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

Evaluation Report: Public Sector Electric Efficiency Standard Incentives Program

Presented to

The Illinois Department of Commerce and Economic Opportunity

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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 (PY2) Public Sector Electric Efficiency (PSEE) Standard Incentives program.[1] The primary objectives of this evaluation are to quantify gross and net savings impacts and to determine key process-related program strengths and weaknesses and identify ways in which the program can be improved.

Under the Illinois Energy Efficiency Portfolio Standard (EEPS), the Illinois Department of Commerce and Economic Opportunity (DCEO) administers the PSEE program that provides incentives for public sector customers of ComEd and Ameren Illinois Utilities who upgrade their facilities with energy efficient equipment. There were two specific program elements that were available to customers during the program year: a Custom Incentives program and a Standard Incentives 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 Standard Incentives program provides an expedited application approach for public sector 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.

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

E.2 Evaluation Methods

The methods used for impact evaluation were to quantify gross savings impacts from an engineering review of the program reporting data and project documentation, and conduct on-site measurement and verification (M&V). The net impacts adjusted for free-ridership were evaluated through a self-report survey with program participants. Participant spillover was examined qualitatively through a self-report survey and is not factored into the net impacts. Participant spillover will be examined quantitatively in PY3.

[1] The Program Year 2 (PY2) program year began June 1, 2009 and ended May 31, 2010.

The methods used for the process evaluation for PY2 included in-depth interviews with the program manager and representatives from the Smart Energy Design Assistance Center (SEDAC), and a participant phone survey. A review and evaluation of program materials and the tracking database was also conducted.

The data collection and analyses for impact and process evaluation was conducted at the state-level. Energy impacts for the program are reported statewide in the main body of this report, and separately for the ComEd and Ameren Illinois Utilities in Appendix 5.2. The process results report statewide data.

The data collected for evaluation of the PY2 Standard Incentives program was gathered during a number of activities including tracking data analysis, an in-depth phone interviews, a participant phone survey, project file engineering review, and on-site M&V. The evaluation team also reviewed program materials developed by DCEO, including the Guidelines and Application document, public presentations from DCEO and SEDAC, program planning documents, and the program web site (www.illinoisenergy.org).

DCEO processed PY2 applications for payment after the May 31, 2010 close of the program, and indicated to the evaluation team at that time that processing could continue through August. In order to complete evaluation activities within reporting deadlines, it was necessary draw samples not later than mid-July, 2010. The July 14, 2010 tracking system contained 168 Standard projects with a PY2 "voucher out" date to indicate they were paid in PY2, and that population was used to select the engineering review sample and the CATI survey sample. Processing of application payments continued into August of 2010, and DCEO sent interim tracking data updates in August and September. When DCEO created the final version of their PY2 program data on October 6, 2010, 286 projects were in the paid PY2 Standard program population.

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

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

Data Collection Type	Targeted Population	Sample Frame	Sample Design	Sample Size	Timing
Tracking Data Analysis	Standard Program Projects	Tracking Database October 6, 2010 Extract	-	All	Ongoing
In-depth Phone Interviews	DCEO Management and Standard Program Staff	Contact from DCEO	Standard Incentives Program Manager Manager of Marketing and Outreach DCEO Management	3	July, Sept., Dec., 2010
	SEDAC Staff	Contacts from DCEO	SEDAC Management and Technical Staff	5	September 2010
Telephone Survey	Standard Program Participants	Tracking Database July 14, 2010 Extract	Stratified Random Sample of DCEO Standard Program Participants	51	August 2010
Follow-up Calls	Standard Program Participants and Vendors	Selected Net-to-Gross Sample	Selected Projects Where Warranted	Selected Projects Where Warranted	October 2010
Project Application File Review	Projects in the Standard Program	Tracking Database, July 14, 2010 Extract	Stratified Random Sample by Standard Project-Level kWh (3 Strata)	51	July – September 2010
On-Site Visit M&V		Project Application File Review Sample	Larger Projects	8	

E.3 Key Findings

Table E-2 below provides an overview of planned, reported ex ante net, and evaluation-adjusted net savings impacts for the PY2 Standard program along with the Custom and combined total Public Sector Electric Efficiency program. DCEO operates the PSEE program

with a joint goal for energy savings that combines Standard and Custom program results, not as separate goals for each program.

As shown in Table E-3, the PY2 Standard program evaluation found that verified gross energy savings were 27 percent higher than savings in DCEO's tracking system, as indicated by the realization rate (realization rate = verified gross / tracking system gross). The verified net-to-gross ratio (NTGR), 0.75, was slightly lower than DCEO's planning value of 0.80. DCEO does not track demand reduction and the evaluation for PY2 did not produce a demand reduction estimate at the program level.

Table E-2. PY2 Public Sector Electric Efficiency Program Net Savings

Net Savings Estimates	Standard MWH	Custom MWH	PSEE MWH
DCEO PY2 Plan Target	89,517	10,000	99,517
DCEO Reported for PY2 (ex ante net)	23,357	28,764	52,122
Total PY2Second-Year Evaluation-Adjusted Net Savings (ex post net)	29,220	13,972	43,191

Source: Plan target from Direct Testimony of Jonathan Feipel, DCEO, Docket No. 07-0541, Exhibit 1.2, November 15, 2007. Reported tracking savings from DCEO tracking system, October 6, 2010. DCEO's planned and reported net savings include a net-to-gross ratio of 0.8 and a gross realization rate of 0.95. DCEO does not track demand savings.

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

Segment	Ex Ante Gross kWh	Ex Post Gross kWh	kWh RR	Ex Post Net kWh	NTGR (ex post gross)
Standard	30,733,397	38,959,615	1.27	29,219,711	0.75

Source: Tracking savings from DCEO tracking system, October 6, 2010

The relative precision at a 90% confidence level for the Standard projects in the sample is ± 19% for the kWh Realization Rate. If the final population had remained where it was when the sample was drawn (168), the relative precision for the sample would have been ±7%. The relative precision at a 90% confidence level for the program NTG ratio is ± 7%.

1.1.1 Key Impact Findings

- In PY2 Standard program participation increased significantly compared to PY1, from 155 projects completed by 105 participants to 286 projects completed by 226 customers. Accordingly, the ex ante gross savings more than doubled from 14.9 GWh in PY1 to 30.7 GWh in PY2. Ex post net savings nearly tripled, from 10.9 GWh to 29.2 GWh.
- DCEO did not meet the PSEE PY2 plan target of 99,517 MWh for combined Custom and Standard energy savings, but DCEO's PY2 plan target was set high relative to baseline

total usage in the public sector. If achieved, DCEO's PSEE goal of 99,517 MWh would save 1.07% of estimated public sector energy usage in PY2[2], substantially higher than the legislative goal of 0.40% for the second year of the energy efficiency portfolio standard. The PY2 ex post net savings for PSEE (excluding the pilot Retrocommissioning program) of 43,191 MWh is 0.47% of 9,271,325 MWh base usage.

- The realization rate for energy savings was 1.27. The primary reasons for being greater than one are that measures involving VFDs applied to HVAC fans and pumps had substantially higher savings than assumed in the default values, and that verified annual hours of use were higher than default values for several 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 sites with verified hours that exceeded default values.
- The population and energy savings were substantially higher in the final October 6 datasets compared with the July 14 tracking data, with the July 14 ex ante energy impacts being roughly one-third of the final October total. The October 6 data has proportionally higher savings in larger, stratum 1 projects, more savings in federal and college projects, and proportionally more savings in Ameren territory. Due to the similar nature of PY2 Standard projects, mainly lighting and HVAC VFDs, we conclude the sample drawn from the July 14, 2010 dataset is reasonably representative of the final population of projects represented by the October 6, 2010 data.
- Many of the projects in the sample were missing complete sets of manufacturer specification sheets for the installed measures in the documentation package. On these projects, we were able to verify measure installation from invoices and determine some specifications through invoices and site visits, but default savings values were retained when as-installed equipment specifications could not be obtained.
- Comparing PY1 and PY2, the mean NTG ratio increased significantly from PY1 (0.62) to PY2 (0.75). 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 increased from 0.47 in PY1 to 0.75 for PY2. One could speculate this was due economic conditions limiting public-sector spending on large discretionary projects, and these participants not intending to implement big energy efficiency projects until after contact by the program.
- Findings from the survey of 51 participants suggest that participant spillover effects for PY2 are relatively small, with only 4 respondents pursuing 4 measures where a strong influence was indicated for the DCEO program.

[2] Communication from David Baker, DCEO, December 6, 2010. Based on a public sector usage of 9,271,325 MWh for non-low income public sector energy consumption.

- The NTG ratio estimate for PY2 included a more complex "standard rigor" level of analysis conducted on larger projects, defined as those assigned to stratum 1. 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, 9 of 51 respondents in our sample went through the standard rigor approach, and two of the nine standard rigor interviews had responses that triggered follow-up interviews with two different vendors.
- No adjustments were made to increase or decrease free-ridership for non-program influences, based on a qualitative review of participant responses.
- Only two vendor interviews were triggered by participant responses, and only one vendor completed the interview. The effect of including the vendor interview in the sample was to raise the overall NTG ratio from 0.74 to 0.75. This is a relatively small change. One reason for this small increase was that end-user participants with large projects had already given DCEO relatively high scores for program influence, particularly the availability of the incentive. This limits the potential to raise the score further.
- The default values used by DCEO for reporting HVAC equipment and HVAC fan and pump variable frequency drive (VFD) impacts need to be updated to reflect the Illinois specific values that ComEd will use for their service territory in PY3. We recommend DCEO use separate sets of HVAC measure default assumptions for Ameren and ComEd.
- The program should estimate and track summer peak demand savings. Additional effort is needed within the program to enhance the estimation of demand savings and the tracking of those resulting impact estimates.
- DCEO is in the process of building a new program tracking database. The EM&V team recommends that that system include the following: Real-time updates to the tracking system for completed projects. The program tracking system would benefit from maintaining a flag to identify paid status, and an additional data field to indicate the likelihood of being paid within the just-completed program year for projects being processed after the program year ends. This would greatly facilitate the evaluation team's ability to draw an appropriately sized representative sample.
- For PY2, DCEO expanded contact information for program applicants, and this greatly facilitated evaluation team development of the phone survey sample data.

1.1.2 Key Process Findings

Program Participation

Participation in the Standard Program increased significantly from PY1 to PY2, from 105 customers completing 155 projects in PY1 to 226 customers completing 286 projects in PY2.

Local governments and K-12 schools continue to account for the largest share of projects (48% and 37%, respectively) and participants (51% and 38%, respectively).

PY2 ex ante energy savings more than doubled compared to PY1. K-12 schools account for the largest share of ex ante savings in PY2 (32%). The largest percentage increase came from the federal government sector, where ex ante savings increased more than 4-fold, from 890 MWh in PY1 to 4,162 MWh in PY2. Federal government projects have the highest average energy savings of any sector, with 595 MWh per project.

Participant Satisfaction

Satisfaction with the Standard Program across various program processes and components remains very high. Notably, 94% of participants are satisfied with DCEO, 90% are satisfied with staff communications, and 89% are satisfied with the program overall (a rating of 7 or higher on a scale from 0 to 10). Few participants report experiencing any problems with their participation in the program and 92% plan to participate again in the future. This high level of satisfaction is commendable.

Program Design

Few program design changes were made in PY2. The program increased incentive levels by approximately 10% and the incentive cap from $100,000 to $200,000. The most significant design change was the "Green Spring Sale," which offered a significant increase in incentives in certain sectors during the last three months of PY2. Program staff estimated that approximately half of all PY2 applications came in during the Green Spring Sale.

The Green Spring Sale demonstrated that participation could be increased by increasing incentive levels, however, the optimum incentive levels to maximize program savings within the program budget is unknown. There should be sufficient data from the PY2 experience for DCEO to run planning scenarios to explore extending higher incentive levels across more sectors and for longer periods of time.

Program Resources

DCEO took several steps to increase PSEE staff levels for PY2 and beyond. DCEO used its role in support of the American Recovery and Reinvestment Act of 2009 (ARRA) as an opportunity to hire six staff with primary responsibility to ARRA, but with the ability to support EEPS up to half time as time allowed. The ARRA hires will be able to transition full time to EEPS as ARRA work phases out for completion by January 2012. In addition, DCEO added two staff persons specifically for EEPS in PY2. Although staff faced challenges in PY2 to keep up with workload during peak periods of ARRA work and the Green Spring sale, this is expected to ease over time as ARRA responsibilities conclude and staff transitions to PSEE. DCEO is planning for additional hires in PY3.

Beginning in PY1, it was more common for program staff to take assigned projects from start to completion with responsibility for all delivery roles. With the addition of staff resources in PY2 and PY3, DCEO is transitioning toward more specialization among staff for internal program delivery roles (application and payment processing, data entry, technical support, etc.) and market and geographic segmentation (K-12 schools contact, community college contact, ComEd municipalities, etc.). This is expected to allow program managers to spend more time on strategy and marketing.

SEDAC

SEDAC plays a key role in supporting the implementation of the DCEO PSEE programs by providing marketing, training, and technical assistance services and by channeling customers into the DCEO programs. In PY2, approximately 20% of PSEE participants used some level of SEDAC technical assistance, and 65% of SEDAC public sector technical assistance recipients were channeled into the DCEO programs. Overall, the Standard Incentives Program is making good use of SEDAC's services and should continue to do so in future program years.

Cooperation with ComEd and Ameren Illinois Utilities

In PY2, DCEO continued to leverage Ameren Illinois Utilities and ComEd activities in promoting the PSEE programs. Cooperation is enhanced through monthly conference calls between Ameren, ComEd and DCEO that discuss marketing and outreach and other issues. DCEO is given time to make presentations at account manager meetings. DCEO feedback suggests the utilities are generally receptive to including DCEO at events and in outreach efforts. DCEO helped fund and co-sponsor some larger outreach events with the utilities.

Trade Ally Network

Contractors remain an important part of the Standard Program: 71% of PY2 participants utilized a contractor for their project, 66% discussed the program with their contractor, and 55% name a contractor, equipment installer, designer, or consultant as providing the most assistance in the design and specification of the installed equipment. Satisfaction with contractors is unanimous: All interviewed participants who used a contractor found that the contractor was able to meet their project needs, and all would recommend their contractor to others.

DCEO has made presentations on the PSEE program at trade ally events and meetings throughout PY2, conducted webinars, and staffed table displays at larger events. DCEO is leveraging the trade ally network of SEDAC, Ameren Illinois Utilities, and ComEd, referring potential participants looking for a qualified contractor to their lists. However, interviewed participants consider a contractor's affiliation with SEDAC or the utility programs only moderately important.

Given increased program goals for PY3, trade ally involvement will become more important to the success of the program, and the program should continue its marketing and outreach efforts to that group, and find additional ways to more closely engage them.

Account Managers

During PY2, DCEO marketing and outreach staff made presentations to ComEd and Ameren account managers to engage them in promoting the DCEO PSEE programs. The level of utility account manager support of DCEO programs is specific to individual and utility; DCEO reports some individuals are providing marketing support while others simply do referrals to DCEO.

Account managers for both utilities were involved in PY2 projects. Of participants with a utility account manager, over half (63%) report receiving account manager assistance with implementing projects. However, account managers appear to be less engaged with the marketing of the program than with implementation: Only 11% of those with an account manager report first hearing about the program through the account manager.

Since account managers can be an effective vehicle for promoting the program – as they have established relationships with the customers targeted by this program – the program should find ways to more closely engage them in promoting the DCEO program.

Marketing and Outreach

Overall program marketing activities increased in PY2 compared to PY1. DCEO identified 49 events and meetings where outreach activities were conducted in-person with an estimated total attendance of 3,790. Target audiences cover a range of public sectors (schools, municipalities, universities, state) and individuals (school boards, facility engineers, public officials, etc.), and trade allies (architects, electrical contractors, and engineers). DCEO has a prepared presentation with Q&A that is adjusted for each audience, and typically lasts from 20 minutes to an hour.

In addition, the program leveraged SEDAC, and to a lesser extent Ameren Illinois Utilities and ComEd, for marketing and outreach. DCEO has relationships with public-sector organizations, such as the Illinois Association of Regional Councils (ILARC), whereby those organizations assist DCEO in outreach and project facilitation with members. The DCEO EEPS program is featured prominently on the ILARC web site. As in PY1, one DCEO staff member had primary responsibility for marketing and outreach for the DCEO PSEE programs in PY2, with additional DCEO staff called in as needed.

In PY2, program participants *first* learned about the program through a variety of sources. Notably, 30% first learned about the program through a market actor (contractor, supplier, distributor, vendor), an indication that promotion through market actors is an effective way of increasing program awareness. The most common sources through which participants have

obtained information about the program in the past include contractors or trade allies (66%) and word-of-mouth (49%). E-mail remains the preferred method of receiving information about energy efficiency opportunities. In fact, the share of interviewed participants who prefer to be contacted by e-mail increased from 48% in PY1 to 65% in PY2.

Barriers to Participation

According to SEDAC technical staff, key barriers to participation in the DCEO programs include a lack of awareness of the programs, insufficient time or staffing to implement recommended measures, and a lack of available upfront financing for implementation. DCEO program staff cites additional reasons for projects dropping out of the participation process: budget changes or unforeseen limitations in funding and changes in staffing or management personnel. Program participants agree with these reasons of why other customers might not participate in the program: Lack of program awareness remains the most commonly cited barrier in PY2 (47%). Significantly more participants named financial reasons as a barrier in PY2 (32%) than in PY1 (14%), reflecting the continued pressures on public sector budgets. Lack of program awareness is a common barrier for most programs during the first three years of operation.

Section 1. Introduction to the Program

This evaluation report covers the PY2 Standard Incentives program element of the Public Sector Electric Efficiency incentive program.

1.1 Program Description

The Illinois Department of Commerce and Economic Opportunity (DCEO) Public Sector Electric Efficiency program provides incentives for public sector customers of ComEd and Ameren Illinois Utilities who upgrade their facilities with energy efficient equipment. There were two specific program elements that were available to customers during program year 1: a Custom Incentives program and a Standard Incentives 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 Standard Incentives program provides an expedited application approach for public sector entities 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.

DCEO uses internal staff to manage, implement, and administer the program. Technical assistance is provided as needed with the assistance of the Smart Energy Design Assistance Center (SEDAC). The PY2 program application form and guidelines package listing measures, eligibility criteria and incentive levels is provided in Appendix 5.2.1. The measure list matched those offered by ComEd, except that DCEO offered incentives for LED traffic signals.

The net MWh savings goals and budgets for the Standard Incentives program, as included in the Three-Year Plan approved by the Illinois Commerce Commission, are presented in Table 1-1 for PY2.

Table 1-1. Public Sector Electric Efficiency Standard PY2 Planned Savings Goals and Budgets

Utility	Plan Target Net MWh	Plan Target Net MW	Plan Target Total Cost
ComEd	65,810	18.8	$10.234 million
Ameren	23,707	6.8	$3.643 million
Total	89,517	25.5	$13.878 million

Source: Direct Testimony of Jonathan Feipel, DCEO, Docket No. 07-0541, Exhibit 1.2, November 15, 2007.

DCEO operates the PSEE program with a joint goal for energy savings that combines Standard and Custom program results, not as separate goals for each program. The combined Standard and Custom goal for PSEE net energy savings is 99,517 MWh.

The Standard and Custom programs continued into program year 2 with minor increases to Standard incentive levels, expansion of rebate options, and changes in strategy. Special challenges affect the marketing, delivery, response to the PSEE program, as reported by DCEO, and summarized below:[3]

Low Incentive Levels

"DCEO staff has heard repeatedly from schools and local governments that its incentives are too low to enable them to implement the efficiency measures. The Program Evaluators also found through their surveys that Public Sector program applicants frequently cited the low incentives offered by the programs as a barrier to program participation. Local governments and schools across Illinois are suffering from the effects of the recession and are unable to find the funds to install energy efficiency measures. Even in good economic times, the approval process in the government sector is slow and energy efficiency must compete against many other priorities. Many local governments that applied for EEP funding from DCEO and received Notices-to-Proceed found that they were unable to implement the projects because they could not raise the rest of the necessary funds."

DCEO Market

"Another challenge for DCEO is the size of the markets addressed in its Plan. Public Sector entities use only about 7% of electricity statewide and low income households about 6%. Overall, DCEO is administering 25% of EEP funds statewide, but is only serving 13% of the market with its portfolio of programs. "

Economic Stimulus Programs

"Another challenge has been the availability of American Recovery and Reinvestment Act (ARRA) funding. In Illinois, 52 cities and 10 counties in the state are entitled to funds from the U.S. Department of Energy under the Energy Efficiency and Conservation Block Grants program. In total, they are receiving more than $90 million to use for energy projects within their borders. Most have chosen to use the money for energy efficiency measures in their own facilities. While ARRA requires grant recipients to leverage existing state programs, DOE has put tremendous pressure on the local governments to spend the funds quickly.

[3] The complete text is found in *Proposed Changes to DCEO's Energy Efficiency Portfolio,* Illinois Department of Commerce and Economic Opportunity, June 23, 2010.

Many have chosen not to apply for EEP funds, but to pay for 100% of project costs with EECBG funds."

Franchise Agreements

"Under franchise agreements between local governments and ComEd authorizing the Company to deliver electricity within their boundaries, most local governments in northern Illinois do not pay for most of the electricity that they use. Rather, the businesses and residences in the city pay a franchise fee that covers the cost of electricity for the city. Therefore, the governments have very little direct incentive to reduce their energy use. Additionally, many street lights in downstate Illinois cities are owned by Ameren, thus excluding a natural market in the Ameren territory for DCEO's Public Sector Energy Efficiency programs."

In response to these and other challenges, DCEO modified strategies and incentive levels, as noted below:

Incentive Levels

DCEO increased its incentives by 10% in the second program year.

Green Spring

DCEO offered promotional incentive rates in spring 2010 for applications processed after March 5, 2010 and received by April 22, 2010 (Earth Day). DCEO increased incentives for universities, state and federal government by 15% and doubled incentives for local governments, K-12 schools, and community colleges from previous levels. The increased incentives were accompanied by outreach to Trade Allies, the Illinois Municipal League, the Illinois Community College Board, and Regional Planning Agencies. During the promotional period, DCEO reports it received approximately 220 applications, and that more than 80% of the applications were from local governments and schools, who were being targeted with the higher incentives.

ARRA and IMEA

DCEO has found in administering ARRA energy programs that offering incentives of 50% of project costs brought in quite a few local government and school projects. For example, DCEO reports it received 180 applications in response to its Community Renewable Energy Program RFP, in which applicants were eligible for up to 50% of project costs if they were a public entity. DCEO reports that the Illinois Municipal Electric Agency has concluded after offering energy efficiency programs for a year that incentives of 50%-75% are necessary for many local governments to consider energy efficiency projects.

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 Standard program, including the data sources and sample designs used as a base for the data collection activities.

A total of 268 Standard Incentives applications were paid in PY2. Lighting and HVAC variable speed drive measures dominated PY2 activity on a relative basis, but other HVAC, motors, and refrigeration measures were also represented. DCEO achieved 69% of reported energy savings in ComEd service territory (60% of project count) with 31% of energy savings in Ameren territory. Public sector participants included municipalities, schools, colleges and universities, and state and federal facilities. Schools and municipalities accounted for 61% of reported energy savings and 86% of the project count.

The final PY2 evaluation plan called for engineering file review for 40 projects, with on-site visits for a subset of 8 projects to address the gross impact evaluation objectives, plus telephone surveys on 50 projects to address evaluation process and net-to-gross objectives. The key evaluation activities completed for PY2 were:

- Conduct an engineering review of project files and energy savings estimates on a sample of 51 projects selected randomly from the population of projects to support gross impact evaluation. After the close of the PY2 program year, the sample was increased from 40 in the plan to 51 to accommodate a larger population of paid PY2 projects.
- Conduct on-site visits and M&V activities on a sample of 8 Standard projects, selected as a subset from the 51 projects in the file review sample, to support gross impact evaluation analysis.
- Conduct CATI telephone surveys for 51 Standard projects from a population of 168 projects paid as of the July 14, 2010 data extract to support the net impact approach (as described in greater detail in the Net Program Savings section, 2.1.2 below). For PY2, most participants received the Basic rigor NTG approach, but the PY2 Standard project population was large enough so that 9 of the 51 respondents in the sample were evaluated through the Standard rigor approach.
- A brief set of questions in the CATI survey was asked regarding 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. If hours of use data was available from site M&V, that data was used rather than the CATI responses. Of the 51 completed phone surveys, 13 provided hours of use 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 Standard program tracking system. The savings reported in DCEO's tracking reports was evaluated using the following steps:

1. Engineering review at the measure-level for a sample of 51 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 (potentially reported hours of use) 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 Standard 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 and then estimated ex post gross savings based on their review of documentation, consideration of CATI interview response data, and engineering analysis.

To support this review, DCEO 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, post inspection reports, 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 (potentially reported hours of use) was applied to projects.

On-Site Data Collection

On-site surveys were completed for a subset of 8 of the 51 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 were defined separately for Ameren and ComEd.

Peak demand savings for both baseline and post retrofit conditions are the average demand kW savings for the weekday on-peak 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. 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 Standard program was to determine the program's net effect on customers' electricity usage. After gross program impacts have been assessed, net program impacts are derived by estimating a Net-to-Gross (NTG) ratio that quantifies the percentage of the gross program impacts that can reliably be attributed to the program.

For PY2, the net program impacts were quantified from the estimated level of free-ridership. 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 assessed qualitatively through questions asked in the participant phone surveys, but not quantified for the PY2 evaluation.

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

NTG Ratio = 1 – Free-ridership Rate

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 ComEd and Ameren Illinois evaluators with the same questions.

Standard Rigor Free-Ridership Assessment

For larger projects in the sample that were assigned to stratum 1[4] 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, availability of ARRA funds, 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.

[4] Stratum 1 projects are the larger projects that comprised approximately one-third of program energy savings in the July 14, 2010 extract population from which the CATI sample came.

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, SEDAC representative, engineer, architect, manufacturer, distributor, or supplier:
>
> - was the most influential in identifying and recommending that the respondent install the project completed through the Public Sector Energy Efficiency Program, or
> - informed the respondent about the availability of an incentive through the DCEO 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 below, 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 PSEE 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 PSEE 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 Standard program is a multi-step process. The survey covers a battery of questions used to assess net-to-gross ratio for a specific end-use and site.

Responses are used to calculate a Timing and Selection score, a Program Influence score and a No-Program score for each project covered through the survey. These three scores can take values of 0 to 10 where a lower score indicates a higher level of free-ridership. The calculation then averages those three scores to come up with a project-level free-ridership level. If the customer has additional projects at other sites covering the same end-use, the survey asks whether the responses also apply to the other projects. If that is the case, the additional projects are given the same score.

Spillover

For the PY2 Standard 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 DCEO 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 DCEO 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 DCEO 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 DCEO program this influence rating?
11. If you had not participated in the DCEO 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.

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 Standard Program

Scoring Element	Calculation
Timing and Selection score. The maximum score (on a 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 a DCEO staff person C. Information from program marketing materials D. Endorsement or recommendation by a utility account manager E. Other factors (recorded verbatim) F. Information provided through technical assistance received from DCEO or SEDAC staff G. Vendor Score (when triggered) Potential adjustments for non-program influences	Basic Rigor: Maximum of A, B, C, D, and E Standard Rigor: Maximum of A, B, C, D, E, F, and G, with potential adjustments for non-program influences
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

Scoring Element	Calculation
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 the "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
Apply score to other end-uses within the same project?	If yes, assign free-ridership score to other end-uses of the same project
Apply score to other projects of the same end-use?	If yes, assign free-ridership score to same end-use of the additional projects
PY2 Project level Net-to-Gross Ratio (ranges from 0.00 to 1.00)	1 – Project level Free-ridership

2.1.2 Process Evaluation Methods

Three key research activities were conducted in support of the process evaluation: (1) two interviews with the program manager, one interview with the manager of marketing and outreach, and one interview with DCEO management, (2) five interviews with SEDAC management and technical staff, and (3) a quantitative telephone survey with 51 participating customers. These activities are further described in the section below.

2.2 *Data Sources*

Table 2-2 provides a summary of the data collection activities in support of the PY2 evaluation, including the targeted population, the sample frame, and timing in which the data collection occurred.

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	Standard Program Projects	Tracking Database October 6, 2010 Extract	-	All	Ongoing
In-depth Phone Interviews	DCEO Management and Standard Program Staff	Contact from DCEO	Standard Incentives Program Manager Manager of Marketing and Outreach DCEO Management	3	July, Sept., Dec., 2010
	SEDAC Staff	Contacts from DCEO	SEDAC Management and Technical Staff	5	September 2010
Telephone Survey	Standard Program Participants	Tracking Database July 14, 2010 Extract	Stratified Random Sample of DCEO Standard Program Participants	51	August 2010
Follow-up Calls	Standard Program Participants and Vendors	Selected Net-to-Gross Sample	Selected Projects Where Warranted	Selected Projects Where Warranted	October 2010
Project Application File Review	Projects in the Standard Program	Tracking Database, July 14, 2010 Extract	Stratified Random Sample by Standard Project-Level kWh (3 Strata)	51	July – September 2010
On-Site Visit M&V		Project Application File Review Sample	Larger Projects	8	

2.2.1 Tracking Data

The tracking data for this evaluation consisted of two Excel spreadsheet files that DCEO delivered on a periodic basis. Program samples were drawn from the versions sent by DCEO dated July 14, 2010, while final reported ex ante impacts were drawn from October 6, 2010 versions. The files were:

- **PSEE Project Yr 2 KWH Savings-Incentives:** This Excel file (the "PSEE projects" file) contained project level details including a tab identifying measures, incentives, and savings for each participating project plus summary totals.
- **EEPS Yr2 Incentive Applicants:** This Excel file (the "EEPS applicants" file) contained program-level information including one tab for tracking data for applicants (including project name, milestone dates, savings and incentives) plus tabs for summary and status information at the program level.

DCEO processed PY2 applications for payment after the May 31, 2010 close of the program, and indicated to the evaluation team at that time that processing could continue through August. In order to complete evaluation activities within reporting deadlines, it was necessary draw samples not later than mid-July, 2010. The July 14, 2010 tracking system contained 168 Standard projects with a PY2 "voucher out" date to indicate they were paid in PY2, and that population was used to select the engineering review sample and the CATI survey sample. Processing of application payments continued into August of 2010, and DCEO sent interim tracking data updates in August and September. When DCEO created the final version of their PY2 program data on October 6, 2010, 286 projects were in the paid PY2 Standard program population.

2.2.2 Program Manager Interviews

Two separate in-depth telephone interviews were conducted with the PSEE Standard Incentive Program Manager. The first interview, conducted in July 2010, focused on changes to program design and implementation compared to PY1 and the effects of those changes on program administration and participation. A follow-up interview, conducted in September 2010, focused specifically on the role of SEDAC in the implementation of the program. It also informed development of interview guides for SEDAC staff members.

Interviews were conducted in December 2010 with the manager of marketing and outreach and with DCEO management to clarify key points and expand the findings.

2.2.3 SEDAC Interviews

Five in-depth telephone interviews were conducted with management and technical staff from SEDAC. The first, with four members of SEDAC's Management Team, focused at a high-level on SEDAC's role in marketing and providing technical assistance to DCEO's PSEE programs as well as efforts to channel SEDAC clients into the PSEE programs. The other four interviews, with SEDAC technical staff members, focused on understanding various aspects of the day-to-day technical assistance that SEDAC provides to DCEO's PSEE clients.

The guides used for the interviews with SEDAC staff are included in Appendix 5.1.

2.2.4 CATI Telephone Survey

A CATI telephone survey was conducted with 51 participants in the Standard Program. This survey focused on three key areas:

- **Net program impacts**. The survey collected data for a quantitative assessment of free-ridership and a qualitative assessment of spillover.
- **Gross program impacts.** The survey collected data on hours-of-use for lighting measures.
- **Process evaluation.** The survey collected data on participant perceptions of program processes and implementation, satisfaction, barriers to participation, and business demographics.

The survey was directed toward unique customer contact names drawn from the tracking database of PY2 paid standard projects as of July 14, 2010. All surveys were completed by Opinion Dynamics Corporation's call center in August 2010. The CATI survey instrument used for this evaluation is included in Appendix 5.1.

2.2.5 Project Application File Review

To support Final Application file review, DCEO provided access at their office to project documentation in hard copy format for each sampled project, plus electronic documents. The evaluation team scanned the hard copy documents into Adobe PDF files to distribute to team members along with the tracking system files. 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, and vendor proposals), pre-inspection reports, post inspection reports, and important email and memoranda.

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

DCEO's tracking database extract dated July 14, 2010 was used to select 51 gross impact evaluation sample points from the population of 168 paid applications in that extract. The decision to select 51 sample points was based on analysis of paid and pending PY2 projects in the July 14, 2010 database, where we projected at least 204 projects would be paid in PY2. The

final number of paid projects in PY2 was 286 projects. All sample points for the participant telephone survey were selected using the July 14, 2010 database.

2.3.1 Profile of Population

Program-level Standard savings data were analyzed by project size and public sector category to inform the sample design for this population. Using the July 14, 2010 tracking data, Standard records for paid PY2 projects were sorted and placed in three strata by equalizing the expected total standard deviation on the individual realization rates, weighted by size. As tracking data updates became available, the strata boundaries defined on July 14, 2010 were preserved. The final ex ante population of the October 6, 2010 dataset contains significantly higher energy savings in the large-project stratum 1 group.

Sampling for the Standard 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 Standard Program, relative to the July 14 population used for sampling, and the final ex ante population of 286 Standard applications. The number of records is presented by strata, along with ex ante gross kWh claimed.

Table 2-4 shows the population profile analyzed by public sector category type, and Table 2-5 shows the population profile by serving utility.

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

Sampling Strata	Paid Projects, July 14, 2010			Paid Projects, October 6, 2010 Final		
	Count	Ex Ante kWh Impact Claimed	kWh%	Count	Ex Ante kWh Impact Claimed	kWh%
1	18	4,217,186	40%	51	20,877,595	68%
2	36	3,526,238	11%	53	5,159,310	17%
3	114	2,721,822	9%	182	4,696,493	15%
TOTAL	168	10,465,246		286	30,733,397	

Source: Evaluation analysis of reported savings from DCEO tracking data.

Table 2-4. PY2 Standard Program Participation by Public Sector Category Type

Category Type	Paid Projects, July 14, 2010			Paid Projects, October 6, 2010 Final		
	Count	Ex Ante kWh Impact Claimed	kWh%	Count	Ex Ante kWh Impact Claimed	kWh%
K-12	64	3,004,514	29%	107	9,935,041	32%
Municipal	85	5,189,014	50%	138	8,783,006	29%
University	13	1,760,492	17%	20	5,257,839	17%
Federal	2	203,722	2%	7	4,162,276	14%
College	4	307,504	3%	11	2,238,881	7%
State	0	-	0%	3	356,355	1%
Total	168	10,465,246		286	30,733,397	

Source: Evaluation analysis of reported savings from DCEO tracking data.

Table 2-5. PY2 Standard Program Participation Serving Utility

Utility	Paid Projects, July 14, 2010			Paid Projects, October 6, 2010 Final		
	Count	Ex Ante kWh Impact Claimed	kWh%	Count	Ex Ante kWh Impact Claimed	kWh%
ComEd	98	7,804,829	75%	173	21,083,880	69%
Ameren	70	2,660,417	25%	113	9,649,517	31%
TOTAL	168	10,465,246		286	30,733,397	

Source: Evaluation analysis of reported savings from DCEO tracking

A total of 268 Standard Incentives applications were paid in PY2. DCEO achieved 69% of reported energy savings in ComEd service territory (60% of project count) with 31% of energy savings in Ameren territory. Public sector participants included municipalities, schools, colleges and universities, and state and federal facilities. Schools and municipalities accounted for 61% of reported energy savings and 86% of the project count.

The population and energy savings are substantially higher in the final October 6 datasets compared with the July 14 tracking data, with the July 14 ex ante energy impacts being roughly one-third of the final October total. The October 6 data has proportionally higher savings in larger, stratum 1 projects, more savings in federal and college projects, and proportionally more savings in Ameren territory.

Due to the similar nature of PY2 Standard projects, mainly lighting and HVAC VFDs, we conclude the sample drawn from the July 14, 2010 dataset is reasonably representative of the final population of projects represented by the October 6, 2010 data.

2.3.2 Gross Impact M&V Sample

Before final sample selection, the tracking data was reviewed to check for outliers, inconsistencies, and missing values. Some projects contain both Custom and Standard measures (combined projects). The Custom and Standard programs were evaluated through different approaches by necessity, so the evaluation team included all custom measures within the Custom evaluation, and all Standard measures within the Standard evaluation. Site visits and phone surveys were coordinated by assigning combined projects to one evaluation or the other to avoid multiple contacts.

Using the July 14, 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 Standard kWh claimed, and placed into one of three strata by equalizing the expected total standard deviation on the individual realization rates, weighted by size.

The project distribution changed between July 14, 2010 and the final data of October 6, 2010, but the strata boundaries defined using the July 14 data were preserved for all future gross impact, net impact, and process samples.

The Standard evaluation plan called for a target sample of 40 projects in the ex post gross impact M&V sample to receive project application file review, but the sample drawn was increased to 51 to accommodate higher participation levels experienced in PY2. This sample was drawn such that an equal number of projects were randomly selected for each stratum. Each of the 51 records selected represents just one Standard 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 larger projects and projects expected to have greater uncertainty regarding ex post impacts.

Profile of the Gross Impact M&V Sample

Table 2-6 provides a profile of the gross impact M&V sample for the Standard program in comparison with the final Standard program population. Shown is the resulting sample that was drawn, consisting of 51 applications, responsible for 6 million kWh of ex ante impact claim and representing 20% of the ex ante impact claim for the program population. Also shown are ex ante-based kWh sample weights for each of three strata.

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

Standard Population Summary				File Review Sample		
Sampling Strata	Number of Projects (N)	Ex Ante kWh Impact Claimed	kWh Weights	n	Ex Ante kWh	Sampled % of Population
1	51	20,877,595	68%	17	3,942,805	19%
2	53	5,159,310	17%	17	1,618,670	31%
3	182	4,696,493	15%	17	460,500	10%
TOTAL	286	30,733,397		51	6,021,974	20%

Table 2-7 provides a profile of the 8 sites selected from the project file review sample for on-site M&V, which cover 8% of total reported ex ante energy savings.

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

On-Site Sample (Subset of File Review Sample)			
Project ID	Utility	Category Type	Ex Ante kWh Impact Claimed
605	Ameren	University	231,389
527	Ameren	University	193,373
211	Ameren	K-12 School	138,470
172	ComEd	University	859,668
333	ComEd	Municipality	265,932
284	ComEd	Municipality	261,204
370	ComEd	University	224,300
269	ComEd	K-12 School	142,127
Total			2,316,461

2.3.3 CATI Telephone Survey

A CATI telephone survey was conducted with 51 participants in the Standard Program.[5]

Sampling Plan

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.[6] 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 project contact. When the sample was developed, there were 136 unique contacts who had completed 168 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 standard and custom projects were also removed from the sample for the standard 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 July 14, 2010 version of the program tracking database, not all PY2 final applications had been processed and paid out. In addition, due to data processing omissions, some projects that were completed at the time of the survey were not identified as such in the database and were therefore mistakenly excluded from the survey. As a result, only 136 unique contacts were included in the sample frame (compared to a total of 234 unique contacts with 286 projects in the final program database). Fifty-one of these contacts were interviewed, which resulted in a precision level of +/-7% for net-to-gross questions and a precision level of +/-9% for process questions (at a 90% confidence level).[7,8]

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[5] In this section, we refer to 51 completed interviews and 136 unique contacts. At the time of the survey, two additional contacts were included in the sample frame, and a survey was completed with one of them. These two contacts were subsequently reclassified as belonging to the sample frame for the Custom Program. Throughout the remainder of this report, our analyses will include the 51 completed interviews and 136 unique contacts that should have been part of the sample frame for the Standard Program.

[6] Stratum 1: large savers (>136,000 kWh); Stratum 2: medium savers (between 67,000 and 136,000 kWh); Stratum 3: small savers (<=67,000 kWh).

[7] 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.

Net-to-Gross Analysis

Table 2-8 provides a summary of the sampling approach used for the net impact analysis, by stratum. The table shows that the 51 completed interviews represent 15% of program savings.

Table 2-8. Summary of Sampling Approach for the Participant Survey

Sampling Strata	Final Population			Completed Interviews		
	Number of Applications (N)	Ex Ante kWh Impact Claimed	kWh Weights by Segment	Number of Respondents (n)	Ex Ante kWh	% of Population Impacts Surveyed
1	51	20,877,595	68%	9	2,410,082	12%
2	53	5,159,310	17%	18	1,763,505	34%
3	182	4,696,493	15%	24	555,745	12%
TOTAL	286	30,733,397		51	4,729,332	15%

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

Process Evaluation

As the sample frame only included 136 of the final 234 unique contacts, there is a potential for coverage bias, i.e., the exclusion of otherwise qualifying participants from the survey effort. While non-sampling errors, such as coverage bias and non-response error, cannot be quantified, the evaluation team conducted a qualitative assessment of the potential bias resulting from the exclusion of 98 qualifying contacts. We compared the distribution of completed surveys with that of the sample frame population and the final population for two characteristics: sector and project size (see Table 2-9 and Table 2-10 below). This comparison provides an indication of how representative the completed interviews are of the final population.

Sector. The comparison by sector shows that the sample frame population is almost identical to the final population: Local governments represent over half of the population (55% and 51% in the sample frame and final populations, respectively) while K-12 schools represent just over one-third (36% and 37%, respectively). One notable difference is a quadrupling of state and federal government entities between the sample frame and the final population. However, the overall share of these entities is very small (4% in the final population), so it is unlikely that this increase would have a significant effect on overall

[8] It should be noted that precision levels for process questions are estimated based on the sample frame, not the final program population. Precision levels for NTG analysis are estimated based on the final program population.

survey responses. We therefore conclude that the exclusion of 98 qualifying contacts from the sample frame does not introduce coverage bias with respect to sector. However, a comparison of *survey responses* with the population shows that local governments are over-represented while K-12 schools are under-represented in the survey. In addition, no state and federal governments responded to the survey. These represent 1% of the sample frame population and 4% of the final population. While our survey results therefore do not represent the opinions and experiences of state and federal government entities, their small overall share in the population makes it unlikely that this omission would have a significant effect on overall survey responses.

Project size. For the comparison by project size, we used the definition of survey strata used for sampling, i.e., Stratum 1 includes large projects, Stratum 2 includes medium sized projects, and Stratum 3 includes small projects. This comparison shows that medium-sized projects are slightly over-represented in the survey (35% compared to 21% in the final population) while small projects are under-represented (47% compared to 60% in the final population). However, since we stratified by project size, the survey weights applied to process questions correct for any differences in distribution by size (see next section).

Based on these comparisons, we conclude that survey responses, after application of process weights, are reasonably representative of the final PY2 population.

Table 2-9. Comparison of Completed Interviews and Population by Sector

Sector	Completed Interview		Sample Frame Population		Final Population	
	#	%	#	%	#	%
Local Government	36	71%	75	55%	119	51%
K-12 Schools	10	20%	49	36%	86	37%
University	4	8%	7	5%	13	6%
College	1	2%	3	2%	8	3%
Federal Government	0	0%	2	1%	6	3%
State Government	0	0%	0	0%	2	1%
TOTAL	**51**		**136**		**234**	

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

Table 2-10. Comparison of Completed Interviews and Population by Project Size

Project Size	Completed Interview		Sample Frame Population		Final Population	
	#	%	#	%	#	%
Large Projects	9	18%	19	14%	46	20%
Medium Projects	18	35%	34	25%	48	21%
Small Projects	24	47%	83	61%	140	60%
TOTAL	**51**		**136**		**234**	

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

Process Weights

For the process analysis, survey weights were developed for the three sampling strata. These weights reflect the fact that not all strata were surveyed in proportion to their representation in the population. The weights in Table 2-11 were applied to responses to process questions provided by respondents in the three strata:[9]

Table 2-11. Summary of Process Analysis Weights

Sampling Strata	Unique Contacts in Final Population	Completed Surveys	Process Weights
1	46	9	1.114
2	48	18	0.581
3	140	24	1.271
TOTAL	**234**	**51**	

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

[9] Process weights were calculated using the entire standard population of 234 unique contacts, not the original 136 contacts from which the sample was developed.

Survey Disposition

Table 2-12 shows below shows the final disposition of the 136 unique contacts included in the original sample frame for the participant survey. Contact with 95% of the sample was attempted at least once, resulting in 51 completed interviews. The survey center was unable to make contact with 23% of contacts for a variety of reasons including: no one answered the phone, an answering machine picked up, or the phone line was busy. On average, we attempted to reach each of these customers more than four times. The phone numbers provided for 3% of the sample had problems such as being disconnected, blocked, or an incorrect number.

Overall the response rate for this survey was 42% computed as the number of completed surveys divided by the number of eligible respondents.[10]

Table 2-12. Sample Disposition

Sample Disposition	Customers	%
Sample Frame of Unique Contacts*	136	
Completed Survey	51	38%
Not Dialed	7	5%
Unable to reach	31	23%
Callback	32	24%
Refusal/Mid Interview Termination	7	5%
Phone Number Issue	4	3%
Knowledgeable Person No Longer Employed	2	1%
Could not confirm participation	2	1%
Response Rate	*42%*	

Source: ODC CATI Center

[10] Eligible respondents include the following dispositions: a) Completed Surveys, b) Unable to Reach, c) Callback, and d) Refusal/Mid-Interview Termination.

Section 3. Program Level Results

This section presents the PY2 Standard program impact and process evaluation results.

3.1 Impact

3.1.1 Tracking System and Default Savings Review

Tracking System Review

The tracking data for this evaluation consisted of two Excel spreadsheet files that DCEO staff maintained and sent to the evaluation team on a periodic basis. Under this task, we conducted a review of Standard Incentives program data in the DCEO tracking system to identify issues that could affect reported savings. During this review, we looked at project data for outliers and missing information, and checked for incorrect values used by the tracking system to report energy savings. Inconsistencies between the two spreadsheets uncovered changes needed to data regarding incentives, savings, or payment status on several projects. Working with the Standard and Custom program evaluation teams, DCEO produced a final version of the PY2 tracking data on October 6, 2010.

A significant challenge for the evaluation team in PY2 was determining project paid status, and identifying the pipeline of projects processed after May 31, 2010 that would be included within PY2. DCEO previously instructed the evaluation team that "voucher out" date was the key for establishing that a project has been paid, but the "voucher out" is not always maintained prior to completion of all PY2 payments. In sending out the July 14, 2010 extract, DCEO had intended for the evaluation team to use the entire database to define PY2 projects, not just those with a completed voucher out date. The program tracking system would benefit from maintaining a flag to identify paid status, and an additional data field to indicate the likelihood of being paid within the just-completed program year for projects being processed after the program year ends. This would greatly facilitate the evaluation team's ability to draw an appropriately sized representative sample.

DCEO does not track peak demand impacts (kW) for the Custom or Standard Incentive programs. It appears possible to incorporate ComEd and Ameren default peak demand reduction values into the current tracking system or future tracking system.

For PY2, DCEO expanded contact information for program applicants, and this greatly facilitated our development of the phone survey sample data.

Default Savings Review

DCEO default savings assumptions are built into the PSEE projects spreadsheet as a tab that contains a lookup table for kWh savings per unit assumptions by measure and building type.

DCEO default savings are differentiated by four building types from the ComEd assumptions: College/University, Medical, Office, and K-12 School. To generate savings for tracking, DCEO must select one of these four building types to represent the project.

For most measures, DCEO kWh per unit savings assumptions match ComEd's exactly, or had minor differences in the 1% range due to updates ComEd made between PY1 and PY2. ComEd implemented a significant revision to their HVAC default values for PY2, and these updates were not reflected in the DCEO PY2 default values. ComEd's HVAC revisions resulted in default values about 30% lower on average than DCEO's HVAC default values. On the other hand, Ameren territory has cooling loads that are about 30% to 40% higher than ComEd's, based on cooling degree days, so DCEO's default values are reasonable for Ameren territory. We recommend DCEO develop separate sets of default values for weather-dependent measures to reflect Ameren and ComEd territories. If a single default value is maintained, DCEO should use a weighted average between Ameren and ComEd.

DCEO's default values for variable speed drive measures for HVAC fans and pumps were about 40% lower than ComEd's updated values for PY2 for three building types: college/universities, medical and K-12 schools. DCEO should update these default values as variable speed drives were one of the more significant non-lighting measures for reported impacts.

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.[11] The purpose of the review was to assess the underlying algorithms, assumptions, and calculated default savings proposed by ComEd for PY2. The memo identifies a number of further updates that could be addressed through an iterative process between the evaluation team and program implementers in PY3.

3.1.2 Gross Program Impact Parameter Estimates

Ex post gross program impacts were developed for this evaluation for the Standard 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 lighting hours of use to support the gross impact evaluation. Gross impacts were adjusted *only* for those projects in the

[11] 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).

engineering file review group. Of the 51 completed phone interviews, 13 covered projects that were also in the file review sample for gross impact evaluation. The hours of use battery in PY2 factored in participant reported responses for two schedule periods during the year: the regular schedule and an alternative schedule (e.g. school summer schedule). The survey also asked respondents to provide adjustment factors for percent of lights kept operating during occupied and unoccupied periods, during regular and alternate schedules. The percent-kept-on adjustment factors allow calculation of an "equivalent full load hours" value for lighting, comparable to the hours of use values used by ComEd to derive the default lighting savings values that DCEO employs. The comparisons to default values for individual projects identified by default building type are provided in Table 3-1.

Table 3-1. Participant Reponses to CATI Lighting Hours of Use Questions

Project Default Building Type	Participant Reported Annual Hours of Use, Adjusted for Self-Reported Percent Operating	Default Savings Value Annual Hours of Full Load Use
Office	5,256	2808
Office	4,709	2808
Office	3,767	2808
Office	2,726	2808
Office	2,628	2808
Office	2,500	2808
Office	2,240	2808
Office	1,078	2808
Office, Un-weighted Average	**3,113**	**2808**
K-12 School	5,539	1873
K-12 School	4,405	1873
K-12 School	3,986	1873
K-12 School	3,604	1873
K-12 School	2,139	1873
K-12 School, Un-weighted Average	**3,934**	**1873**

Realization Rates for the Standard 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.[12] 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 Standard 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.

DCEO does not report demand impacts, therefore, a realization rate cannot be calculated for demand savings. The evaluation process was only able to estimate demand savings for the projects in the engineering review sample.

The results are summarized in Table 3-2.

Table 3-2. Gross Impact Realization Rate Results for the Standard 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	3,942,805	NA	5,318,877	903	1.35	NA
2	1,618,670	NA	1,828,335	384	1.13	NA
3	460,500	NA	558,998	104	1.21	NA

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

The relative precision at a 90% level of confidence is ±19% relative to the final population (October 6, 2010 data), which is higher than the ±10% targeted by the sampling process, as shown in Table 3-3 below.

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

Sampling Strata	Relative Precision ± %	Low	Mean	High
Stratum 1	31%	0.93	1.35	1.77
Stratum 2	13%	0.98	1.13	1.27
Stratum 3	20%	0.98	1.21	1.45
Total kWh RR	19%	1.03	1.27	1.50

Two factors account for the relative precision being worse than planned. The first is that the sample was drawn from the population of paid projects as of July 14, 2010, when only 168 projects were paid. The program ultimately paid 286 projects, including 7 large projects that would have been placed into stratum 1, which had worst relative precision at ±31%.

If the final population remained at 168, the relative precision for the sample would have been ±7% and the overall mean would have been 1.24.

A second factor causing the relative precision to be worse than ±10% was a single stratum 1 project with a very large realization rate. This project involved VFDs on HVAC fans and pumps and had an ex ante energy savings of 193,373 kWh and on-site verified ex post energy savings of 1,381,671 kWh, for a realization rate of 7.1. Including this project in the sample caused the error ratio to equal 0.86, which is substantially higher than PY1 and what was assumed when drawing the PY2 sample. When the error ratio is large, a much larger sample is required to meet a given relative precision target. Other than this project, most of the projects in the sample had realization rates close to 1, reflecting the small variability among the projects, the majority of which involved lighting retrofits.

To illustrate the impact of this single project, we recalculated the means and relative precisions with this project removed from our sample. When we do this, the error ratio drops to 0.37, and the relative precision of the sample, even for the final population of 286 projects, is ±8%. The mean realization rate drops from 1.27 to 1.11.

3.1.3 Gross Program Impact Results

Based on the gross impact parameter estimates described previously, gross program impacts for energy savings were derived for the PY2 Standard program. Although the PY1 evaluation estimated demand savings for the overall Standard program by applying a ratio of energy to

demand savings from the sample to the project population, this approach was not conducted in PY2. Due to the ±19% relative precision on the energy estimate in PY2 and high variability of realization rates as indicated by the high error ratio, the evaluation team concluded the sample results should not be used to estimate program-level demand savings. We report only the ex post demand reductions estimated for projects in our review sample.

The results are provided in Table 3-4.

Table 3-4. Gross Parameter and Savings Estimates

Segment	kWh, Ex Ante	kWh, Ex Post	kWh RR	kW, Ex Ante	kW, Ex Post, Sample only	kW RR
Total	30,733,397	38,959,615	1.27	NA	1,390	NA

Some general observations from the gross impact sample:

- The realization rate for kWh was 1.27. The primary reasons for being greater than one are that measures involving VFDs applied to HVAC fans and pumps had substantially higher savings than assumed in the default values, and that verified annual hours of use were higher than default values for several 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 sites with verified hours that exceeded default values.
- Many of the projects in the sample were missing complete sets of manufacturer specification sheets for the installed measures in the documentation package. On these projects, we were able to verify measure installation from invoices and determine some specifications through invoices and site visits, but default savings values were retained when as-installed equipment specifications could not be obtained.

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 Standard program was estimated using a customer self-report approach supplemented by vendor interviews. 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). Vendor interviews, if triggered, were conducted for participants assigned to stratum

1 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 not included in the calculation of NTG ratio for PY2. The NTG ratio and relative precision at a 90% confidence level for the final program population (October 6, 2010 data) is provided in Table 3-5.

Table 3-5. NTG Ratio and Relative Precision at 90% Confidence Level

Sample Strata	Population (N=286)	NTG Interviews (n=51)	NTG Sample (n=52)	Sample kWh Wgts.	Relative Precision ± %	Low	NTGR Mean	High
1	51	9	9	0.403	9%	0.64	0.70	0.76
2	53	18	18	0.337	4%	0.76	0.80	0.83
3	182	24	25	0.260	8%	0.69	0.75	0.81
Total	286	51	52	1.000	7%	0.70	0.75	0.80

Comparing PY1 and PY2, the mean NTG ratio increased significantly from PY1 (0.62) to PY2 (0.75). 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 increased from 0.47 in PY1 to 0.75 for PY2. One could speculate this was due economic conditions limiting public sector funding of large discretionary projects, and these participants not intending to implement big energy efficiency projects until after contact by the program.

The NTG ratio estimate for PY2 included a more complex "standard rigor" level of analysis conducted on larger projects, defined as those assigned to stratum 1. 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, 9 of 51 respondents in our sample went through the standard rigor approach, and two of the nine standard rigor interviews had responses that triggered follow-up interviews with two different vendors.

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

Only two vendor interviews were triggered by participant responses, and only one vendor completed the interview. The effect of including the vendor interview in the sample was to raise the NTG ratio for the overall program from 0.74 to 0.75. This is a relatively small change. One reason for this small increase was that end-user participants with large projects had already given DCEO relatively high scores for program influence, particularly the availability of the incentive. This limits the potential to raise the score further.

Participant Spillover

The existence of participant spillover was qualitatively assessed through questions asked in the participant phone survey. The evidence of spillover from the CATI participant survey for the Standard program is presented in Table 3-6 below.

Table 3-6. Evidence of Spillover in PY2 Standard from Participant Phone Survey

Spillover Question	Evidence of Spillover
Since your participation in the DCEO 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 51 survey respondents that responded to this question, 20 said "Yes" (39%). These respondents identified a total of 30 energy efficiency measures.
What type of energy efficiency measure was installed without an incentive?	(3) T5 or T8 lamps or Lighting upgrades (2) CFLs or LED lamps (5) Lighting controls or occupancy sensors (8) Unitary or Split system cooling or heat pumps (1) Room air conditioners (2) Variable speed drives (1) Efficient motors (8) Other, mainly heating systems and controls
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 DCEO program in your decision to implement this energy efficiency measures?	For the 30 implemented measures and studies: (10) Rating of 0 (3) Rating between 1 and 3 (4) Rating between 4 and 6 (4) Rating between 7 and 10 (9) Did not know

Spillover Question	Evidence of Spillover
If you had not participated in the DCEO 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 30 implemented measures and studies: (3) Rating between 1 and 3 (3) Rating between 4 and 6 (17) Rating between 7 and 10 (7) Did not know
Why did you purchase this energy efficiency measure without the financial assistance available through the DCEO's program?	For the 4 implemented measures indicating strong DCEO influence: (1) Rebate too small (2) Lack of knowledge of the program (1) Don't know

These findings suggest that spillover effects for PY2 are relatively small, with only 4 respondents pursuing 4 measures where a strong influence was indicated for the DCEO 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.

3.1.5 Net Program Impact Results

Net program impacts were derived by multiplying ex post gross program savings by the estimated NTG ratio. Table 3-7 and Table 3-8 provide the program-level evaluation-adjusted net impact results for the PY2 Standard program. The NTG ratio is the same for energy and demand savings, 0.75, due to the use of the identical responses from each contributing participant (and other sources).

The chained realization rate (gross RR * NTG Ratio) is 0.95 for kWh.

Table 3-7. 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	30,733,397	38,959,615	1.27	29,219,711	0.75

Table 3-8. Program-Level Evaluation-Adjusted Net kW Impacts for PY2

Segment	Ex Ante Gross kW	Ex Post Gross kW, Sample Only	kW RR	Ex Post Net kW	NTGR (ex post gross)
Total	NA	1,390	NA	1,043	0.75

3.2 Process Evaluation Results

The process component of the Standard Incentives program evaluation focused on program implementation, program design and processes, marketing and outreach, and participant satisfaction. Data sources for the process component include a review of program materials, two in-depth interviews with the PSEE Standard Incentives Program Manager, in-depth interviews with SEDAC management and technical staff, an interview with the manager of marketing and outreach and DCEO management, and a telephone survey with 51 program participants. Of the telephone survey respondents, 31 are in ComEd's service territory and 20 are in Ameren's service territory.

3.2.1 Program Theory

Given modest changes in the program design, the program theory/logic model was not revisited for PY2. Please refer to the PY1 report for more information on this topic and the program theory and logic model for the PSEE Standard Program.

3.2.2 Participant Profile

In PY2, 226 organizations completed a total of 286 projects that accounted for over 30.7 GWh of ex-ante gross savings.[13] PY2 participants represent a range of sectors. Key observations, by sector, are:

[13] Gross savings reported in this section are based on the program tracking database of October 6, 2010.

- Local governments represent the largest share of projects (48%), participants (51%), and the second largest share of energy savings (29%). On average, projects in this sector have the smallest savings (63.6 MWh).
- K-12 schools account for the largest total savings of any sector (9.9 GWh or 32% of program total) and the second largest share of projects (37%) and participants (38%). As with local governments, projects in this sector tend to be small (on average 92.9 MWh), although the largest PY2 project (2.4 GWh) was completed in this sector.
- Universities are most likely to have multiple projects per participant. With 20 projects completed in PY2 (7% of program total), they account for 17% of ex ante gross savings.
- The average size of projects in the federal government sector is larger than any other sector (594.6 MWh). This is driven by two projects over 1.4 GWh, which are among the three largest projects in PY2.

Table 3-9 summarizes the distribution of PY2 projects, participants, and energy savings by sector.

Table 3-9. Distribution of Projects, Entities, and Savings by Sector

Sector	Projects		Participants		Projects / Participant	Ex Ante Gross Savings		kWh/ Project
	#	%	#	%		kWh	%	
Local Government	138	48%	116	51%	1.2	8,783,006	29%	63,645
K-12 Schools	107	37%	85	38%	1.3	9,935,041	32%	92,851
Universities	20	7%	9	4%	2.2	5,257,839	17%	262,892
Community Colleges	11	4%	8	4%	1.4	2,238,881	7%	203,535
Federal Government	7	2%	6	3%	1.2	4,162,276	14%	594,611
State Government	3	1%	2	1%	1.5	356,355	1%	118,785
TOTAL	**286**		**226**		**1.3**	**30,733,397**		**107,459**

Source: DCEO Program Tracking Database

DCEO operates the PSEE program with a joint goal for energy savings that combines Standard and Custom program results, not as separate goals for each program. The combined Standard and Custom goal for PSEE net energy savings is 99.5 GWh.

In PY2 Standard program participation increased significantly compared to PY1, from 155 projects completed by 105 participants to 286 projects completed by 226 customers. Accordingly, the ex ante gross savings more than doubled from 14.9 GWh in PY1 to 30.7 GWh in PY2. Ex post net savings nearly tripled, from 10.9 GWh to 29.2 GWh.

DCEO did not meet the PSEE PY2 plan target of 99.5 GWh for combined Custom and Standard energy savings, but DCEO's PY2 plan target was set high relative to baseline total usage in the public sector. If achieved, DCEO's PSEE goal of 99.5 GWh would save 1.07% of estimated public sector energy usage in PY2[14], substantially higher than the legislative goal of 0.40% for the second year of the energy efficiency portfolio standard. Combining Standard and Custom, the PY2 ex post net savings for PSEE (excluding the pilot Retrocommissioning program) of 43.2 GWh is 0.47% of 9,271 GWh base usage.

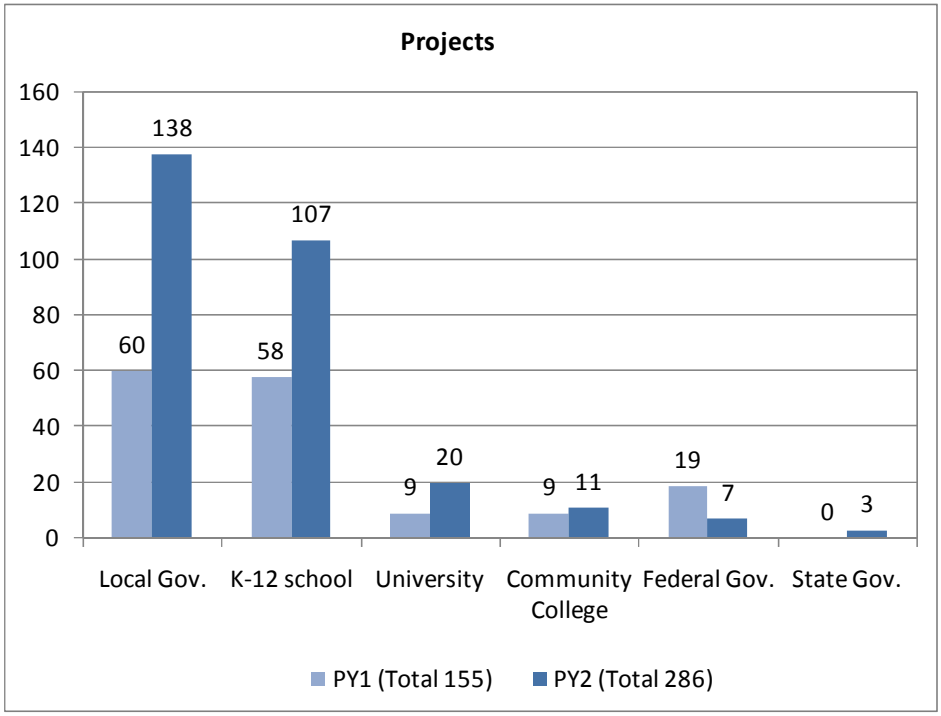
Key comparisons between PY1 and PY2 include:

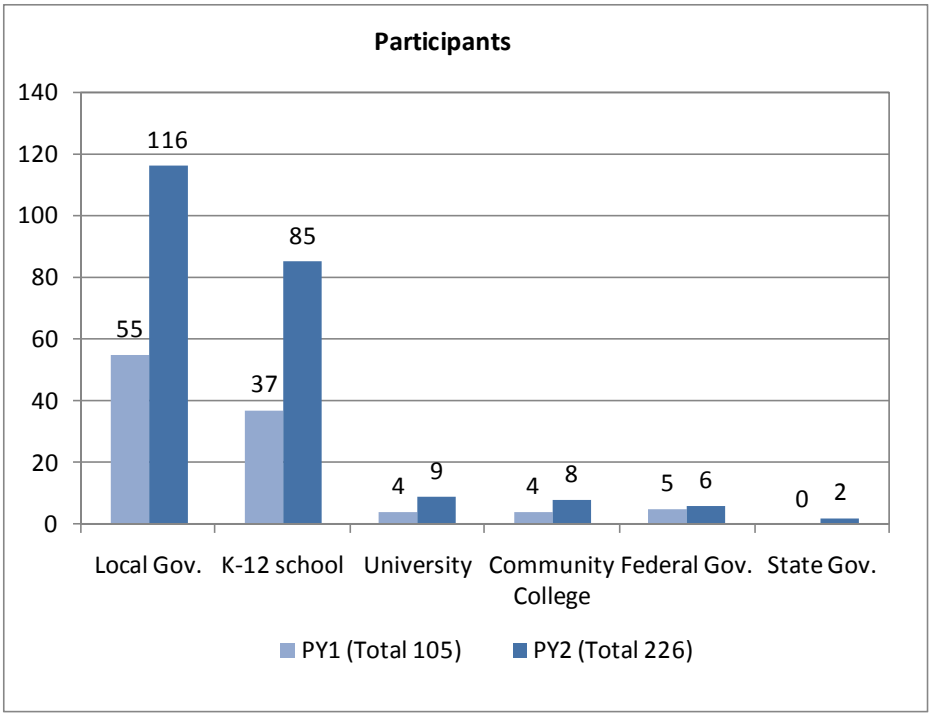
- Local governments and K-12 schools continue to account for the largest share of projects. The share of projects implemented by local governments increased from 39% in PY1 to 48% in PY2. The only sector with fewer projects in PY2 than in PY1 is the federal government (19 or 12% in PY1 versus 7 or 2% in PY2).
- The distribution of participants across sectors in PY2 is nearly identical to that of PY1, with local governments accounting for slightly more than half of the entities, K-12 schools representing slightly more than a third, and all other entities representing 5% or less of the population.
- In PY2, K-12 schools (32%) overtook local governments (29%) in the share of ex ante gross savings. Federal governments showed the highest percentage increase in savings (more than four-fold), from 890 MWh in PY1 to 4,162 MWh in PY2.

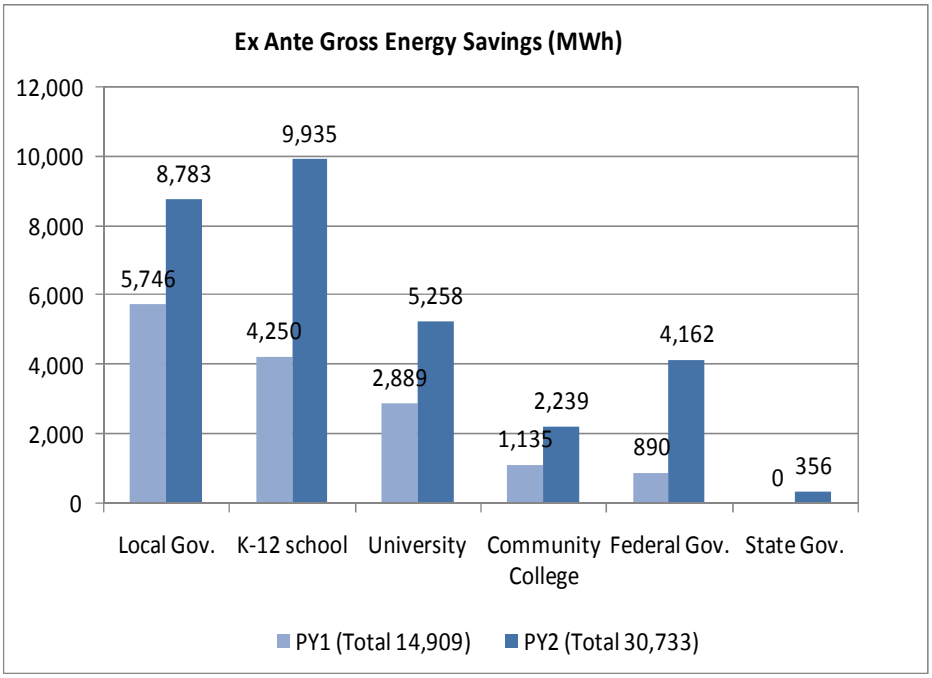
Figure 3-1 compares the number of projects, participants, and ex ante gross energy savings by sector and program year.

[14] Communication from David Baker, DCEO, December 6, 2010. Based on a public sector usage of 9,271,325 MWh for non-low income public sector energy consumption.

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







Source: DCEO Program Tracking Database

3.2.3 Program Design and Processes

Overall, changes made to the Standard Program in PY2 were modest. Specific changes and enhancements are discussed in the subsections below.

Application Process

Similar to PY1, the application process includes a pre-approval application (not required of all projects) and a final application. Only minor changes were made to the PY2 application form. These include clarifications as well as a few additions to form, e.g., project start and end date, other sources of project funding, total project costs, and the utility supplying service at the address of measure installation. The PY2 application also requires submission of a utility bill, instead of only requesting the account number and name on the account. No changes were made to the incentive worksheets (other than changes in eligible measures and incentive amounts).

As in PY1, program guidelines stipulate that projects must be completed within 90 days of pre-approval. However, this deadline is not enforced, and projects often take longer than 90 days. Program participants must submit the final approval application within 60 days of project completion.

A majority of participants (67%) fill out the program paperwork themselves. Most of these customers (91%) feel that the application forms clearly explain the program requirements and

participation process. The majority of those who filled out the paperwork themselves (80%) rate the application process as easy; none rate the process as difficult.[15] Fewer participants in PY2 (6%) than in PY1 (14%) noted that the paperwork is too burdensome (unprompted question about program drawbacks), although the difference is not statistically significant.

Interviewed SEDAC technical and management staff noted that some clients need help with paperwork, although most clients do not find the paperwork too burdensome.

Participation Process

The participation process has remained largely unchanged from PY1. Every standard project still has to undergo several steps, including project application, final paperwork, payment processing, and incentive disbursement. In addition, certain projects are subject to pre- and post-inspections to qualify for an incentive.

Only 11% of program participants experienced problems with their participation in the program in PY2, although some of these were issues with a contractor or supplier, not program staff or processes. Overall, 89% of participants were satisfied with the program and 49% were very satisfied[16] (see also Section 3.2.7).

Incentives

In order to induce participation, a few changes have been made to the program incentive structure in PY2:

- The incentive cap was increased from $100,000 in PY1 to $200,000 in PY2. The incentive cap is in place to reduce the possibility of one entity receiving an undue share of the program's incentive pool. While the program exercises a certain amount of flexibility in enforcing the incentive cap, only four of the 286 PY2 projects received an incentive of over $200,000. Our PY1 evaluation report had recommended to closely monitor exceptions to the cap. However, given shortfalls in savings relative to goals in PY2 and increasing savings goals in PY3, we believe that the continued prudent use of exceptions to the cap is well justified.
- DCEO increased its incentives for standard measures by 10% in PY2.
- During the program's "Green Spring Sale" (see also discussion below), DCEO increased incentives for universities and state and federal government by 15% and doubled

[15] "Easy" is defined as a score of 7 to 10 on a scale from 0 to 10, where 0 is "very difficult" and 10 is "very easy." "Difficult" is defined as a score of 0 to 3.
[16] "Satisfied" is defined as a score of 7 to 10 on a scale from 0 to 10, where 0 is "very dissatisfied" and 10 is "very satisfied."

incentives for local governments, K-12 schools, and community colleges. According to program staff, this promotion had a dramatic effect on increasing applications, especially by local governments and schools.

Program incentives were initially set in PY1 to match those offered by the utilities to their private sector customers. However, experience in other jurisdictions has shown that public sector entities generally require substantially higher incentives than private sector entities to implement energy efficiency measures.

The Green Spring Sale demonstrated that participation could be increased by increasing incentive levels, however, the optimum incentive levels to maximize program savings within the program budget is unknown. There should be sufficient data from the PY2 experience for DCEO to run planning scenarios to explore extending higher incentive levels across more sectors and for longer periods of time. The program should consider offering permanently higher incentives or repeating promotions like the Green Spring Sale (preferably not in the final months of the program year) to further increase participation.

Payment Processing

According to the Program Manager, payment processing consumes a significant amount of staff time. In PY2, several factors contributed to this burden and resulted in a back-log in incentive processing after the end of the program year:

- The payment process for incentives of $10,000 or more must meet several accounting and legal requirements before payment can be made to the customer. These requirements can cause the process to take several months from the time a completed final application is received to the time the incentive is paid to the customer. In PY2, the State added an electronic grant system with new monitoring requirements which further increased the amount of time spent on this process.
- Because of the timing of the Green Spring Sale, a large percentage of PY2 applications were submitted late in the program year and processed in the early months of PY3. This resulted in a significantly increased administrative burden at a time when final PY2 processing should have occurred. As a result, program databases were not finalized until early October 2010 which caused sampling problems and reporting delays for the evaluation team (see also Section 3.1.1 above).
- Because of procurement limitations, payment processing is not contracted to outside vendors.

DCEO added staff during PY2 and requested more staff for PY3, allowing for specialization of roles, and this may help reduce the burden on staff with implementation responsibilities.

Green Spring Sale

In the final three months of PY2, DCEO launched a special promotion, called the "Green Spring Sale," to stimulate participation in the PSEE programs. As part of this promotion, local governments, K-12 schools, and community colleges were eligible for a 100% increase in incentives, while universities and state and federal governments qualified for a 15% incentive increase. DCEO held a webinar with trade allies to explain the Green Spring Sale. According to program staff, this promotion was very successful with approximately half of all PY2 applications coming in during the 3-month period of the sale.

Based on the participant survey, nearly half of PY2 participants (43%) are aware of the Green Spring Sale and a quarter (24%) participated. Those who were aware of the sale primarily learned of it through e-mail (30%), trade allies (20%), and newsletters or mailings (17%). Most participants did not have any feedback on the sale. Several participants suggested that the time frame for the sale should be extended and that DCEO should give more advanced notice.

3.2.4 Program Implementation

In PY2, DCEO relied upon internal staff to deliver and market the program, supplemented by SEDAC staff for technical assistance and outreach. DCEO leveraged Ameren and ComEd marketing and outreach channels, in particular their trade ally mailing list, to promote the program to public entities.

Program Resources

DCEO took several steps to increase PSEE staff levels for PY2 and beyond. DCEO used its role in support of the American Recovery and Reinvestment Act of 2009 (ARRA) as an opportunity to hire six staff with primary responsibility to ARRA, but with the ability to support EEPS up to half time as time allowed. The ARRA hires will be able to transition full time to EEPS as ARRA work phases out for completion by January 2012. In addition, DCEO added two staff persons specifically for EEPS in PY2. DCEO is planning for additional hires in PY3.

Beginning in PY1, it was more common for program staff to take assigned projects from start to completion with responsibility for all delivery and administrative roles. With the addition of staff resources in PY2 and PY3, DCEO is transitioning toward more specialization among staff for internal program delivery roles (application and payment processing, data entry, technical support, etc.) and market and geographic segmentation (K-12 schools contact, community college contact, ComEd municipalities, etc.). This is expected to allow program managers to spend more time on strategy and marketing. Deployment of a new tracking system in PY3 should reduce administrative burden and allow data entry to be assigned to dedicated staff.

Although staff faced challenges in PY2 to keep up with workload during peak periods of ARRA work and the Green Spring sale, this is expected to ease over time as ARRA responsibilities

conclude and staff transitions to PSEE. With goals increasing for PY3, staff resources continues to be a factor to monitor for the DCEO PSEE programs.

Smart Energy Design Assistance Center

SEDAC plays an important role in supporting the implementation of the DCEO PSEE programs. Initially created by DCEO to provide design assistance to small private sector businesses, the introduction of the Illinois Energy Efficiency Portfolio Standard (EEPS) resulted in the expansion of SEDAC's role to also include public sector facilities. SEDAC is currently co-sponsored by DCEO, ComEd, and Ameren Illinois Utilities to provide assistance to clients in both the private and public sectors. However, because of its origin, its physical location at the University of Illinois, and the Standard Program Manager's managerial role at SEDAC, SEDAC has a much closer relationship with DCEO than the utilities. This relationship is apparent in the mix of customers SEDAC currently serves. While public sector entities made up about 44% of clients in PY1, this share has increased to approximately 56% in PY2 and 70% in the first few months of PY3.

SEDAC currently supports several key functions for the PSEE programs. These functions are generally conducted in collaboration with DCEO and supported by DCEO funding. They include:

- **Marketing.** Key SEDAC marketing activities include development and distribution of marketing materials and strategic outreach.
    - Marketing materials: Key marketing materials include (1) A monthly electronic newsletter, distributed to about 4,000 market actors and potential customers from SEDAC's contact lists; this newsletter is also provided to DCEO to distribute to its own contacts; (2) case studies and "niche market" educational materials directed towards targeted sectors, like water treatment facilities, within the public sector; and (3) e-mail blasts promoting SEDAC training events.
    - Strategic Outreach: SEDAC's strategic outreach includes face-to-face meetings, teleconferences, presentations, and participation in conferences that are often geared toward public sector clients. These outreach activities focus on energy savings opportunities and promoting the EEPS incentives programs.
- **Training.** The trainings SEDAC holds in collaboration with DCEO are intended to educate public entities about the PSEE programs – including measures offered and application processes – through workshops, lunch sessions, seminars, and occasionally client-focused sessions. In PY2, SEDAC organized six training sessions for the public sector, up from only two in PY1.

- **Technical design and implementation assistance**. In addition to maintaining a list of screened contractors on its website, SEDAC offers four levels of technical design assistance that are heavily utilized by public sector clients:
    - Level 1, Initial Consultation: Initial Consultation occurs when clients call or e-mail SEDAC for technical advice and direction or for funding information. At this stage SEDAC experts usually, but not consistently, inform clients about the PSEE programs.
    - Level 2, Energy Audits: In Level 2, SEDAC technical staff analyzes current energy consumption of a facility and suggests measures to reduce energy consumption. Any PSEE incentive opportunities and amounts associated with the recommended measures are listed in the report.
    - Level 3, Design Assistance: In Level 3, the analyst estimates the cost of doing the project and conducts a life cycle cost analysis. Clients receive Level 3 assistance based on the amount of potential savings SEDAC considers could be achieved if the project is implemented.[17]
    - Level 4, Implementation Support: Level 4 occurs when (1) clients need help navigating their interactions with service providers because of conflicting information; (2) clients want advice out of a desire to achieve even greater savings through additional measures; or (3) SEDAC technical staff members follow up with clients to learn if the client has implemented the recommended measures.

Results from the process evaluation indicate that SEDAC plays a key role in supporting DCEO and that it is effectively channeling participants into the PSEE program. Specific findings include:

- **SEDAC Newsletter**. More than one-third of participants (36%) have received information about the PSEE programs through the SEDAC newsletter, up from 24% in PY1 (difference not statistically significant).
- **Outreach and Trainings.** Slightly more program participants recall attending a SEDAC event that discussed the PSEE programs in PY2 (37%) than in PY1 (30% – difference not

[17] SEDAC determines if it will provide a client with Level 3 service after a review of the client's utility bills from the previous twelve months. The utility bills indicate (1) the energy savings potential – those with higher utility bills demonstrate a larger potential to achieve savings and are viewed as a more worthwhile use of SEDAC's resources and (2) the motivation of the client, indicating their likelihood to move forward with implementation – clients who are unwilling to put in the time to collect these documents indicate less of a commitment to putting in the required effort needed to implement projects.

statistically significant). SEDAC management and technical staff considers identifying public sector entities the most challenging part of the outreach process.

- **Contractors.** Program participants generally are not aware of their contractors' association with SEDAC. When asked if their contractor is affiliated with SEDAC, over half of PSEE participants who used a contractor (54%) do not know; 32% believe the contractor is affiliated with SEDAC and 14% believe the contractor is not affiliated.
- **Channeling Participation.** Approximately 20% of PSEE program participants in PY2 used some level of SEDAC design assistance.[18] Conversely, approximately 65% of public sector clients who received SEDAC's Level 2, 3, or 4 assistance in PY2 received DCEO incentives for one or more facilities.[19] Notably, this rate of participation by public sector SEDAC customers in the DCEO programs is substantially higher than that of private sector SEDAC customers in the ComEd or Ameren Illinois Utilities programs. SEDAC staff suggests this high rate of program participation is due to the amount of attention public sector clients receive from SEDAC, targeted marketing, and the networking that occurs in partnership with DCEO. One suggestion to channel even more clients into the DCEO programs, provided by SEDAC staff, is to receive more frequent updates on which clients have received incentives.[20] This would allow SEDAC staff to more efficiently identify and follow up with customers who have received implementation recommendations but have not begun or completed implementation. Ideally the new PSEE client database, currently under development, will facilitate this process by giving SEDAC regular access to current information.

DCEO and SEDAC have been working collaboratively for nearly five years. The relationship functions well, and both groups are satisfied with communication. Overall, the Standard Incentives Program is making good use of SEDAC's services and should continue to do so in future program years.

Cooperation with ComEd and Ameren Illinois Utilities

In PY2, DCEO continued to leverage Ameren Illinois Utilities and ComEd activities in promoting the PSEE programs. Cooperation is enhanced through monthly conference calls between Ameren, ComEd and DCEO that discuss marketing and outreach and other issues. DCEO is given time to make presentations at account manager meetings. DCEO feedback

[18] Source: Interview with SEDAC's Research Specialist in Planning (9/22/10).
[19] Source: *The Illinois Smart Energy Design Assistance Program EEPS Annual Performance Evaluation, 6/1/09 through 5/31/10*, submitted by University of Illinois at Urbana-Champaign and 360 Energy Group, LLC. (7/30/10).
[20] Currently, DCEO transmits their participation list to SEDAC at the end of the program year. SEDAC then cross-references their customer list with that of DCEO.

suggests the utilities are generally receptive to including DCEO at events and in outreach efforts. DCEO helped fund and co-sponsor some larger outreach events with the utilities.

Trade Allies

DCEO is leveraging the trade ally network of SEDAC, Ameren Illinois Utilities, and ComEd, referring potential participants looking for a qualified contractor to their lists. DCEO has made presentations on the PSEE program at trade ally events and meetings throughout PY2, conducted webinars for trade allies, and held table displays at larger events.

In PY2 both Ameren Illinois Utilities and ComEd made steps to refine their trade ally networks by introducing mandatory ally training and providing higher visibility to program-active allies. Ameren Illinois Utilities also introduced a trade ally bonus for bringing in projects over $10,000, which was very successful in increasing participation. ComEd introduced a similar bonus in the fall of 2010. Although a contractor/trade ally bonus may not be feasible for DCEO, DCEO can target the utilities' high performing, active trade allies with a more intense level of outreach than might be provided to a larger list. For example, some programs use breakfast meetings or "lunch and learn" events at trade ally offices to cater to high-profile trade allies.

The telephone survey with program participants included questions about their use of contractors, their contractors' affiliation with SEDAC or the utility trade ally networks, and satisfaction with their contractors. 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 affiliated with SEDAC or a utility. Specific findings from the survey include:

- 71% of participants used a contractor for their project.
- 14% of participants first heard about the program from a contractor.
- 66% of participants discussed the program with a contractor.
- 55% named a contractor, equipment installer, designer, or consultant as providing the most assistance in the design and specification of the installed equipment; 30% named an equipment distributor, supplier, or vendor.
- A contractor's affiliation with SEDAC or the utility programs is only moderately important to program participants: Only 31% consider it important that their contractor is affiliated with an electric utility program; 36% consider it not at all important.[21] Only

[21] "Important" is defined as a score of 7 or higher on a scale from 0 to 10, where 0 is "not at all important" and 10 is "very important."

14% participants with a contractor-implemented project confirmed that their contractor is affiliated with SEDAC; however, 54% did not know.

- Participant satisfaction with the contractors who helped implement the projects is high. All interviewed participants said that their contractor was able to meet their project needs[22] and that they would recommend their contractor to others.

Given increased program goals for PY3, trade ally involvement will become more important to the success of the program. We recommend that the program continue to capitalize on the trade ally networks created by ComEd and Ameren Illinois Utilities. In addition, the program should try to differentiate itself from the utility programs and more independently reach out to trade allies.

Account Managers

During PY2, DCEO marketing and outreach staff made presentations to ComEd and Ameren account managers to engage them in promoting the DCEO PSEE programs. The level of utility account manager support of DCEO programs is specific to individual and utility; DCEO reports some individuals are providing marketing support while others simply do referrals to DCEO.

Account managers for both utilities were involved in PY2 projects, and the DCEO program manager acknowledged their role in referring customers to the PSEE programs. Interviewed program participants provided the following information about account managers:

- Nearly half of program participants (44%) report having a utility account manager.
- Only 30% of participants with an account manager discussed the program with their account manager. However, 63% of participants with an account manager report that their account manager assisted them with the project they implemented through the DCEO program.
- Only 5% of participants first found out about the program from an account manager (11% of those who have an account manager).

Account managers can be an effective vehicle for promoting the program as they have established relationships with the customers targeted by this program (mainly larger customers). With increasing savings goals in PY3, the program should continue to reach out to account managers and try to engage them to a greater extent in promoting the program. Ameren Illinois Utilities and ComEd have both started an account manager bonus/incentive system to get them more engaged in promoting the utility programs. Although DCEO cannot

[22] A score of 7 or higher on a scale from 0 to 10, where 0 is "not at all able to meet needs" and 10 is "completely able to meet needs."

offer incentives to utility account managers, DCEO should poll account managers for ideas on ways that DCEO could support them in return for their assistance with PSEE.

3.2.5 Program Marketing & Outreach

Overall program marketing activities increased in PY2 compared to PY1. DCEO identified 49 events and meetings where outreach activities were conducted in-person with an estimated total attendance of 3,790. Target audiences cover a range of public sectors (schools, municipalities, universities, state) and individuals (school boards, facility engineers, public officials, etc.), and trade allies (architects, electrical contractors, and engineers). DCEO has a prepared presentation with Q&A that is adjusted for each audience, and typically lasts from 20 minutes to an hour.

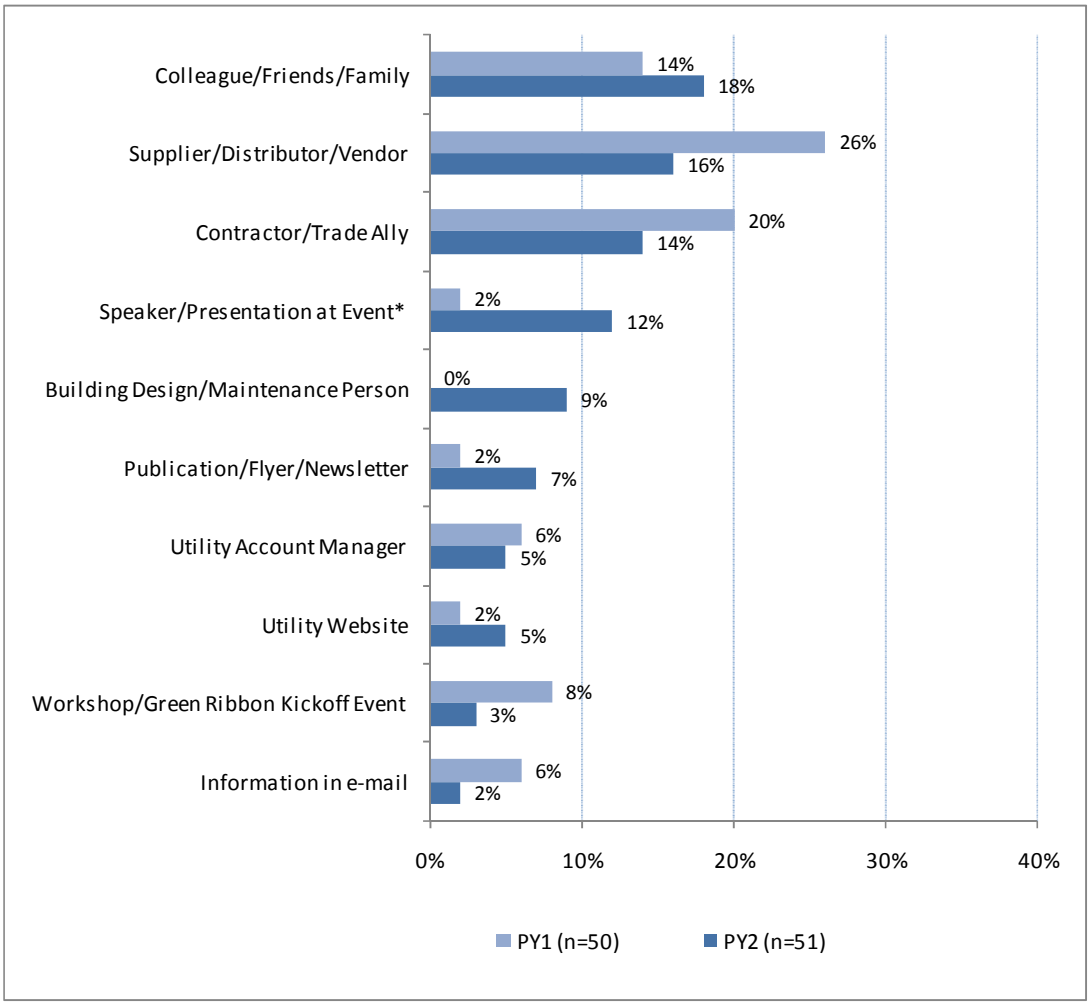
In addition, the program leveraged SEDAC, and to a lesser extent Ameren Illinois Utilities and ComEd, for marketing and outreach. DCEO has relationships with public-sector organizations, such as the Illinois Association of Regional Councils (ILARC), whereby those organizations assist DCEO in outreach and project facilitation with members. The DCEO EEPS program is featured prominently on the ILARC web site. As in PY1, one DCEO staff member had primary responsibility for marketing and outreach for the DCEO PSEE programs in PY2, with additional DCEO staff called in as needed.

In PY2, SEDAC increased the numbers of trainings and other events offered to public sector entities and expanded its newsletter mailing list from 3,000 market actors and potential customers in PY1 to 4,000 in PY2. SEDAC also developed fact sheets targeted at water treatment facilities as well as public sector pools and ice arenas.

The Program Manager believes the program would benefit from developing promotional materials like case studies and from spending more time identifying and marketing to targeted sectors.

In PY2, a variety of sources first informed participants of the program. Notably, 30% first learned about the program through a market actor (contractor, supplier, distributor, vendor), an indication that promotion through market actors is an effective way of increasing program awareness. In addition, word-of-mouth first informed 18% of participants. A significantly larger number of PY2 participants (12%) learned of the program from a speaker or presentation at an event compared to PY1 (2%). This is likely the result of the increased number of trainings and events offered by SEDAC in PY2.

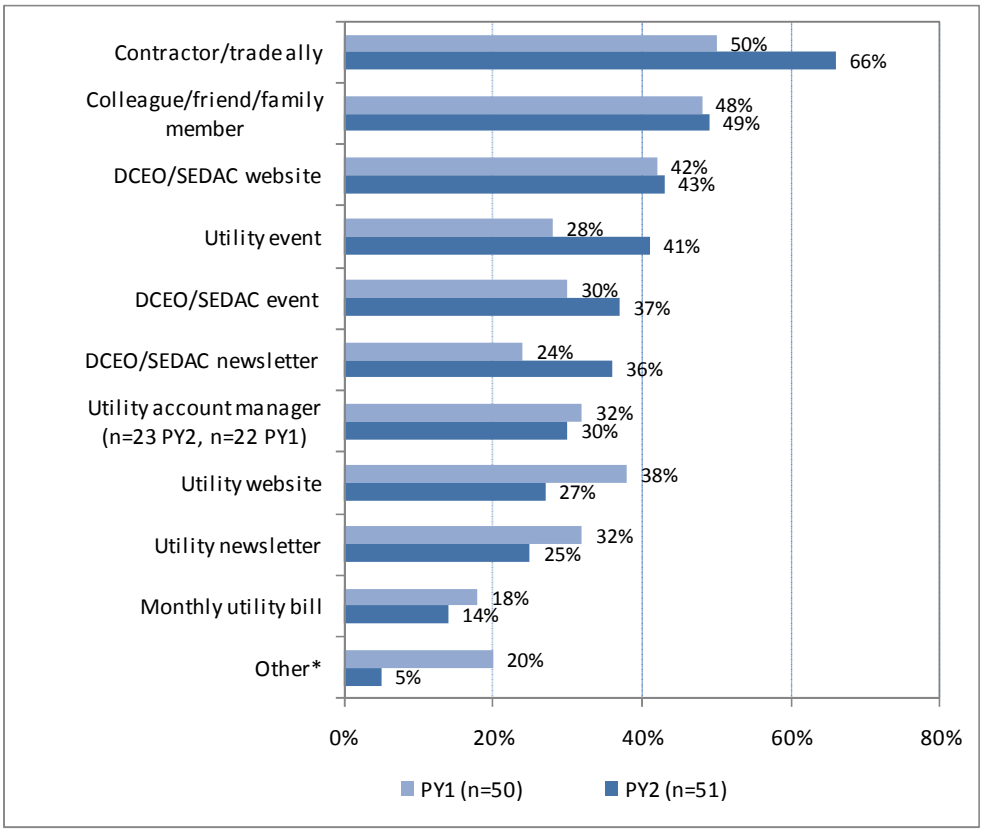
Figure 3-2. How Participants First Learned about the Program (Unprompted)



Note: ** Denotes a significant difference between PY1 and PY2 at the 90% confidence level.*
Responses under 5% for both years are not included.
Source: *PY1 and PY2 CATI Participant Surveys.*

The survey also asked participants about a series of sources through which they might have obtained information about the program in the past. As with the initial source of awareness, contractors/trade allies (66%) and word-of-mouth (49%) top the list. Interestingly, ComEd customers are significantly more likely than Ameren Illinois Utilities customers to have heard about the program from a contractor or trade ally whereas Ameren Illinois Utilities customers are significantly more likely than ComEd customers to have heard about the program in a utility bill.

Figure 3-3. Sources of Information about the Public Sector Electric Efficiency Program (Prompted)



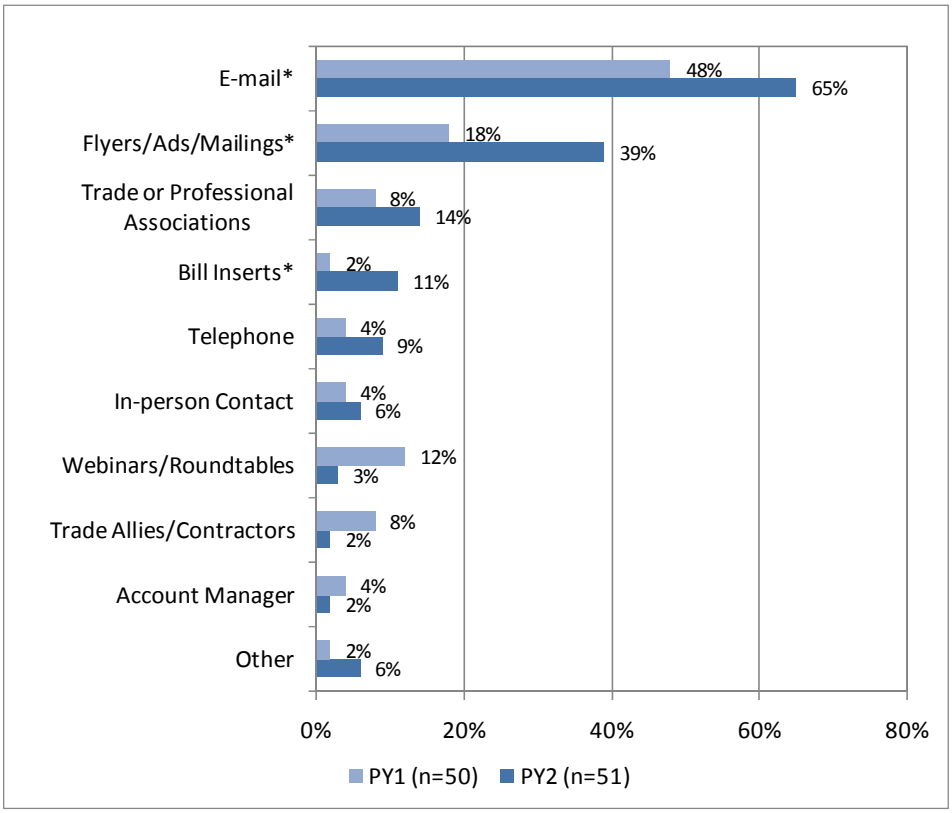
*Note: * Denotes a significant difference between PY1 and PY2 at the 90% confidence level.*
Source: PY1 and PY2 CATI Participant Surveys.

In addition to recalling program marketing materials, almost all participants who saw program marketing materials (94%) found them to be useful.[23]

Similar to PY1, e-mail was cited as the preferred method of receiving information about energy efficiency opportunities. The share of participants who prefer to be contacted by e-mail increased from 48% in PY1 to 65% in PY2. Many customers also cite flyers and other mailings (39%) as a preferred method of providing information. DCEO and SEDAC currently use e-mail when distributing the monthly SEDAC newsletters. The program may wish to consider expanding its use of e-mail for recruiting new participants into the program. Figure 3-4 summarizes preferred methods of contact.

[23] A response of "very useful" or "somewhat useful."

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



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

3.2.6 Barriers to and Benefits of Participation

Barriers to Participation

Barriers to participation were assessed through interviews with program and SEDAC staff as well as through the survey of program participants. While the PY2 evaluation plan also called for a few interviews with program drop-outs and non-participants, these were not conducted primarily because program staff feels that they have a good sense of why projects drop out (budget changes or unforeseen limitations in funding; changes in staffing or management personnel).

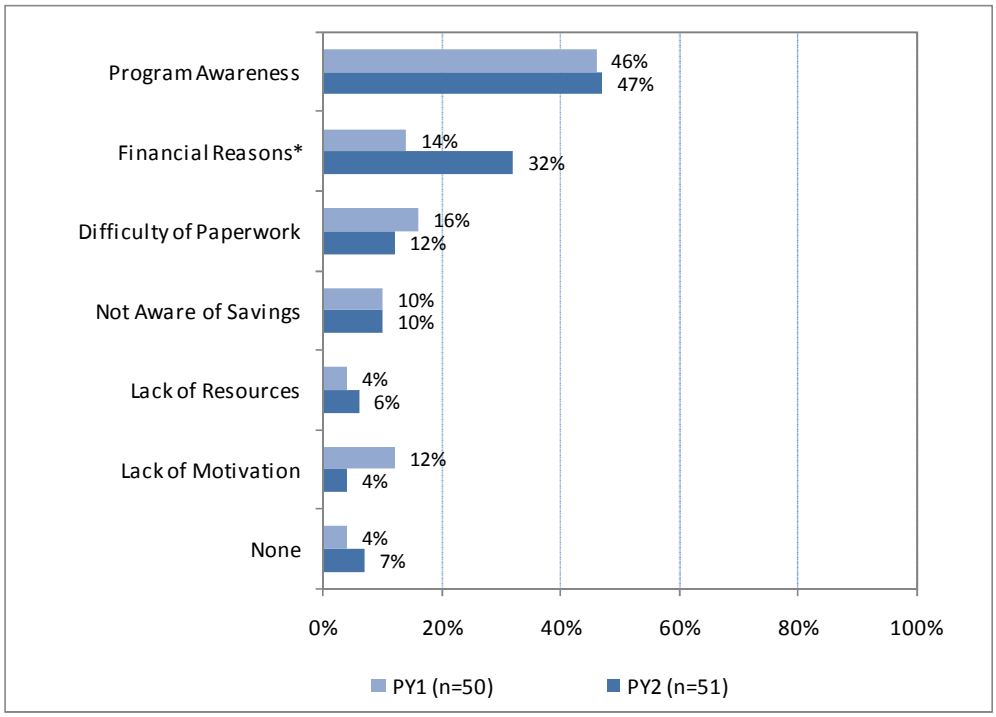
In PY1, one of the major barriers to participation by many public sector entities, and K-12 schools specifically, was the length and timing of the budget planning process. Public sector budgets are often written and approved far in advance, so many customers did not have a chance to take advantage of the program because the budgeting process for the year had already taken place. After a year of traction, this appears to have been less of a problem in PY2.

This barrier should continue to decrease as public sector customers are aware of the program and can therefore factor the available funding into their budgeting process.

According to the interviewed design assistance experts at SEDAC, the key barriers to participation in the DCEO programs are lack of awareness of the programs, insufficient time or staffing to implement recommended measures, or lack of available upfront financing for implementation. One interviewed expert suggested higher incentives to reduce the upfront capital barrier. Another recommendation was to expand the list of prescriptive measures and to provide more examples of potential custom measures.

Program participants were also asked about their views of why other customers might not participate in the program. Lack of program awareness remains the most commonly cited barrier in PY2 (47%). Significantly more participants named financial reasons as a barrier in PY2 (32%) than in PY1 (14%), reflecting the continued pressures on public sector budgets. Lack of program awareness is a common barrier for most programs during the first three years of operation. Figure 3-5 summarizes participant responses.

Figure 3-5. Reasons for Non-Participation (Unprompted, Multiple Response)



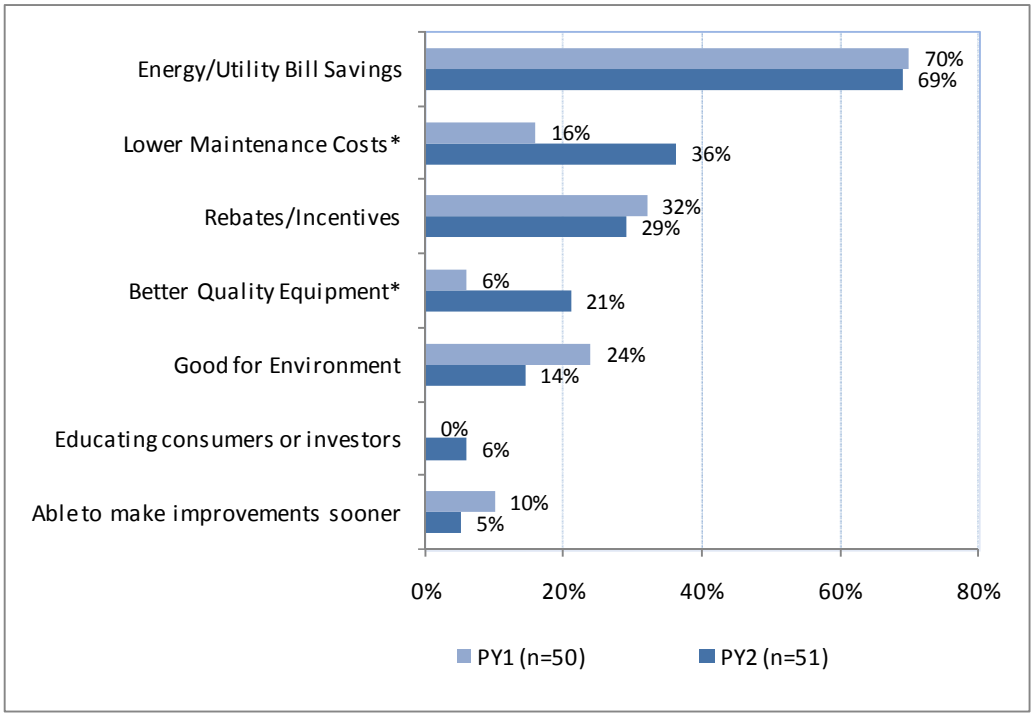
Note: ** Denotes a significant difference between PY1 and PY2 at the 90% confidence level. Responses under 5% for both years are not included.*

Source: *PY1 and PY2 CATI Participant Surveys.*

Benefits of Participation

Similar to PY1, participants overwhelmingly consider energy and utility bill savings the major benefit of participating in the program (70%). Three other benefits are commonly mentioned: lower maintenance costs (36%), program incentives (29%), and better quality equipment (21%). Both lower maintenance cost and better quality equipment are significantly more often mentioned than in PY1. These four benefits should be highlighted in marketing messages.

Figure 3-6. Benefits of Program Participation (Unprompted, Multiple Response)



Note: ** Denotes a significant difference between PY1 and PY2 at the 90% confidence level. Responses under 5% for both years are not included.*

Source: *PY1 and PY2 CATI Participant Surveys.*

3.2.7 Participant Satisfaction

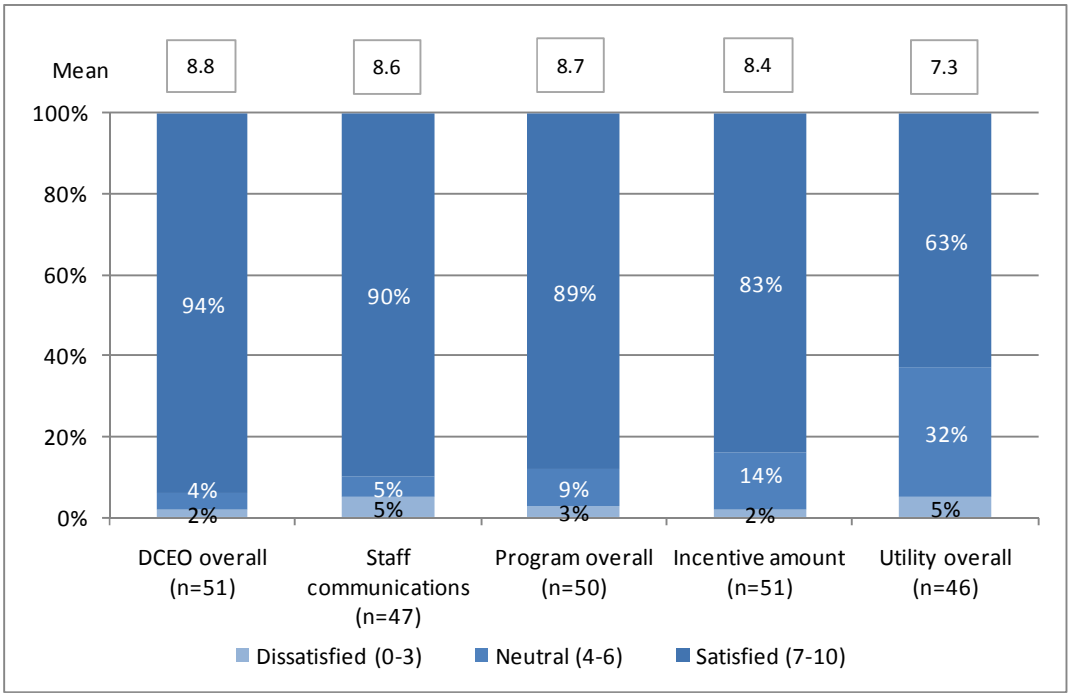
Participants are generally satisfied with the Standard Program. Participants were asked to rate – on a scale of 0 to 10, where 0 means "very dissatisfied" and 10 means "very satisfied" – several aspects of the program. Satisfaction is highest with DCEO overall, where 94% of participants report being satisfied.[24] Staff communications and the program overall also received high

[24] A rating of 7 to 10.

ratings, with 90% and 89%, respectively, being satisfied. Satisfaction is lowest with the customers' utility company (63%) and significantly declined from PY1 levels (81%).

It is noteworthy that satisfaction with the program and its elements in PY2 is largely unchanged from PY1. Program staff should be commended for keeping customer satisfaction high.

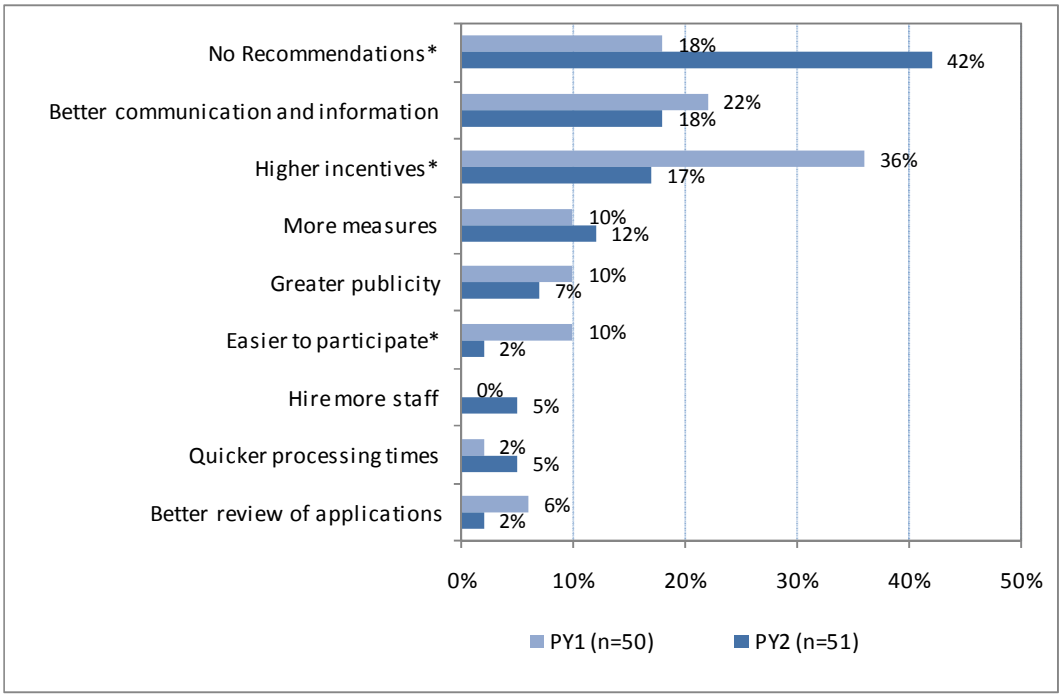
Figure 3-7. Program Satisfaction



Source: PY2 CATI Participant Survey.

Given the high satisfaction scores for the program, it is not surprising that 92% of participants plan to participate again in the future, a significant increase from PY1 (80%). When asked what could be done to improve the program, 42% of participants had no recommendations, up from 18% in PY1 (a significant increase). The few recommendations provided include better communication and information (18%), higher incentives (17%), and more measures (12%). Notably, the share of participants who recommended higher incentives decreased significantly compared to PY1 (36%).

Figure 3-8. Recommended Program Improvements by Program Year (Unprompted, Multiple Response)



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

3.3 *Cost Effectiveness Review*

This section addresses the cost effectiveness of the Public Sector Standard 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."[25]

Table 3-10 summarizes the unique inputs used in a spreadsheet model to assess the TRC ratio for the Public Sector Standard program in PY2. Most of the unique inputs come directly from the evaluation results presented previously in this report. Incentive costs come from the DCEO program tracking data. Avoided costs for both demand and energy match what was used by ComEd in DSMore™ for assessing the TRC ratio of their own energy efficiency projects.

Table 3-10. Inputs to TRC Assessment for Public Sector Standard Program

Item	ComEd	Ameren
Measure Life	15 years	15 years
Annual Gross Energy Savings	26,777 MWh	12,255 MWh
Gross Coincident Peak Savings	0.000 MW	0.000 MW
Net-to-Gross Ratio	75%	75%
DCEO Administration Costs	$393,802	$127,812
DCEO Implementation Costs	$0	$0
DCEO Other Costs	$0	$0
DCEO Incentive Costs	$4,358,509	$1,994,771
Participant Contribution to Incremental Measure Costs	$7,285,639	$3,334,438

Based on these inputs, the TRC for this program is 1.80 for ComEd and 1.27 for Ameren and the program passes the TRC test.

Environmental benefits have been quantified for CO_2 reductions using a value of $0.013875 per kWh.

[25] Illinois Power Agency Act SB1592, pages 7-8.

Section 4. Conclusions and Recommendations

This section highlights the conclusions and recommendations from the PY2 evaluation of DCEO's Standard Incentives 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 Standard program evaluation, the evaluation team has drawn a number of conclusions that are enumerated in this section.

4.1.1 Program Impacts

Gross Impacts

DCEO processed PY2 applications for payment after the May 31, 2010 close of the program, and indicated to the evaluation team at that time that processing could continue through August. In order to complete evaluation activities within reporting deadlines, it was necessary draw samples not later than mid-July, 2010.

The population and energy savings were substantially higher in the final October 6 datasets compared with the July 14 tracking data, with the July 14 ex ante energy impacts being roughly one-third of the final October total. The October 6 data has proportionally higher savings in larger, stratum 1 projects, more savings in federal and college projects, and proportionally more savings in Ameren territory. Due to the similar nature of PY2 Standard projects, mainly lighting and HVAC VFDs, we conclude the sample drawn from the July 14, 2010 dataset is reasonably representative of the final population of projects represented by the October 6, 2010 data.

In PY2 program participation increased significantly compared to PY1, from 155 projects completed by 105 participants to 286 projects completed by 226 customers. Accordingly, the ex ante gross savings more than doubled from 14.9 GWh in PY1 to 30.7 GWh in PY2. Ex post net savings nearly tripled, from 10.9 GWh to 29.2 GWh.

DCEO operates the PSEE program with a joint goal for energy savings that combines Standard and Custom program results, not as separate goals for each program. The combined Standard and Custom goal for PSEE net energy savings is 99,517 MWh. DCEO did not meet the PSEE PY2 plan target of 99,517 MWh for combined Custom and Standard energy savings, but DCEO's PY2 plan target was set high relative to baseline total usage in the public sector. If achieved,

DCEO's PSEE goal of 99,517 MWh would save 1.07% of estimated public sector energy usage in PY2[26], substantially higher than the legislative goal of 0.40% for the second year of the energy efficiency portfolio standard. Including 13,972 MWh ex post net savings from the Custom program, the PY2 ex post net savings for PSEE (excluding the pilot Retrocommissioning program) of 43,191 MWh is 0.47% of 9,271,325 MWh base usage.

The realization rate for energy savings was 1.27. The primary reasons for being greater than one are that measures involving VFDs applied to HVAC fans and pumps had substantially higher savings than assumed in the default values, and that verified annual hours of use were higher than default values for several 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 sites with verified hours that exceeded default values.

Many of the projects in the sample were missing complete sets of manufacturer specification sheets for the installed measures in the documentation package. On these projects, we were able to verify measure installation from invoices and determine some specifications through invoices and site visits, but default savings values were retained when as-installed equipment specifications could not be obtained.

For most measures, DCEO kWh per unit savings assumptions match ComEd's exactly, or had minor differences in the 1% range due to updates ComEd made between PY1 and PY2. ComEd implemented a significant revision to their HVAC default values for PY2, and these updates were not reflected in the DCEO PY2 default values. ComEd's HVAC revisions resulted in default values about 30% lower on average than DCEO's HVAC default values. On the other hand, Ameren territory has cooling loads that are about 30% to 40% higher than ComEd's, based on cooling degree days, so DCEO's default values are reasonable for Ameren territory.

DCEO's default values for variable speed drive measures for HVAC fans and pumps were about 40% lower than ComEd's updated values for PY2 for three building types: college/universities, medical and K-12 schools. DCEO should update these default values as variable speed drives were one of the more significant non-lighting measures for reported impacts.

Net Impacts

Comparing PY1 and PY2, the mean NTG ratio increased significantly from PY1 (0.62) to PY2 (0.75). The increase was due to much higher component scores for factors that indicate the

[26] Communication from David Baker, DCEO, December 6, 2010. Based on a public sector usage of 9,271,325 MWh for non-low income public sector energy consumption.

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 increased from 0.47 in PY1 to 0.75 for PY2. One could speculate this was due economic conditions limiting public-sector spending on large discretionary projects, and these participants not intending to implement big energy efficiency projects until after contact by the program.

The NTG ratio estimate for PY2 included a more complex "standard rigor" level of analysis conducted on larger projects, defined as those assigned to stratum 1. 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, 9 of 51 respondents in our sample went through the standard rigor approach, and two of the nine standard rigor interviews had responses that triggered follow-up interviews with two different vendors.

No adjustments were made to increase or decrease free-ridership for non-program influences, based on a qualitative review of participant responses.

Only two vendor interviews were triggered by participant responses, and only one vendor completed the interview. The effect of including the vendor interview in the sample was to raise the overall NTG ratio from 0.74 to 0.75. This is a relatively small change. One reason for this small increase was that end-user participants with large projects had already given DCEO relatively high scores for program influence, particularly the availability of the incentive. This limits the potential to raise the score further.

Findings from the survey of 51 participants suggest that participant spillover effects for PY2 are relatively small, with only 4 respondents pursuing 4 measures where a strong influence was indicated for the DCEO program.

Tracking System

The tracking data for this evaluation consisted of two Excel spreadsheet files that DCEO staff maintained and sent to the evaluation team on a periodic basis. Inconsistencies between the two spreadsheets uncovered changes needed to data regarding incentives, savings, or payment status on several projects. Working with the Standard and Custom program evaluation teams, DCEO produced a final version of the PY2 tracking data on October 6, 2010.

A significant challenge for the evaluation team in PY2 was determining project paid status, and identifying the pipeline of projects processed after May 31, 2010 that would be included within PY2. DCEO has previously instructed the evaluation team to use "voucher out" date as the key for establishing that a project has been paid, but the "voucher out" is not always maintained prior to completion of all PY2 payments. In sending out the July 14, 2010 extract, DCEO had

intended for the evaluation team to use the entire database to define PY2 projects, not just those with a completed voucher out date. The program tracking system would benefit from maintaining a flag to identify paid status, and an additional data field to indicate the likelihood of being paid within the just-completed program year for projects being processed after the program year ends. This would greatly facilitate the evaluation team's ability to draw an appropriately sized representative sample.

DCEO does not track peak demand impacts (kW) for the Custom or Standard Incentive programs. It appears possible to incorporate ComEd and Ameren default peak demand reduction values into the current tracking system or future tracking system.

For PY2, DCEO expanded contact information for program applicants, and this greatly facilitated our development of the phone survey sample data.

4.1.2 Program Processes

Program Participation

Participation in the Standard Program increased significantly from PY1 to PY2, from 105 customers completing 155 projects in PY1 to 226 customers completing 286 projects in PY2. Local governments and K-12 schools continue to account for the largest share of projects (48% and 37%, respectively) and participants (51% and 38%, respectively).

PY2 ex ante energy savings more than doubled compared to PY1. K-12 schools account for the largest share of ex ante savings in PY2 (32%). The largest percentage increase came from the federal government sector, where ex ante savings increased more than 4-fold, from 890 MWh in PY1 to 4,162 MWh in PY2. Federal government projects have the highest average energy savings of any sector, with 595 MWh per project.

Participant Satisfaction

Satisfaction with the Standard Program across various program processes and components remains very high. Notably, 94% of participants are satisfied with DCEO, 90% are satisfied with staff communications, and 89% are satisfied with the program overall (a rating of 7 or higher on a scale from 0 to 10). Few participants report experiencing any problems with their participation in the program and 92% plan to participate again in the future. This high level of satisfaction is commendable.

Program Design

Few program design changes were made in PY2. The program increased incentive levels by approximately 10% and the incentive cap from $100,000 to $200,000. The most significant design change was the "Green Spring Sale," which offered a significant increase in incentives in certain

sectors during the last three months of PY2. Program staff estimated that approximately half of all PY2 applications came in during the Green Spring Sale.

The Green Spring Sale demonstrated that participation could be increased by increasing incentive levels, however, the optimum incentive levels to maximize program savings within the program budget is unknown. There should be sufficient data from the PY2 experience for DCEO to run planning scenarios to explore extending higher incentive levels across more sectors and for longer periods of time.

Program Resources

DCEO took several steps to increase PSEE staff levels for PY2 and beyond. DCEO used its role in support of the American Recovery and Reinvestment Act of 2009 (ARRA) as an opportunity to hire six staff with primary responsibility to ARRA, but with the ability to support EEPS up to half time as time allowed. The ARRA hires will be able to transition full time to EEPS as ARRA work phases out for completion by January 2012. In addition, DCEO added two staff persons specifically for EEPS in PY2. Although staff faced challenges in PY2 to keep up with workload during peak periods of ARRA work and the Green Spring sale, this is expected to ease over time as ARRA responsibilities conclude and staff transitions to PSEE. DCEO is planning for additional hires in PY3.

With the addition of staff resources in PY2 and PY3, DCEO is transitioning toward more specialization among staff for internal program delivery roles (application and payment processing, data entry, technical support, etc.) and market and geographic segmentation (K-12 schools contact, community college contact, ComEd municipalities, etc.). This is expected to allow program managers to spend more time on strategy and marketing.

SEDAC

SEDAC plays a key role in supporting the implementation of the DCEO PSEE programs by providing marketing support, training, and technical assistance services and by channeling customers into the DCEO programs. In PY2, approximately 20% of PSEE participants used some level of SEDAC technical assistance, and 65% of SEDAC public sector technical assistance recipients were channeled into the DCEO programs. Overall, the Standard Incentives Program is making good use of SEDAC's services and should continue to do so in future program years.

Cooperation with ComEd and Ameren Illinois Utilities

In PY2, DCEO continued to leverage Ameren Illinois Utilities and ComEd activities in promoting the PSEE programs. Cooperation is enhanced through monthly conference calls between Ameren, ComEd and DCEO that discuss marketing and outreach and other issues. DCEO is given time to make presentations at account manager meetings. DCEO feedback

suggests the utilities are generally receptive to including DCEO at events and in outreach efforts. DCEO helped fund and co-sponsor some larger outreach events with the utilities.

Trade Ally Network

Contractors remain an important part of the Standard Program: 71% of PY2 participants utilized a contractor for their project, 66% discussed the program with their contractor, and 55% name a contractor, equipment installer, designer, or consultant as providing the most assistance in the design and specification of the installed equipment. Satisfaction with contractors is unanimous: All interviewed participants who used a contractor found that the contractor was able to meet their project needs, and all would recommend their contractor to others.

DCEO has made presentations on the PSEE program at trade ally events and meetings throughout PY2, conducted webinars, and staffed table displays at larger events. DCEO is leveraging the trade ally network of SEDAC, Ameren Illinois Utilities, and ComEd, referring potential participants looking for a qualified contractor to their lists. However, interviewed participants consider a contractor's affiliation with SEDAC or the utility programs only moderately important.

Given increased program goals for PY3, trade ally involvement will become more important to the success of the program, and the program should continue its marketing and outreach efforts to that group, and find additional ways to more closely engage them.

Account Managers

During PY2, DCEO marketing and outreach staff made presentations to ComEd and Ameren account managers to engage them in promoting the DCEO PSEE programs. The level of utility account manager support of DCEO programs is specific to individual and utility; DCEO reports some individuals are providing marketing support while others simply do referrals to DCEO.

Account managers for both utilities were involved in PY2 projects. Of participants with a utility account manager, over half (63%) report receiving account manager assistance with implementing projects. However, account managers appear to be less engaged with the marketing of the program than with implementation: Only 11% of those with an account manager report first hearing about the program through the account manager.

Since account managers can be an effective vehicle for promoting the program – as they have established relationships with the customers targeted by this program – the program should find ways to more closely engage them.

Marketing and Outreach

Overall program marketing activities increased in PY2 compared to PY1. DCEO identified 49 events and meetings where outreach activities were conducted in-person with an estimated total attendance of 3,790. Target audiences cover a range of public sectors (schools, municipalities, universities, state) and individuals (school boards, facility engineers, public officials, etc.), and trade allies (architects, electrical contractors, and engineers). DCEO has a prepared presentation with Q&A that is adjusted for each audience, and typically lasts from 20 minutes to an hour.

In addition, the program leveraged SEDAC, and to a lesser extent Ameren Illinois Utilities and ComEd, for marketing and outreach. DCEO has relationships with public-sector organizations, such as the Illinois Association of Regional Councils (ILARC), whereby those organizations assist DCEO in outreach and project facilitation with members. As in PY1, one DCEO staff member had primary responsibility for marketing and outreach for the DCEO PSEE programs in PY2, with additional DCEO staff called in as needed.

In PY2, program participants *first* learned about the program through a variety of sources. Notably, 30% first learned about the program through a market actor (contractor, supplier, distributor, vendor), an indication that promotion through market actors is an effective way of increasing program awareness. The most common sources through which participants have obtained information about the program in the past include contractors or trade allies (66%) and word-of-mouth (49%). E-mail remains the preferred method of receiving information about energy efficiency opportunities. In fact, the share of interviewed participants who prefer to be contacted by e-mail increased from 48% in PY1 to 65% in PY2.

Barriers to Participation

According to SEDAC technical staff, key barriers to participation in the DCEO programs include a lack of awareness of the programs, insufficient time or staffing to implement recommended measures, and a lack of available upfront financing for implementation. DCEO program staff cites additional reasons for projects dropping out of the participation process: budget changes or unforeseen limitations in funding and changes in staffing or management personnel. Program participants agree with these reasons of why other customers might not participate in the program: Lack of program awareness remains the most commonly cited barrier in PY2 (47%). Significantly more participants named financial reasons as a barrier in PY2 (32%) than in PY1 (14%), reflecting the continued pressures on public sector budgets.

4.2 *Recommendations*

4.2.1 Impact Recommendations

Gross Impact Results

Many of the projects in the review sample were missing complete sets of manufacturer specification sheets for the as-installed measures in the documentation package. DCEO should make a concerted effort to obtain these from the participant or vendor.

The default values used by DCEO for reporting HVAC equipment and HVAC fan and pump variable frequency drive (VFD) impacts need to be updated to reflect the Illinois specific values that ComEd will use for their service territory in PY3. We recommend DCEO use separate sets of HVAC measure default assumptions for Ameren and ComEd.

The program should estimate and track summer peak demand savings. Additional effort is needed within the program to enhance the estimation of demand savings and the tracking of those resulting impact estimates.

Net Impact Results

The EM&V team will likely collect participant free-ridership and spillover data in the same manner for the PY3 evaluation.

DCEO 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.

Tracking System

DCEO is in the process of developing an improved tracking database. As part of this effort, enhanced electronic tracking of information within the program is needed, including real-time updates to the tracking system for completed projects. The program tracking system would benefit from maintaining a flag to identify paid status, and an additional data field to indicate the likelihood of being paid within the just-completed program year for projects being processed after the program year ends. This would greatly facilitate the evaluation team's ability to draw an appropriately sized representative sample.

4.2.2 Process Recommendations

Program Design

- **Increase incentives.** Program incentives were initially set to match those offered by the utilities to their private sector customers. However, experience in other jurisdictions has shown that public sector entities generally require substantially higher incentives than private sector entities to implement energy efficiency measures. The program should consider offering permanently higher incentives or repeating promotions like the Green Spring Sale to further increase participation.

- **Green Spring Sale.** The Green Spring Sale was an effective way of increasing program participation during the three months it was offered. Given the long budgeting process of many public sector entities, more advanced notice and longer participation time frames should be considered for future similar promotions (while keeping an eye on freeridership). Promotions targeting summer installations might be especially effective for schools and colleges.

- **Improve data tracking procedures.** DCEO is in the process of developing an improved tracking database. As part of this effort, we recommend adding identifiers for key program information, such as participation in pilot efforts or special promotions (e.g., the Green Spring Sale). This information would help the program better assess the effectiveness of such initiatives. In addition, key process information should be tracked, e.g., whether a pre-inspection or a post-inspection was conducted. This information would facilitate program management as well as program evaluation. Program staff should also ensure that the database is updated in a timely manner.

Program Resources

- **Ensure adequate program staffing for PY3.** Adequate program staffing requires having enough staff across each program delivery function to meet the program goals. DCEO should continue the steps already taken to increase PSEE staff levels for PY2 and beyond. DCEO hired six staff with primary responsibility to ARRA, but with the ability to transition to full time on EEPS as ARRA work phases out for completion by January 2012. In addition, DCEO added two staff persons specifically for EEPS in PY2. DCEO is planning for additional hires in PY3. With the addition of staff resources in PY2 and PY3, DCEO is transitioning toward more specialization among staff for internal program delivery roles (application and payment processing, data entry, technical support, etc.) and market and geographic segmentation (K-12 schools contact, community college contact, ComEd municipalities, etc.). This is expected to allow program managers to spend more time on strategy and marketing.

SEDAC

- SEDAC plays a key role in supporting the implementation of the DCEO PSEE programs by providing marketing support, training, and technical assistance services and by channeling customers into the DCEO programs. The Standard Incentives Program is making good use of SEDAC's services and should continue to do so in future program years. DCEO should provide more frequent updates on their program participants to SEDAC, which might increase SEDAC's efficiency in channeling customers into the DCEO programs by following up with clients who have not yet implemented SEDAC recommendations.

Cooperation with ComEd and Ameren Illinois Utilities

- **Expand joint marketing efforts among DCEO, Ameren Illinois Utilities and ComEd.** With increases in program goals on both the utility and the DCEO side, both parties benefit from increased cooperation, for example if marketing resources can be pooled for certain outreach activities.

Trade Ally Network

- **Further engage trade allies with the program.** Contractors and trade allies are one of the primary sources of information for customers and play a significant role in the specification of new equipment. To better leverage the ComEd and Ameren Illinois Utilities trade ally networks, program staff should try to become more closely involved in the promotional messages sent to trade allies registered with the utilities. In addition, the program should also try to differentiate itself from the utility programs and more independently reach out to trade allies. This could be done through independent communication with utility trade allies and would allow the program to provide its own messaging.

- **Conduct intense outreach to high performing trade allies.** Although a trade ally bonus such as the utilities are offering may not be feasible for DCEO, DCEO can target the utilities' high performing, active trade allies with a more intense level of outreach than might be provided to a larger group. For example, some programs use breakfast meetings or "lunch and learn" events at trade ally offices to cater to high-profile trade allies.

Account Managers

- **Increase outreach to Account Managers.** Account managers can be an effective vehicle for promoting the program as they have established relationships with the customers targeted by this program. The program should find ways to more closely engage them.

Marketing and Outreach

- **Continue to differentiate the DCEO PSEE program from the utility programs.** Confusion about DCEO and utility program offerings, special promotions, and fund availability is still present in the marketplace. Further differentiation and separation of the PSEE programs will help create a more prominent image of the programs and will also keep program staff from having to adjust to the activities and promotions run by ComEd and Ameren Illinois Utilities. Some strategies might include providing specific messaging in marketing, supplying trade allies with DCEO-labeled marketing materials for co-branding, and increasing communication with and education of account managers and trade allies on the program and its offerings.

- **Utilize Ameren Illinois Utilities and ComEd marketing and outreach infrastructure.** Leveraging the marketing channels already established by ComEd and Ameren Illinois Utilities is an effective way of outreach. Increased collaboration, e.g., through financial contributions by DCEO to utility marketing efforts, would be beneficial to all parties and would provide DCEO with an established and cost-effective way to market the PSEE program to potential customers.

- **Consider increased use of e-mail.** E-mail is the preferred method of receiving information about energy efficiency opportunities, mentioned by 65% of PY2 participants. The program should consider increased use of this low-cost channel to reach out to potential participants and disseminate program information, e.g., about new initiatives.

- **Highlight program benefits that resonate with participants.** Energy and electric bill savings, lower maintenance costs, incentives, and better quality equipment are all benefits of program participation noted by PY2 participants. DCEO should continue to highlight these in its marketing messages to attract more participants into the program.

Section 5. Appendices

5.1 *Data Collection Instruments*

5.1.1 Participant Phone Survey

2010 DCEO PSEE
Participant Survey - F

5.1.2 SEDAC Interview Guides

SEDAC Management
Team Depth Interviev

SEDAC Technical
Assistant Depth Inter

5.2 *Other Appendices*

5.2.1 PY2 Program Application Forms and Operations Manual

The electronic application forms for the PY2 program are provided along with the Guidelines and Application document.

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Electric Efficiency Gui

5.2.2 Review of ComEd's PY2 Default Savings Assumptions

The attached memo provides our review of ComEd's PY2 program default savings assumptions, which are the basis for DCEO's default values.

Review of PY2
Prescriptive Default S

5.2.3 2009 Utility specific savings

Table 5-1. **Utility Specific Evaluation-Adjusted Net kWh Impacts for PY2**

Utility	Ex Ante Gross kWh	Ex Post Gross kWh	kWh RR	Ex Post Net kWh	NTGR (ex post gross)
Ameren	9,649,517	12,254,887	1.27	9,191,165	0.75

Table 5-2. **Utility Specific Evaluation-Adjusted Net kWh Impacts for PY2**

Utility	Ex Ante Gross kWh	Ex Post Gross kWh	kWh RR	Ex Post Net kWh	NTGR (ex post gross)
ComEd	21,083,880	26,776,528	1.27	20,082,396	0.75