) software is developed by Integral Analytics.

could occur, and the range of weather is based on weather patterns seen over the historical record. This method captures the impact on electric prices that comes from extreme weather conditions. Extreme weather creates extreme peaks which create extreme prices. These extreme prices generally occur as price spikes and they create a skewed price distribution. High prices are going to be much higher than the average price while low prices are going to be only moderately lower than the average. DSMore is able to quantify the weighted benefits of avoiding energy use across years which have this skewed price distribution.

Table 3-14 summarizes the unique inputs used in the DSMore model to assess the TRC ratio for the C&I Prescriptive program in PY2. Most of the unique inputs come directly from the evaluation results presented previously in this report. Measure life estimates and program costs come directly from ComEd. All other inputs to the model, such as avoided costs, come from ComEd and are the same for this program and all programs in the ComEd portfolio.

Table 3-15. Inputs to DSMore Model for C&I Prescriptive Program

Item	Value Used
Measure Life	11 years
Participants	1,739
Annual Gross Energy Savings	259,093 MWh
Gross Coincident Peak Savings	45.1 MW
Net-to-Gross Ratio	74 %
Utility Administration and Implementation Costs	$339,527
Utility Incentive Costs	$13,179,269
Participant Contribution to Incremental Measure Costs	$41,679

Based on these inputs, the Illinois societal TRC for this program is 2.67 and the program passes the TRC test. The standard TRC calculation produced by DSMore is 1.73.

Section 4. Conclusions and Recommendations

This section highlights the conclusions and recommendations from the PY2 evaluation of ComEd's Smart Ideas for your Business Prescriptive Program. The primary evaluation objectives include quantifying the gross and net energy and demand impacts resulting from the rebated measures and assessing program marketing, and delivery. Below are the key conclusions and recommendations.

4.1 Conclusions

In conducting the PY2 Prescriptive program evaluation, the evaluation team has drawn a number of conclusions that are enumerated in this section.

4.1.1 Program Impacts

Tracking System

To support the impact evaluation, the evaluation team was given direct access to ComEd's on-line tracking system and data. The on-line system was easy to work with and provided viewing access to the project tracking data plus downloading rights to project documentation in electronic format for each project. This documentation was complete and greatly facilitated the evaluation while removing a step that commonly impedes evaluation progress: a data request for the very information that ComEd made available in the tracking database itself. This level of access and documentation represents best practice in this area for a Prescriptive program.

The evaluation team worked off of a copy of the tracking system data uploaded by ComEd to their secure SharePoint site on a periodic basis. ComEd's tracking system provides on-line access to standard reports developed for internal program reporting and management functions. Several reports are similar to datasets analyzed in the evaluation process, and with some modification the reports could serve EM&V functions as well.

The tracking system records for Prescriptive ex ante peak demand impact (kW) were correctly populated at the measure level, however, project-level kW variables in the ComEd tracking system appeared to be missing measure component values for projects consisting of Custom and Prescriptive measures. We summed measure level impacts to develop project and program ex ante demand impacts

Gross Impacts

The realization rate for energy savings was 1.21. The primary reason for being greater than one is that verified annual hours of use were higher than default values for many projects. Annual hours of use were verified through a CATI survey with program participants or through on-site M&V. The hours of use adjustments increased and decreased impacts, depending on the

project, but similar to PY1, there were a substantial number of industrial and warehouse business types with verified hours that exceeded default values.

A factor that reduced both the energy savings and demand savings realization rates was a finding that a substantial number of sites had installed lighting in non-cooled spaces, and ComEd includes an HVAC interaction factor in most lighting measures.

Adjustment factors that increased or decreased ex post impacts, depending on the project, include quantity adjustments and baseline equipment not matching default assumptions. The overall impact of these adjustments on realization rate was less than the hours of use and non-cooled installation adjustments.

The realization rate for demand savings was 0.99, reflecting that ComEd has strong quality control procedures in place for correctly tracking quantities and screening for eligibility. These procedures should be maintained.

The CATI participant survey indicated that placing equipment into storage and adding lighting fixtures to increase lighting levels after the rebated installation is complete are not significant concerns for impact adjustment. There were 7 respondents that claimed to have moved lighting equipment to another location, however, it was not clear whether they were referring to rebated equipment or replaced equipment.

Participants reported that removed fluorescent lighting equipment was T12s and magnetic ballasts where that equipment was required by the baseline default assumption.

Net Impacts

Comparing PY1 and PY2, the mean NTG ratio increased significantly from PY1 (0.68) to PY2 (0.74). The primary driver in this increase was substantially lower free-ridership in the large project group. For large projects, the mean NTG ratio increased from 0.59 in PY1 to 0.77 in PY2.

The increase in large project NTG ratio was due to much higher component scores for factors that indicate the program had a higher influence on the decision to implement a project and to implement that project sooner than would have occurred without the program. The No-Program score for large projects increased from 0.40 in PY1 to 0.67 for PY2.

Mean free-ridership was higher for the smaller project size category (32% free-ridership, 0.68 NTGR for the small project sample stratum) than for medium and large size projects (NTGR of 0.76 and 0.77 respectively). There were 10 projects in the sample of 114 that had a NTG ratio below 0.5, and 6 were small projects. The impact of these 10 projects with NTG ratios below 0.5 is to lower the overall NTG ratio for the program from 0.78 to 0.74. Within the small project strata, four of the six projects with a NTG below 0.5 were scored greater than 90% free-

ridership, where the participant had learned about the program after the decision to implement the project had already been made.

The NTG ratio estimate for PY2 included a more complex "standard rigor" level of analysis conducted on larger projects, defined as those with incentives greater than $50,000 for a single project or multiple projects under a single contact name. For PY2, 66 of 850 contacts in our sample frame met the standard rigor definition, and 27 of 90 respondents in our sample went through the standard rigor approach, and 11 of the 27 standard rigor interviews had responses that triggered follow-up interviews with 10 different vendors. The effect of including standard rigor analysis in the sample was to raise the NTG ratio for large projects from 0.76 to 0.77 (estimated by removing all standard rigor adjustments), and to raise the overall program NTG ratio from 0.73 to 0.74. This is a relatively small change. One reason for this small increase was that end-user participants with large projects had already given ComEd relatively high scores for program influence, particularly the availability of the incentive. However, the average vendor influence score was 0.97, based on the seven interviews that resulted in a vendor score (3 of the interviewed vendors did not provide responses that could be scored).

Relatively few spillover candidates were identified through the PY2 participant phone survey. Only six respondents pursuing eight measures indicated a strong influence by the ComEd program. While participating customers are installing other energy efficiency improvements outside of the program, they attribute little influence to the program in their decision to install these additional measures and further state that these actions generally would have been implemented regardless of their program participation experiences.

There was stronger evidence for spillover in PY1 than in PY2. In PY2, only 15 of 90 survey respondents answered "Yes" (17%) to the screening question of whether they had implemented any additional energy efficiency measures without incentives. In PY1, 33 of 85 respondents answered "Yes" (39%). In PY2, only eight respondents gave their ComEd program experience a rating or seven or higher in their decision to implement potential spillover measures, compared with 17 respondents in PY1.

An effort to quantifying spillover savings, limited to the on-site M&V sample, identified 885,314 kWh and 136 peak kW that were added to ComEd's net PY2 Prescriptive savings.

The PY2 evaluation interviews with market actors provided evidence for program influence on vendors, and provide some evidence of the potential for non-participant spillover. To quantify non-participant spillover would require a much more detailed interview supported by sales data figures, to allow an estimate of the increase in high efficiency sales in the past two years, that were influenced by ComEd, sold in the service territory, and did not go through the Prescriptive program.

4.1.2 Program Processes

Program Participation

Participation in the Prescriptive Program substantially increased in PY2, with 958 unique companies completing 1,739 projects. Participation by more national retailers/chain companies – particularly in the retail/service sector (73 projects in PY1, 462 projects in PY2) – contributed significantly to this increase. Light industry represented the largest share of participants (28%), energy savings (32%), and demand savings (36%) and had the greatest impact on program savings, with almost four-fold increases in both energy and demand savings compared to PY1.

Despite the attempt to diversify the program away from lighting measures, 85% of projects, 94% of energy savings, and 96% of demand savings in PY2were still associated with the implementation of lighting measures, almost identical to PY1.

Overall, the strong participation gains in PY2 resulted in the program far exceeding both energy and demand savings goals, even though these goals had also substantially increased from PY1.

Participant Satisfaction

Satisfaction with the Prescriptive Program and various program processes remains very high. Notably, 97% of participants are satisfied with the Prescriptive Program overall (a rating of 7 or higher, on a scale of 0 to 10). Compared to PY1, PY2 participants are significantly more satisfied with the measures offered (97% up from 87%) and ComEd overall (91% up from 76%). Very few participants encountered problems while participating, and about three-quarters (74%) plan on participating again.

Interviewed contractors were likewise largely satisfied with the program and participation processes. All interviewed contractors expressed satisfaction with the measures offered and found the incentives to be reasonable and fair. All plan to participate in the future.

Program Oversubscription

Similar to PY1, the Smart Ideas for Your Business program experienced strong demand for prescriptive measures in PY2. However, unlike in PY1, only prescriptive *lighting* measures were subject to waitlisting in PY2. Program staff decided to keep available non-lighting incentives in an attempt to diversify the program away from its heavy reliance on lighting.

Program staff seemed to manage the oversubscription process better in PY2. There was more proactive communication with trade allies, and the addition of a fund-o-meter on the website was helpful in keeping all parties informed of funding status. As a result, significantly fewer participating customers in PY2 were aware of the waitlist (38% vs. 63% in PY1). According to program staff, all waitlisted projects were able to participate before the end of the program year.

While nearly all interviewed lighting contractors were aware of the waitlist, they believe it was communicated effectively by program staff. However, the oversubscription still presented a problem for many contractors, as the availability of program incentives affects their business volume.

Trade Ally Network

Contractors play an integral role in the Prescriptive Program. Eighty-six percent of PY2 prescriptive projects were implemented with contractor support. Notably, only 31% of contractors who implemented a project in PY2 are registered trade allies. However, these trade allies account for 62% of contractor-implemented projects. Contractors also remain vital for program promotion: Almost a third (32%) of participants named their contractor as the most influential in specifying the details of the project, and 37% report that it was the contractor who indentified the opportunity for the program incentive. Overall, participants are very satisfied with their contractor, and 96% would recommend their contractor to others.

Contractor interviews show that the Smart Ideas for Your Business Program did not significantly influence the business practices of lighting contractors. Many had already adopted business models that focused on energy efficiency and were recommending energy efficient equipment before participating in the program.[29] Many non-lighting contractors, however, are more frequently recommending energy efficient models as a result of the program.

Almost all of the interviewed contractors who are registered trade allies have attended training. Overall the contractors found the training events to be useful in explaining the program requirements.

Marketing and Outreach

Similar to PY1, prescriptive goals were exceeded with minimal marketing efforts. According to participants, contractors remain the most important source of program information. All interviewed contractors reported that they always promote the program when applicable to a specific project. Contractor involvement should further increase with the contractor bonus implemented in PY3.

Email remains the best way to reach participants (53%) and is also a commonly cited source of program information (50%). Interviewed contractors generally believe that awareness of the

[29] While the program did not influence the frequency with which most lighting contractors recommend energy efficient equipment, it does influence the business volume of those most active in the program. See also "Program Oversubscription" Section 3.2.4.

program varies by business characteristics, with large companies and companies in urban settings being more aware.

Increased marketing – already planned and implemented by the program – will likely be necessary to meet the significantly increased goals for PY3.

Account Managers

While program staff report that Account Managers have become more active in the Smart Ideas for Your Business Program in PY2, additional opportunities for Account Managers to help increase participation in the program appear to exist. In general, program staff would still like to see increased involvement by Account Managers. Specific Account Manager goals planned for PY3 – bringing customers to the Energy Efficiency Expo, bringing in a certain volume of projects, and attending a certain number of lunch-and-learns – plus incentives if these goals are met, should help the program in future years.

4.2 Recommendations

4.2.1 Impact Recommendations

Gross Impact Results

The gross impact results yielded an energy realization rate of 1.21. A significant factor raising the realization rate above 1.0 was the hours of use adjustment, while the primary deduction was a finding that a substantial number of sample sites had installed lighting in non-cooled spaces, and ComEd includes an HVAC interaction factor by default in most lighting measures (38 of 78 respondents in the participant phone survey indicated lighting was not installed in a cooled space).

If possible, it would be desirable to have these differences addressed in the ex ante calculations. Two significant adjustments that occurred during the PY2 evaluation might be relatively straightforward to address in program delivery:

- ComEd should consider adding check box(es) to the application to identify number of shifts or 24 hour operation.
- ComEd should also consider adding a check box to indicate whether lighting is installed in an air-conditioned (cooled) space so that the HVAC interaction factor can be applied only when appropriate.

If ComEd chooses not to add the check box for lighting HVAC interaction, then we suggest the default savings values for certain measures and business types be adjusted to reflect installations in non-cooled spaces.

The realization rate for demand savings was 0.99, reflecting that ComEd's quality control and verification procedures for the Prescriptive Program are rigorous and ensure high quality projects and tracking data. These procedures should be maintained.

ComEd is to be commended for improving default estimates of HVAC full load hours from PY1 to PY2. The PY2 default savings review identifies a number of further updates that could be addressed through an iterative process between the evaluation team, ComEd, and the program implementer in PY3.

Recently effective federal standards prohibiting manufacture or importation of T12 magnetic replacement ballasts may affect the assumed baseline for several lighting measures. ComEd, the implementer and the evaluation team should discuss whether changes need to be made to default savings for PY3.

The brief set of impact questions in the participant survey will be updated in the PY3 evaluation to reflect findings from PY2. Issues requiring clarification in PY3 include movement of equipment to new locations and the impact of federal fluorescent magnetic ballast standards.

Free-Ridership Results

Some level of free-ridership is unavoidable in rebate programs. Nationally franchised businesses present higher risk of free ridership as decisions are made at the national level independent of local conditions and incentives. If the program implementation team is aware that these businesses are implementing franchise-wide, state-wide, or even nationwide projects, they might want to incorporate a likelihood-of-free-rider factor into the final ex ante energy saving and demand estimates.

The average vendor influence score for the projects analyzed at standard rigor was 0.97, based on the seven interviews that resulted in a vendor score (three of the interviewed vendors did not provide responses that could be scored, and one vendor was named on two projects). This indicates a high level of program influence through the vendor (i.e., only 3% free-ridership for one-third of the total free-ridership score for these seven projects).

Spillover Results

The EM&V team will likely collect participant spillover data in the same manner for the PY3 evaluation. One could speculate that reduced evidence of participant spillover in PY2 compared with PY1 was due economic conditions limiting investment in discretionary projects.

ComEd should consider asking a brief set of spillover questions to screen participant contacts during post inspection visits, using questions from the PY2 CATI survey. Participants responding positively for spillover could then be flagged in the tracking system for potential follow-up through the evaluation process.

The PY2 evaluation interviews with market actors provided evidence of program influence on business practices that may be generating non-participant spillover. The PY3 evaluation will explore approaches to quantify non-participant spillover.

Tracking System

ComEd's tracking system provides on-line access to standard reports developed for internal program reporting and management functions. Several reports are similar to datasets analyzed in the evaluation process, and with some modification the ComEd reports could support EM&V functions as well.

The evaluation team recommends that ComEd provide a database map that explains the field names and their relevance for program tracking and reporting.

4.2.2 Process Recommendations

Program Participation

The program far exceeded savings goals as a result of strong increases in program participation. Higher program goals in PY3 mean that the program will need to continue to increase its participant base. Key steps towards this goal have already been taken, including goals and incentives for Account Managers, bonuses for trade allies, and increased marketing efforts.

While lighting measures will continue to play a key role in PY3, increasing the volume of non-lighting measures should also remain a goal in PY3. The program has already implemented some steps that specifically target non-lighting measures (e.g., waitlisting only lighting projects in PY2 and efforts to recruit more non-lighting contractors). Nevertheless, lighting still accounted for 85% of projects and over 90% of energy and demand savings in PY2.[30] As contractors play a critical role in promoting participation, the program should continue its focus on recruitment and training of non-lighting contractors. The program might also consider offering a special bonus for trade allies completing non-lighting projects or use of a special "sale" during which increased customer incentive levels are offered for non-lighting measures (if cost-effective).

Trade Ally Network

While the trade ally network has grown in PY2, about two-thirds of trade allies are only minimally engaged with only one or no projects in PY2. Given the importance of contractors in project implementation, increasing trade ally activity should be a primary goal for PY3. The

[30] It should be noted that, in absolute terms, the number of projects with non-lighting measures has almost quadrupled, from 70 in PY1 to 272 in PY2.

trade ally bonus, started in September 2010, and new requirements for trade allies should help towards this goal.

Enrollment of more non-lighting contractors remains a goal for the program. As noted above, a contractor bonus specifically for non-lighting projects might help motivate contractors specializing in non-lighting measures to become more active in the program.

Account Managers

Account Manager activity in PY2 – while improved, in absolute terms, over PY1 – is still not as strong as desirable for a C&I program. Account Managers should serve as a major program delivery channel, since they already have established contacts with the largest users of energy. However, the program has already implemented steps to get Account Managers more engaged, including specific goals with respect to bringing customers to the Energy Efficiency Expo, bringing in projects, and attending lunch-and-learns, and an ability to earn incentives if these goals are met. The effectiveness of these steps will need to be assessed before additional recommendations with respect to Account Managers can be made.

The program should also make efforts to foster better relationships between Account Managers and trade allies in order to help synchronize the efforts of both groups in promoting the program to the largest customers. For example, the program could require Account Managers to attend a certain number of contractor trainings to facilitate face-to-face interaction or encourage contractors to reach out to Account Managers to help promote the program to specific targeted customers.

Marketing and Outreach

General awareness of the program and knowledge of energy efficient options remain a barrier to participation for many customers. To meet increased PY3 program goals, aggressive marketing and outreach is clearly necessary. The Smart Ideas for Your Business Program is already planning a PY3 marketing campaign that is much enhanced compared to PY1 and PY2. The program should also consider marketing specifically to smaller companies and those not located in main metropolitan areas, as they are less likely to be already aware of the program.

Other Recommendations

Other recommendations include:

- Several contractors recommended that the program utilize an online tracking system of program milestones. Program staff would update the status of the application electronically, allowing customers and contractors to more easily keep apprised. This would help ease communication and allow for a smoother participation process.

- To overcome first-cost barriers to participation, especially among smaller customers, several contractors recommended considering alternative financing mechanisms. This could include energy sharing or financing the project through the achieved energy savings, either through an independent broker, the utility, or contractors themselves.
- Assign contractors a unique contractor ID and use this ID for program tracking, instead of contractor name (which is prone to typos and differences in spelling across different projects implemented by the same contractors). This would facilitate tracking of contractor activity – especially as trade ally requirements are being enhanced – as well as program evaluation.

Section 5. Appendices

5.1 *Data Collection Instruments*

5.1.1 Participant Phone Survey


ComEd PY2
Prescriptive Participar

5.1.2 Trade Ally and Contractor Phone Survey


ComEd PY2 TA Guide
- Active.pdf


ComEd PY2 TA Guide
- Inactive.pdf


ComEd PY2 TA Guide
- Non-Participant.pdf

5.2 *Other Appendices*

5.2.1 PY2 Program Application Forms and ComEd Operations Manual

The application forms for the PY2 program are provided along with a draft version of ComEd's Operations Manual.


ComEd Operations
Manual 2009 Draft.dc


Prescriptive PY2
Program Forms.zip

5.2.2 PY2 Default Savings Assumptions Review

The attached memo provides our review of the PY2 program default savings assumptions.


Review of PY2
Prescriptive Default S