Evaluation of Illinois Energy Now Public Sector Custom, Standard, and New Construction Incentives Programs: June 2012 through May 2013

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1. Executive Summary

This report presents the results of the impact and process evaluations of the Public Sector Custom and Standard Incentives Programs (Custom and Standard Incentives Programs) and the Public Sector New Construction Program (New Construction Program) that the Illinois Department of Commerce and Economic Opportunity (DCEO) offers to public sector entities. This report presents results for electric program year five and natural gas program year two (EPY5/GPY2), which is defined as the period from June 2012 through May 2013.

The main features of the approach used for the evaluation of the Custom and Standard Incentives Programs and New Construction Program are as follows:

- Data for the study were collected through review of program materials, on-site inspections, end-use metering, and interviews with DCEO staff members, program partner staff members, and participating public sector entities' staff and contractors. Based on data provided by the DCEO, a sample design was developed for on-site data collection. Separate samples were drawn for electric and natural gas savings for both the Custom Incentives Program and Standard Incentives Program that provide savings estimates for program within the ±10% precision at the 90% confidence level. Table 1-1 shows the precision of the sample estimates and Table 1-2 shows the sample sizes for different types of data collection employed for the Custom and Standard Incentives Programs. Gross savings were estimated for all of the New Construction Program projects. Table 1-3 shows the sample sizes for different types of data collection employed for the New Construction Program.
- On-site visits were used to collect data for savings impact calculations, to verify measure installation, and to determine measure operating parameters. Facility staff were interviewed to determine the operating hours of the installed system and to locate any additional benefits or shortcomings with the installed system. For the majority of sites, lighting equipment, HVAC equipment, or motors/VFDs were monitored in order to obtain accurate information on hours of operation. For electric savings, the 33 projects sampled for the Custom Incentives Program accounted for 55% of the expected kWh savings and the 63 projects sampled for the Standard Incentives Program accounted for 27% of the expected kWh savings. For natural gas savings, the 20 projects sampled for the Custom Incentives Program accounted for 41% of the expected therm savings and the 24 projects sampled for the Standard Incentives Program accounted for 54% of the expected therm savings. Gross realized savings were developed for all of the New Construction Program projects.
- Participant surveys provided the information for the net to gross analysis and process evaluation. For the Custom and Standard Incentives Programs, a total of 261 participant decision makers were interviewed about the influence of the program on their project decision making. A subset of 241 of these participants was also asked questions related to the program participation process. For the New Construction Program, a census of the five

participant decision makers who completed the six EPY5/GPY2 projects was interviewed. Additionally, relevant DCEO staff members were interviewed to provide information for the process evaluation.

- In-depth interviews with DCEO trade allies provided information on the program application process, the adequacy of incentive offerings, the influence of the incentives on participant decision making, the value of the trade ally rallies and other support, and suggestions for program improvement. In total, 15 interviews were completed.

Table 1-1 Precision of Sample Estimates for Custom and Standard Electric and Natural Gas Savings

Program	*Precision for 90% Confidence Level*
Custom, Electric	± 7.68%
Custom, Natural Gas	± 8.68%
Standard, Electric	± 8.67%
Standard, Natural Gas	± 9.71%

Table 1-2 Sample Sizes for Custom and Standard Incentives Programs Data Collection Efforts

Type of Data Collected	*Sample Size*
Project On-Site Measurement and Verification	101
Participant Decision Maker Survey	20
Participant Decision Maker and Program Process Survey	241

Table 1-3 Sample Sizes for New Construction Program Data Collection Efforts

Type of Data Collected	*Sample Size*
Project Engineering Desk Review	6
Participant Decision Maker Survey	5

The Illinois Statewide Technical Reference Manual (TRM) was used to estimate gross savings for deemed savings measures implemented through the Standard Incentives Program. Measures implemented through the New Construction Program, the Custom Incentives Program and non-deemed savings measures implemented through the Standard Incentives Program were estimated using proven techniques, including industry standard engineering calculations and verification of computer simulations developed by program contractors to determine energy savings.

The realized electric savings for the Custom and Standard Incentives Programs and New Construction Program during the period June 2012 through May 2013 are summarized in Table 1-4, Table 1-5, and Table 1-6. During this period, realized gross electric savings totaled 28,708,558 kWh for the Custom Incentives Program, 82,214,740 kWh for the Standard

Incentives Program, and 3,666,703 kWh for the New Construction program. The gross realization rates for electric savings from the Custom and Standard Incentives Program are 83% and 124%, respectively. For the New Construction Program, the gross realization rate is 99%.

In order to estimate free ridership in the program, survey-based techniques were applied to the data collected through a survey of decision makers. During EPY5/GPY2, realized net electric savings totaled 26,868,887 kWh for the Custom Incentives Program, 78,874,975 kWh for the Standard Incentives Program, and 1,788,519 kWh for the New Construction Program. The net to gross ratio for the Custom Incentives Program is 94% and the net to gross ratio for the Standard Incentives Program is 96%. For the New Construction Program, the net to gross ratio is 49%. Net peak kW savings for Custom Incentives Program totaled 2,559.02 kW and net peak kW savings for Standard Incentives Program totaled 13,270.40 kW. For the New Construction Program, net peak kW savings totaled 252.77 kW.

Table 1-4 Summary of kWh Savings for Custom Incentives Program

Utility	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Gross Realization Rate*	*Realized Net kWh Savings*	*Net to Gross Ratio*
Ameren	12,547,763	9,331,474	74%	8,733,505	94%
ComEd	21,850,159	19,377,084	89%	18,135,382	94%
Total	34,397,922	28,708,558	83%	26,868,887	94%

Table 1-5 Summary of kWh Savings for Standard Incentives Program

Utility	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Gross Realization Rate*	*Realized Net kWh Savings*	*Net to Gross Ratio*
Ameren	15,435,623	19,473,481	126%	18,682,420	96%
ComEd	51,005,130	62,741,259	123%	60,192,555	96%
Total	66,440,753	82,214,740	124%	78,874,975	96%

Table 1-6 Summary of kWh Savings for New Construction Program

Utility	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Gross Realization Rate*	*Realized Net kWh Savings*	*Net to Gross Ratio*
Ameren	1,783,231	1,675,224	94%	817,129	49%
ComEd	1,932,166	1,991,479	103%	971,390	49%
Total	3,715,397	3,666,703	99%	1,788,519	49%

The realized natural gas savings for the Custom and Standard Incentives Programs and New Construction Program during the period June 2012 through May 2013 are summarized in Table 1-7, Table 1-8, and Table 1-9. During this period, gross natural gas savings totaled 1,274,088 therms for the Custom Incentives Program, 526,703 therms for the Standard Incentives Program, and 43,980 therms for the New Construction Program. The gross realization rates for the

Custom and Standard Incentives Programs are 88% and 95%, respectively. The gross realization rate for the New Construction Program is 81%.

The total net natural gas savings is 1,165,493 therms for the Custom Incentives Program, 408,153 therms for the Standard Incentives Program, and 43,059 therms for the New Construction Program. The net to gross ratio for the Custom Incentives Program is 91% while the net to gross ratio for the Standard Incentives Program is 77%. For the New Construction Program, the net to gross ratio is 98%.

Table 1-7 Summary of Therm Savings for Custom Incentives Program

Utility	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Gross Realization Rate*	*Realized Net Therm Savings*	*Net to Gross Ratio*
Ameren	807,248	725,799	90%	663,936	91%
Nicor	419,712	367,669	88%	336,331	91%
North Shore	97,181	78,964	81%	72,233	91%
Peoples	127,060	101,657	80%	92,992	91%
Total	1,451,202	1,274,088	88%	1,165,493	91%

Table 1-8 Summary of Therm Savings for Standard Incentives Program

Utility	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Gross Realization Rate*	*Realized Net Therm Savings*	*Net to Gross Ratio*
Ameren	215,190	133,324	62%	103,315	77%
Nicor	316,738	380,727	120%	295,033	77%
North Shore	11,973	5,717	48%	4,430	77%
Peoples	13,108	6,935	53%	5,374	77%
Total	557,008	526,703	95%	408,153	77%

Table 1-9 Summary of Therm Savings for New Construction Program

Utility	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Gross Realization Rate*	*Realized Net Therm Savings*	*Net to Gross Ratio*
Ameren	370	355	96%	348	98%
Nicor	53,679	43,625	81%	42,712	98%
Total	54,049	43,980	81%	43,059	98%

The following presents a selection of key conclusions from EPY5/GPY2:

- **Combined Gross Realized Savings Decreased from Prior Program Year**: In comparison to last year, the realized gross electric and natural gas savings for all three programs combined decreased. The lower activity was due to decreased Custom Incentive Program savings. Although the number of custom incentive projects increased from the prior year, the average savings decreased. Realized gross savings for the Standard Incentives and New Construction Programs increased from EPY4/GPY1.

- **Increased Participation from K-12 Schools**: The share of applications submitted by K-12 schools increased markedly in EPY5/GPY2 from the prior program year. In particular, the number of custom projects completed by K-12 schools increased significantly. The share of custom applications submitted by K-12 schools increased from 25% to 47% and the share of standard applications increased from 40% to 49%. The increase in participation was in part due to the participation of the Chicago Public Schools, which participated for the first time during the program year and completed projects at more than 160 locations.

  In addition to K-12 schools, the other sector that accounted for a large share of program participation was local government facilities. As with the prior year, federal facilities, state facilities, community colleges, and universities represented a small share of the number of completed applications.

- **Limited Activity in the New Construction Program**: There were a limited number of projects completed through the New Construction Program during the program year. This may reflect continued restricted building activity due to limited budget resources in the public sector. To increase participation in the program, prescriptive incentives were offered during EPY5/GPY2. The prescriptive incentives were added to increase the number of smaller new construction projects by providing incentives for energy efficient equipment without requiring the cost of completing building energy simulations. The prescriptive incentives may increase program activity in future years as awareness of the incentives increases.

- **High Program Satisfaction**: Overall, EPY5/GPY2 participants noted high levels of satisfaction with the programs. Fewer than three percent of survey respondents who participated in the Standard and Custom Programs indicated that they were dissatisfied with any of the rated aspects of the program and only one participant indicated dissatisfaction with the program overall. Additionally, none of the survey respondents who participated in the New Construction Program indicated dissatisfaction with their program experience.

  Few problems were noted regarding the implementation of the efficiency measures, the application process, the incentive amount, or the receipt of the incentive. Additionally, many of the comments in response to open ended questions indicated that participants had positive experiences with the programs.

- **Inconsistent Maintenance of Project Documentation, Status, and Storage**: It was noted during the evaluation process that the information included in project documentation was frequently inconsistent across projects. In particular, the granularity of project documentation varied and several projects involving multiple buildings did not have building level information. Additionally, some projects are not updated in the database when the project scope changes from what was presented in the initial application. Lastly, not all electronic documentation is stored in a central location.

- **Trade Allies Suggested Application Process Improvements**: Participants noted few problems with the application process and most trade allies indicated that the process was straightforward. However, some trade allies indicated that the forms and application process could be streamlined and that the application requires some additional effort in comparison to the requirements of utility programs they had participated in. Some of the suggestions made include simplifying the format and including step-by-step instructions, and to allow applicants to include multiple buildings for a single project on an application.
- **Trade Allies Offered Mixed Assessments of Program Awareness**: Interviewed trade allies offered mixed assessments of the level of awareness of the programs among their customers. Although several trade allies reported that most of their customers were aware of the programs, others indicated that relatively few were. Furthermore, trade allies noted that when customers were aware of the programs, they tended to have a fairly superficial level of awareness. That is, their customers were generally not aware of the specific incentives available. Continued promotion of the program is needed to ensure that potential participants are aware of the specific incentives that are available, the applicability of the incentives to potential projects at their facilities, and the potential cost savings. It is important for potential participants to understand how the incentives can make energy efficiency improvements financially viable for their organizations.

  Additionally, the extent to which trade allies were promoting the program and the number of DCEO projects that they had completed varied among those interviewed. Although it is difficult to form generalizations about the degree to which trade allies are promoting the program from the limited sample who were interviewed, the findings suggest that trade allies are engaged with the incentive programs to varying degrees.
- **Trade Allies Noted Budget Constraints are a Barrier to Efficiency Improvements**: Trade allies indicated that when speaking with their customers about projects they typically discuss the financial aspects of the project. The discussions tend to frame the decision in terms of the project payback, return on investment, and maintenance savings. Despite the financial benefits from implementing new equipment and the money that can be saved by receiving an incentive, trade allies noted that some customers are difficult to convince to complete a project because of budget constraints.
- **Trade Ally Rallies are Valued**: Trade allies indicated that the trade ally rallies are a good forum for learning about the programs, clarifying questions about the program, and networking. Although one or more trade allies suggested that it would be beneficial if some of the presentations were more focused and that the DCEO should consider holding rallies that are only attended by trade allies, in general they found the rallies to be valuable and worth attending.

While interviews with program staff suggest that program organization and efficiency have continually improved during the period the programs have operated, several recommendations

have been developed based on interview findings, survey results, and overall analysis of program processes. These recommendations may provide strategic advantage in future program years:

- **Integrate Trade Ally Information into Project Data**: The current project tracking data does not contain names and contact information for the trade allies that assisted with the projects. It would be beneficial if this information was tracked for future projects, as the inclusion of trade ally information would be useful to better support trade allies. Project tracking data that incorporates trade ally information may be useful for targeting less active trade allies and to potentially identify ways to increase their activity. Similarly, this information may be useful for identifying trade allies who submit incomplete or incorrect application materials so that they can receive additional instruction to improve the quality of the application submission.
- **Use Historical Billing Data to Check Expected Savings**: Although the differences between expected and realized savings were largely due to project specific factors, in a few cases the estimated projects savings were very large in comparison to the annual energy use for the site. It is recommended that the project managers use historical billing data to verify that claimed savings are reasonable.
- **Improve Application and Documentation Protocols**: Consider developing data entry protocols for all staff responsible for entering, maintaining, or updating the EEPS database. Specifically, all project data should be input at the building level with all required fields populated; when new versions of the application are submitted EEPS should be updated accordingly. Prior to incentives payment being dispersed DCEO project managers should ensure that EEPS accurately reflects all project and building level information. The above changes will further aid both project managers and management staff in the tracking project activity and estimating energy savings, in addition to streamlining evaluation efforts. Much of the need for improved data management will likely be addressed through the recent development of a new electronic application process.
- **Add Capacity to Include Multiple Buildings on Application**: A recommendation stemming from the interviews with trade allies was to add the capacity to add multiple buildings to the application form. Building this capacity into the application form may also facilitate the collection of the more detailed building specific information needed for estimating project savings. This capacity has been incorporated into EPY6/GPY3 program year form.
- **Consider Allowing New Construction Projects in the Design Phase to Apply for Incentive**s: As was mentioned last year, working with new construction projects earlier in the design process may allow for the generation of deeper savings. Additionally, it may also reduce program free ridership because participants with completed design plans may be less likely to be influenced by the program incentives because they have already committed to project and its design specifications. The DCEO's partner, the Smart Energy Design

Assistance Center (SEDAC), has implemented an initiative to expand their design assistant services to more new construction projects and to focus on transistioning these projects to the incentive program.

2. Introduction

This section presents a description of the Public Sector Custom and Standard Incentives Programs (Custom and Standard Incentives Program) and the Public Sector New Construction Program (New Construction Program) that Illinois Department of Commerce and Economic Opportunity (DCEO) offers to public sector entities, as well as overviews of the evaluation approach and report contents. This report presents results for electric program year five and natural gas program year two (EPY5/GPY2), which is defined as the period from June 2012 through May 2013.

2.1. **Description of Programs**

The Custom and Standard Incentives Programs and the New Construction Program offered by the DCEO were designed to help the public sector identify and implement energy saving projects. The three programs evaluated in this report are described below.

2.1.1. **Custom and Standard Incentives Programs**

The Custom Incentives Program generates electric and natural gas savings through helping public sector entities identify and implement energy savings projects. During EPY5/GPY2, the program provided incentives of $0.12 per kWh saved and $1.50 per therm saved. A payback period of one to seven years is required for custom incentive projects. The program also offered an additional $0.30 per kWh saved for pilot projects involving breakthrough equipment for exterior lighting, namely LED and induction lighting. These projects may have payback periods exceeding seven years.

The Standard Incentives Program generates electric and natural gas savings through helping public sector entities identify and implement energy saving projects. The program offers incentives on a per measure basis for qualifying equipment purchased and installed by the participant.

For a portion of the year, ending on April 15th 2013, the program doubled the custom and standard incentives for natural gas saving measures (i.e., the Double-Up Natural Gas Bonus) to encourage additional natural gas saving projects. During the period between August 14th, 2012 and February 14th, 2013, the program offered an additional "Sweet Deal" that increased the qualifying incentive by 14% for completed projects.

Incentives provided by the program cannot exceed 100% of the incremental measure cost or 75% of the total project cost. If incentives are provided from other public sources, those incentives in combination with the program incentives cannot exceed 100% of the total project cost. Additionally incentive awards cannot exceed $300,000 unless multiple project locations are included.

Expected electric savings are shown in Table 2-1 by utility for the Custom and Standard Incentives Programs. There were 441 Custom Incentives Program projects during the period June 2012 through May 2013, which were expected to provide savings of 34,397,922 kWh. Additionally, there were 1,373 Standard Incentives Program projects during the period June 2012 through May 2013, which were expected to provide savings of 66,440,753 kWh.

Table 2-1 Expected kWh Savings for Custom and Standard Incentives Programs

Utility	*Expected kWh Savings*	
	Custom Incentives Program	*Standard Incentives Program*
Ameren	12,547,763	15,435,623
ComEd	21,850,159	51,005,130
Total	34,397,922	66,440,753

Expected natural gas savings are shown in Table 2-2 by utility for the Custom and Standard Incentives Programs. There were 223 Custom Incentives Program projects during the period June 2012 through May 2013, which were expected to provide savings of 1,451,202 therms. The 99 Standard Incentives Program projects during the same period were expected to provide savings of 557,008 therms.

Table 2-2 Expected Therm Savings for Custom and Standard Incentives Programs

Utility	*Expected Therm Savings*	
	Custom Incentives Program	*Standard Incentives Program*
Ameren	807,248	215,190
Nicor	419,712	316,738
North Shore	97,181	11,973
Peoples	127,060	13,108
Total	1,451,202	557,008

Figure 2-1 shows the Custom Incentives Program's realized kWh savings by the date of application submission.

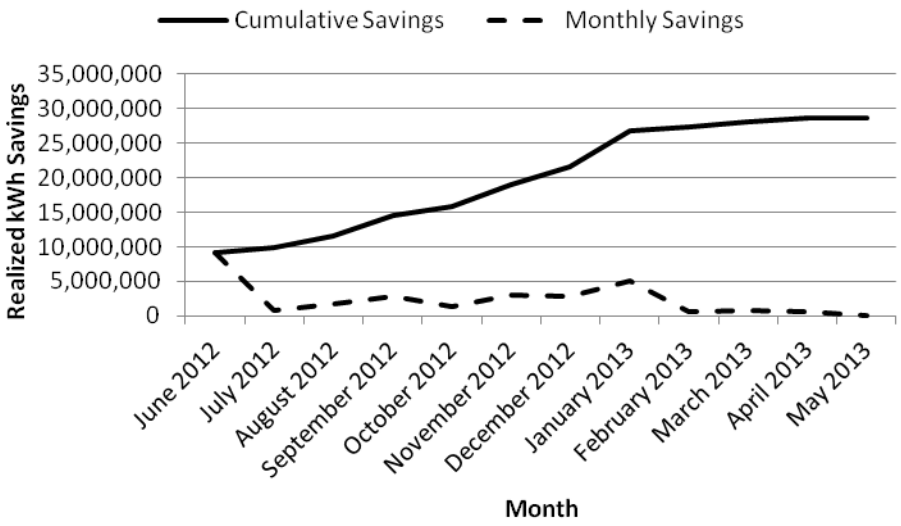

Figure 2-1 Custom Incentives Program Cumulative Realized kWh Savings by Date of Application Submission

Figure 2-2 shows the Standard Incentives Program's realized kWh savings by the date of application submission.

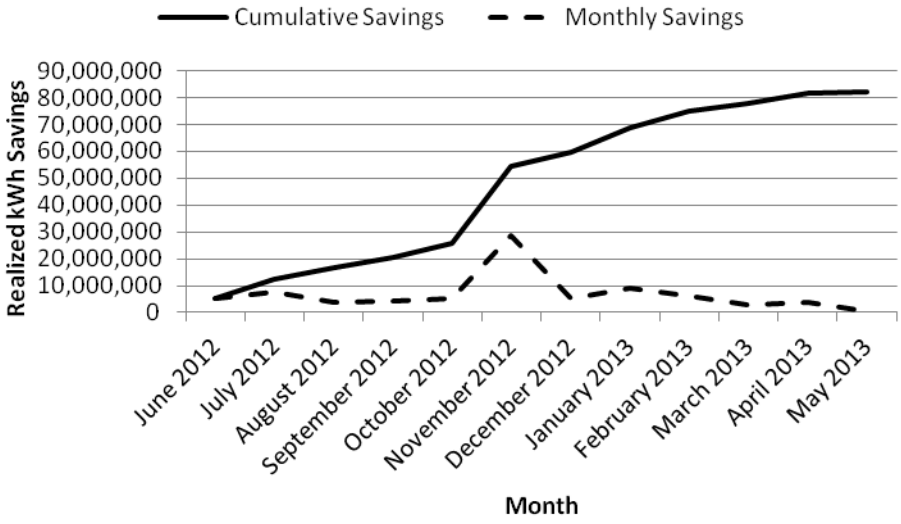

Figure 2-2 Standard Incentives Program Cumulative Realized kWh Savings by Date of Application Submission

Figure 2-3 shows the Custom Incentives Program's realized therm savings by the date of application submission.

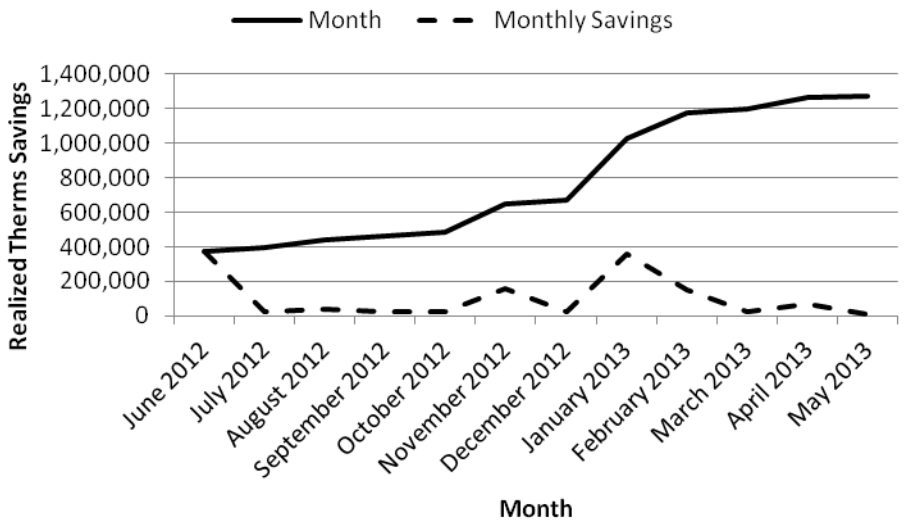

Figure 2-3 Custom Incentives Program Cumulative Realized Therm Savings by Date of Application Submission

Figure 2-4 shows the Standard Incentives Program's realized therm savings by the date of application submission.

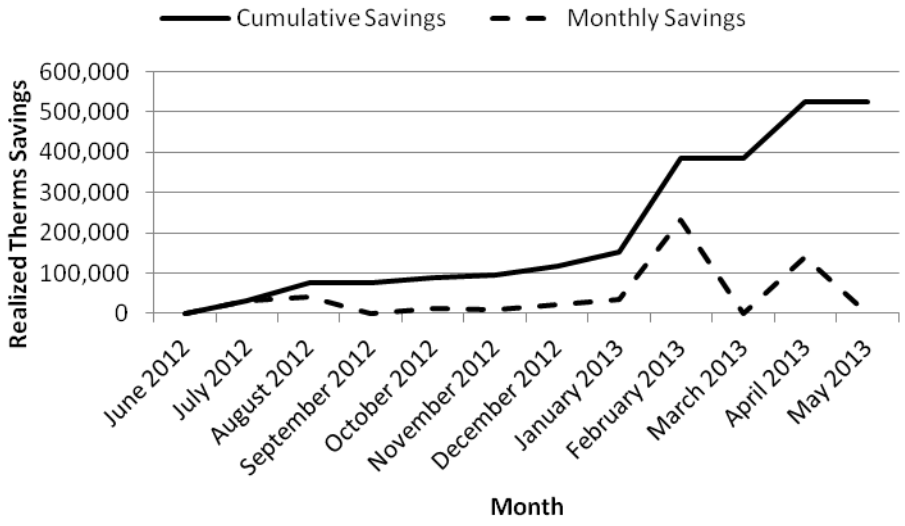

Figure 2-4 Standard Incentives Program Cumulative Realized Therm Savings by Date of Application Submission

2.1.2. **New Construction Program**

The New Construction Program generates electric and natural gas savings through new construction and major renovation of public sector buildings that exceed the current Illinois

Energy Conservation Code for Commercial Buildings. Applicants receive incentives for incorporating energy saving technologies and design features that exceed the building code requirements that are in effect at the time of application. During EPY5/GPY2, there was a change in the building code in January. Prior to January, the effective commercial conservation code was the 2009 International Energy Conservation Code (IECC) with applicable provisions of the American Society for Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1-2007. After January 1st, the 2012 IECC with applicable provisions of ASHRAE Standard 90.1 – 2010 were in effect.

In order to receive program incentives for electric savings, project sites must be serviced by Ameren Illinois or ComEd. Incentives are available for gas conservation measures for sites serviced by Ameren Illinois, Nicor, Peoples, or North Shore.

New Construction Program incentives are structured to encourage construction and major renovation projects that result in buildings that use less energy than buildings constructed to code requirements. Applicants can receive custom incentives for energy savings or prescriptive incentives with fixed dollar amounts for equipment installed. There are two components to the custom incentives: a base incentive rate and a bonus rate for applicants seeking LEED Silver, Gold, or Platinum designation. The base rate incentives are $0.08 per above code kWh saved and $2.00 per above code therm saved. The bonus incentive rates for each applicable building code are shown in Table 2-3.

Table 2-3 EPY5/GPY2 Bonus Incentive Rates

IECC 2009/ ASHRAE 90.1 2007 required	*Incentive per square foot*	*IECC 2012/ ASHRAE 90.1 2010 required*	*Incentive per square foot*
5% beyond code	$0.00	5% beyond code	$0.40
10% beyond code	$0.20	10% beyond code	$0.60
15% beyond code	$0.40	15% beyond code	$0.80
20% beyond code	$0.60	20% beyond code	$1.00
25% beyond code	$0.80	25% beyond code	$1.20
30% beyond code	$1.00	30% beyond code	$1.40

Incentives for prescriptive measures are available for lighting equipment, envelope measures, mechanical measures, water heating measures, and kitchen measures. Lighting incentives are based on lighting density (i.e., watts per square foot); envelope measures are based or R-values per square foot; mechanical measures are based on equipment efficiency, type, and size; water heating measures are based on equipment type; and various kitchen measures are set on a per unit basis.

Total incentives cannot exceed 100% of the incremental measure cost or 75% of the project cost. If additional incentives are provided from other public sources, those incentives in combination with the program incentives cannot exceed 100% of the total project cost. The maximum bonus

incentive is $100,000 and the total base and bonus incentive cannot exceed $2.50 per square foot or $300,000 (unless the project includes multiple project locations).

Preapproval of projects is strongly encouraged and incentives for certain measures may not be allowed if pre-retrofit equipment is not identifiable.

Expected kWh and therm savings by program are shown in Table 2-4 and Table 2-5. There were six incentive projects completed through the program during the period June 2012 through May 2013. These projects were expected to provide savings of 3,715,397 kWh and 54,049 therms.

Table 2-4 Expected kWh Savings for New Construction Program

Utility	*Expected kWh Savings*
Ameren	1,783,231
ComEd	1,932,166
Total	3,715,397

Table 2-5 Expected Therm Savings for New Construction Program

Utility	*Expected Therm Savings*
Ameren	370
Nicor	53,679
Total	54,049

2.2. **Overview of Evaluation Approach**

The overall objective for the impact evaluation of the Custom and Standard Incentives Programs and the New Construction Program was to determine the gross and net electric and natural gas savings and peak demand (kW) reductions resulting from projects completed during the June 2012 through May 2013 period.

The evaluation approach had the following main features:

- Available documentation (e.g., audit reports, savings calculation work papers, etc.) was reviewed for a sample of projects, with particular attention given to the calculation procedures and documentation for savings estimates.
- On-site data collection was conducted for a sample of projects to provide the information needed for estimating savings and demand reductions. Monitoring was also conducted at some sites to obtain more accurate information on the hours of operation for lighting, HVAC equipment, and motors/VFDs.
- The Illinois Statewide Technical Reference Manual (TRM) was used to estimate gross savings for deemed savings measures implemented through the Standard Incentives Program.

Measures implemented through the New Construction Program, the Custom Incentives Program and non-deemed savings measures implemented through the Standard Incentives Program were estimated using proven techniques, including industry standard engineering calculations and verification of computer simulations developed by program contractors to determine energy savings.

  - Analysis of lighting savings was accomplished using ADM's custom-designed lighting evaluation model with system parameters (fixture wattage, operating characteristics, etc.) based on operating parameter information collected on-site and, if appropriate, industry standards.
  - For HVAC measures, the original analyses used to calculate the expected savings were reviewed and the operating and structural parameters of the analysis were verified. For custom measures or relatively more complex measures, simulations with the DOE-2 energy analysis model were used to develop estimates of energy use and savings from the installed measures.

- A participant survey was conducted from a sample of program participants to gather information on their decision making, their perceived benefits and critiques of the program, and factors determining net to gross savings ratios for the program.

2.3. **Organization of Report**

This report on the impact and process evaluation of the Custom and Standard Incentives Programs and the New Construction Program for the period June 2012 through May 2013 is organized as follows:

- Chapter 3 presents and discusses the methods used for and the results obtained from estimating gross savings for measures installed under the Custom and Standard Incentives Programs and the New Construction Program.
- Chapter 4 presents and discusses the methods used for and results obtained from estimating net savings for the Custom and Standard Incentives Programs and the New Construction Program.
- Chapter 5 presents and discusses the methods used for and results obtained from the process evaluation of the Custom and Standard Incentives Programs and the New Construction Program.
- Chapter 6 presents evaluation conclusions and recommendations for the Custom and Standard Incentives Programs and the New Construction Program.
- Appendix A: Survey Instrument for Decision Maker Survey provides a copy of the questionnaire used for the survey of decision makers for participants in the Custom and Standard Incentives Programs.

- Appendix B: Custom and Standard Decision Maker Survey Responses presents the results from a survey of decision makers for participants that received incentives under the Custom and Standard Incentives Programs.
- Appendix C: Questionnaire for New Construction Survey provides a copy of the questionnaire used for the survey of decision makers for participants in the New Construction Program.
- Appendix D: New Construction Survey Responses presents the results from a survey of decision makers for participants that received incentives under the New Construction Program.
- Appendix E: Trade Ally Interview Guide provides a copy of the questionnaire used for interviews of trade allies.

3. Estimation of Gross Savings

This chapter addresses the estimation of gross kWh and therm savings and peak kW reductions resulting from measures installed in facilities of participants that obtained incentives under the Custom and Standard Incentives Programs, and the New Construction Program, during the period June 2012 through May 2013. Section 3.1 describes the methodology used for estimating gross savings. Section 3.2 presents the electric and natural gas gross savings results for the three programs.

3.1. **Methodology for Estimating Gross Savings**

The methodology used for estimating gross savings for the Custom and Standard Incentives Programs and the New Construction Program is described in this section.

3.1.1. **Sampling Plan**

Data used to estimate the gross savings achieved through the Custom and Standard Incentives Programs were collected for samples of projects completed during the period June 2012 through May 2013. Samples were drawn for both electric and natural gas savings achieved through the programs.

Data provided by the DCEO showed that during the period June 2012 through May 2013, there were 441 Custom Incentives Program projects that were expected to provide electric savings of 34,397,922 kWh. During the same period there were 1,373 Standard Incentives Program projects, which were expected to provide electric savings of 66,440,753 kWh annually.

Inspection of data on kWh savings for individual projects provided by the DCEO indicated that the distribution of electric savings was generally positively skewed, with a relatively small number of projects accounting for a high percentage of the estimated energy savings for the Custom and Standard Incentives Programs. Estimation of electric savings for Custom and Standard Incentives Programs is based on a ratio estimation, which allows precision/confidence requirements to be met with a smaller sample size. The actual precision of the Custom Incentives Program sample is ±7.7% at 90% confidence, while the actual precision of the Standard Incentives Program sample is ±8.7% at 90% confidence.

Table 3-1 shows the number of projects and expected kWh savings for the Custom Incentives Program sample by stratum. Table 3-2 shows the number of projects and expected kWh savings of the Standard Incentives Program sample by stratum.

Table 3-1 Population Statistics Used for Sample Design for Custom Incentives Program kWh Savings

	Stratum 1	*Stratum 2*	*Stratum 3*	*Stratum 4*	*Stratum 5*	*Totals*
Strata boundaries (kWh)	15,200 <	15,200 - 63,775	63,776 - 198,046	198,047 - 569,400	569,401 - 3,047,803	
Number of projects	227	121	54	30	9	441
Total kWh savings	1,294,231	3,921,491	6,067,532	9,673,976	13,440,692	34,397,922
Average kWh Savings	5,701	32,409	112,362	322,466	1,493,410	78,000
Standard deviation of kWh savings	3,993	13,678	36,216	104,651	999,801	259,961
Coefficient of variation	0.70	0.42	0.32	0.32	0.67	3.33
Final design sample	4	2	7	11	9	33

Table 3-2 Population Statistics Used for Sample Design for Standard Incentives Program kWh Savings

	Stratum 1	*Stratum 2*	*Stratum 3*	*Stratum 4*	*Stratum 5*	*Totals*
Strata boundaries (kWh)	34,296 <	34,296 - 119,993	119,994 - 176,448	176,449 - 489,514	489,515 - 3,678,965	
Number of projects	893	346	75	52	7	1,373
Total kWh savings	10,429,877	22,793,949	10,685,207	14,142,109	8,389,610	66,440,753
Average kWh Savings	11,680	65,878	142,469	271,964	1,198,516	48,391
Standard deviation of kWh savings	9,332	23,486	15,528	84,968	1,116,612	126,534
Coefficient of variation	0.80	0.36	0.11	0.31	0.93	2.61
Final design sample	13	10	10	21	7	61

As shown in Table 3-3, the sample projects account for approximately 55% of the Custom Incentives Program's expected kWh savings, and, as shown in Table 3-4, the Standard Incentives Program's sample projects account for approximately 27% of expected kWh savings.

Table 3-3 Expected kWh Savings for Custom Incentives Sampled Projects by Stratum

Stratum	*Sample Expected kWh Savings*	*Total Expected kWh Savings*	*Percent of Ex Ante kWh Savings in Sample*
5	13,440,692	13,440,692	100%
4	4,294,657	9,673,976	44%
3	1,107,472	6,067,532	18%
2	122,932	3,921,491	3%
1	31,849	1,294,231	2%
Total	18,997,602	34,397,922	55%

Table 3-4 Expected kWh Savings for Standard Incentives Sampled Projects by Stratum

Stratum	*Sample Expected kWh Savings*	*Total Expected kWh Savings*	*Percent of Ex Ante kWh Savings in Sample*
5	8,389,610	8,389,610	100%
4	6,921,576	14,142,109	49%
3	1,446,150	10,685,207	14%
2	929,060	22,793,949	4%
1	180,674	10,429,877	2%
Total	17,867,069	66,440,753	27%

Data provided by the DCEO showed that during the period June 2012 through May 2013, there were 223 Custom Incentives Program projects that were expected to provide natural gas savings of 1,451,202 therms. During the same period, there were 99 Standard Incentives Program projects that were expected to provide natural gas savings of 557,008 therms.

Inspection of data on therm savings for individual projects provided by the DCEO indicated that the distribution of savings was generally positively skewed, with a relatively small number of projects accounting for a high percentage of the estimated savings. Estimation of natural gas savings for Custom and Standard Incentives Programs is based on a ratio estimation procedure, which allows precision/confidence requirements to be met with a smaller sample size. The actual precision of the Custom Incentives Program sample is ±8.7% at 90% confidence, while the actual precision of the Standard Incentives Program sample is ±9.7% at 90% confidence.

Table 3-5 shows the number of projects and expected therm savings of the Custom Incentives Program sample by stratum.

Table 3-5 Population Statistics Used for Sample Design for Custom Incentives Therm Savings

	Stratum 1	*Stratum 2*	*Stratum 3*	*Stratum 4*	*Stratum 5*	*Totals*
Strata boundaries (Therm)	2,723 <	2,724 - 9,933	9,934 - 20,885	20,886 - 40,914	40,915 - 209,744	
Number of projects	137	50	21	12	3	223
Total therm savings	95,996	259,274	302,128	366,072	427,731	1,451,202
Average therm savings	701	5,185	14,387	30,506	142,577	6,508
Standard deviation of therm savings	707	2,061	2,731	5,677	75,570	19,062
Coefficient of variation	1.01	0.40	0.19	0.19	0.53	2.93
Final design sample	4	5	3	4	3	19

As shown in Table 3-6 the sample projects account for approximately 41% of the Custom Incentives Program's expected therm savings.

Table 3-6 Expected Therm Savings for Custom Incentives Sampled Projects by Stratum

Stratum	*Sample Expected Savings*	*Total Expected Savings*	*Percent of Ex Ante Therm Savings in Sample*
5	427,731	427,731	100%
4	99,991	366,072	27%
3	46,337	302,128	15%
2	20,500	259,274	8%
1	7,337	95,996	8%
Total	601,896	1,451,202	41%

Table 3-7 shows the number of projects and expected therm savings of the Standard Incentives Program sample by stratum.

Table 3-7 Population Statistics Used for Sample Design for Standard Incentives Therm Savings

	Stratum 1	*Stratum 2*	*Stratum 3*	*Stratum 4*	*Totals*
Strata boundaries (therm)	2,438 <	2,439 - 15,474	15,475 - 25,087	25,088 - 57,907	
Number of projects	56	26	13	4	99
Total therm savings	64,051	155,161	156,972	180,824	557,008
Average therm savings	1,144	5,968	12,075	45,206	5,626
Standard deviation of therm savings	653	2,548	3,496	14,068	9,509
Coefficient of variation	0.57	0.43	0.29	0.31	1.69
Final design sample	9	5	5	4	23

As shown in Table 3-8 the sample projects account for approximately 52% of the Standard Incentives Program's expected therm savings.

Table 3-8 Expected Therm Savings for Standard Incentives Sampled Projects by Stratum

Stratum	*Sample Expected Savings*	*Total Expected Savings*	*Percent of Ex Ante Therm Savings in Sample*
4	180,824	180,824	100%
3	62,451	156,972	40%
2	32,258	155,161	21%
1	12,381	64,051	19%
Total	287,913	557,008	52%

Data provided by the DCEO showed that during the period June 2012 through May 2013, there were five New Construction Program projects with electric savings and four projects with natural gas savings. Expected savings for the program were 3,715,397 kWh and 54,049 therms. Site visits were performed for four of the sites. Realized savings for the remaining two sites were based on an engineering desk review of project documentation.

3.1.2. **Review of Documentation**

After the samples of projects were selected, the DCEO provided documentation pertaining to the projects. The first step in the evaluation effort was to review this documentation and other program materials that were relevant to the evaluation effort.

For each project, the available documentation (e.g., audit reports, savings calculation work papers, etc.) for each rebated measure was reviewed, with particular attention given to the calculation procedures and documentation for savings estimates. Documentation that was reviewed for all projects selected for the sample included program forms, data bases, reports, billing system data, weather data, and any other potentially useful data. Each application was reviewed to determine whether the following types of information had been provided:

Documentation for the equipment changed, including (1) descriptions, (2) schematics, (3) performance data, and (4) other supporting information;

Documentation for the new equipment installed, including (1) descriptions, (2) schematics, (3) performance data, and (4) other supporting information; and

Information about the savings calculation methodology, including (1) what methodology was used, (2) specifications of assumptions and sources for these specifications, and (3) correctness of calculations.

If there was uncertainty regarding a project, or apparently incomplete project documentation, ADM staff contacted the DCEO to seek further information to ensure the development of an appropriate project-specific M&V plan.

3.1.3. On-Site Data Collection Procedures

On-site visits were used to collect data that were used in calculating savings impacts. The visits to sampled project sites were used to collect primary data on the facilities participating in the program.

When projects were selected for the M&V sample, ADM provided DCEO staff with a list of projects for which ADM planned to schedule M&V activities. This notification also served as a request for any documentation relating to the projects. This list included the company name, the project ID, the site address or other premise identification, and the respective contact information for the participant representative ADM intended to contact in order to schedule an appointment.

During an on-site visit, the field staff accomplished three major tasks:

- First, they verified the implementation status of all measures for which participants received incentives. They verified that the energy efficiency measures were indeed installed, that they were installed correctly and that they still functioned properly.
- Second, they collected the physical data needed to analyze the energy savings that have been realized from the installed improvements and measures. Data were collected using a form that was prepared specifically for the project in question after an in-house review of the project file.
- Third, they interviewed the contact personnel at a facility to obtain additional information on the installed system to complement the data collected from other sources.
- At some sites, monitoring was conducted to gather more information on the operating hours of the installed measures. Monitoring was conducted at sites where it was judged that the monitored data would be useful for further refinement and higher accuracy of savings calculations. Monitoring was not considered necessary for sites where project documentation allowed for sufficiently detailed calculations.

3.1.4. Procedures for Estimating Savings from Measures Installed

The procedures used to estimate savings for projects implemented through the Custom and Standard Incentives Programs and the New Construction Program are described in this section.

3.1.4.1. Procedures for Estimating Savings from Custom Incentives Program Projects

The method ADM employed for measures implemented through the Custom Incentives Program was dependent on the measure type. Categories of measures include the following:

- Lighting;
- HVAC;
- Motors;

- VFDs;
- Compressed-Air;
- Refrigeration; and
- Process Improvements.

ADM uses a specific set of methods to determine gross savings for projects that depend on the type of measure being analyzed. These typical methods are summarized in Table 3-9.

Table 3-9 Typical Methods to Determine Savings for Measures

Type of Measure	*Method to Determine Savings*
Compressed Air Systems	Engineering analysis, with monitored data on load factor and schedule of operation
Lighting	Custom-designed lighting evaluation model, which uses data on wattages before and after installation of measures and hours-of-use data from field monitoring.
HVAC (including packaged units, chillers, cooling towers, controls/EMS)	eQUEST model using DOE-2 as its analytical engine for estimating HVAC loads and calibrated with site-level billing data to establish a benchmark.
Motors and VFDs	Measurements of power and run-time obtained through monitoring
Refrigeration	Simulations with EQuest engineering analysis model, with monitored data
Process Improvements	Engineering analysis, with monitored data on load factor and schedule of operation

The activities specified in Table 3-9 produced two estimates of gross savings for each sample project: an expected gross savings estimate (as reported in the project documentation and program tracking system) and the verified gross savings estimates developed through the M&V procedures employed by ADM. ADM developed estimates of program level gross savings by applying a ratio estimation procedure in which achieved savings rates estimated for the sample projects were applied to the program level expected savings.

Energy savings realization rates[1] were calculated for each project for which on-site data collection and engineering analysis/building simulations were conducted. Sites with relatively

[1] The savings realization rate for a project is calculated as the ratio of the achieved savings for the project (as measured and verified through the M&V effort) to the expected savings (as determined through the project application procedure and recorded in the tracking system for the program).

high or low realization rates were further analyzed to determine the reasons for the discrepancy between expected and realized energy savings.

The following discussion describes the basic procedures used for estimating savings from various measure types.

Plan for Analyzing Savings from Lighting Measures: Lighting measures examined include retrofits of existing fixtures, lamps and/or ballasts with energy efficient fixtures, lamps and/or ballasts. These types of measures reduce demand, while not affecting operating hours. Any proposed lighting control strategies that might include the addition of energy conserving control technologies such as motion sensors or daylighting controls are examined. These measures typically involve a reduction in hours of operation and/or lower current passing through the fixtures.

Analyzing the savings from such lighting measures requires data for retrofitted fixtures on (1) wattages before and after retrofit and (2) hours of operation before and after the retrofit. Fixture wattages are taken from a table of standard wattages, with corrections made for non-operating fixtures. Hours of operation are determined from metered data collected after measure installation for a sample of fixtures.

To determine baseline and post-retrofit demand values for the lighting efficiency measures, ADM uses in-house data on standard wattages of lighting fixtures and ballasts to determine demand values for lighting fixtures. These data provide information on wattages for common lamp and ballast combinations.

As noted, ADM collects data with which to determine average operating hours for retrofitted fixtures by using Time-of-Use (TOU) data loggers to monitor a sample of "last points of control" for unique usage areas in the sites where lighting efficiency measures have been installed. Usage areas are defined to be those areas within a facility that are expected to have comparable average operating hours. Typical usage areas are designated in the forms used for data collection.

ADM uses per-fixture baseline demand, retrofit demand, and appropriate post-retrofit operating hours to calculate peak capacity savings and annual energy savings for sampled fixtures of each usage type.

Peak kW reduction was calculated for projects that are part of the sample for measurement and verification. In order to calculate total achieved peak kW savings, the total realized peak kW savings for the sampled projects of a stratum were factored by the ratio of total expected kWh savings to sample expected kWh savings.

Peak Period Demand Savings are calculated as the difference between peak period baseline demand and post-installation peak period demand of the affected lighting equipment, per the following formula:

$$\text{Peak Capacity Savings} = kW_{before} - kW_{after}$$

The baseline and post-installation average demands are calculated by dividing the total kWh usage during the Peak Period by the number of hours in the Peak Period.

ADM calculates annual energy savings for each sampled fixture per the following formula:

$$\text{Annual Energy Savings} = kWh_{before} - kWh_{after}$$

The values for insertion in this formula are determined through the following steps:

- Results from the monitored sample are used to calculate the average operating hours of the metered lights in each costing period for every unique building type/usage area.
- These average operating hours are then applied to the baseline and post-installation average demand for each usage area to calculate the respective energy usage and peak period demand for each usage area.
- The annual baseline energy usage is the sum of the baseline kWh for each costing period for all of the usage areas. The post-retrofit energy usage is calculated similarly. The energy savings are calculated as the difference between baseline and post-installation energy usage.
- Savings from lighting measures in conditioned spaces are factored by the region-specific, building type-specific heating cooling interaction factors in order to calculate total savings attributable to lighting measures, inclusive of impacts on HVAC operation

Plan for Analyzing Savings from HVAC Measures: Savings estimates for HVAC measures installed at a facility are derived by using the energy use estimates developed through DOE-2 simulations and engineering calculations. The HVAC simulations also allow calculation of the primary and secondary effects of lighting measures on energy use. Each simulation produces estimates of HVAC energy and demand usage to be expected under different assumptions about equipment and/or construction conditions. There may be cases in which DOE-2 simulation is inappropriate because data are not available to properly calibrate a simulation model, and engineering analysis provides more accurate M&V results.

For the analysis of HVAC measures, the data collected through on-site visits and monitoring are utilized. Using these data, ADM prepares estimates of the energy savings for the energy efficient equipment and measures installed in each of the participant facilities. Engineering staff develop independent estimates of the savings through engineering calculations or through simulations with energy analysis models. By using energy simulations for the analysis, the energy use associated with the end use affected by the measure(s) being analyzed can be quantified. With these quantities in hand, it is a simple matter to determine what the energy use would have been without the measure(s).

Before making the analytical runs for each site with sampled project HVAC measures, engineering staff prepare a model calibration run. This is a base case simulation to ensure that

the energy use estimates from the simulations have been reconciled against actual data on the building's energy use. This run is based on the information collected in an on-site visit pertaining to types of equipment, their efficiencies and capacities, and their operating profiles. Current operating schedules are used for this simulation, as are local (TMY) weather data covering the study period. The model calibration run is made using actual weather data for a time period corresponding to the available billing data for the site.

The goal of the model calibration effort is to have the results of the DOE-2 simulation come within approximately 10% of the patterns and magnitude of the energy use observed in the billing data history. In some cases, it may not be possible to achieve this calibration goal because of idiosyncrasies of particular facilities (e.g., multiple buildings, discontinuous occupancy patterns, etc.).

Once the analysis model has been calibrated for a particular facility, ADM performs three steps in calculating estimates of energy savings for HVAC measures installed or to be installed at the facility.

- First, an analysis of energy use at a facility under the assumption that the energy efficiency measures are not installed is performed.
- Second, energy use at the facility with all conditions the same but with the energy efficiency measures now installed is analyzed.
- Third, the results of the analyses from the preceding steps are compared to determine the energy savings attributable to the energy efficiency measure.

Plan for Analyzing Savings from Motors: Estimates of the energy savings from use of high efficiency motors on HVAC and non-HVAC applications are derived through an "after-only" analysis. With this method, energy use is measured only for the high efficiency motor and only after it has been installed. The data thus collected are then used in estimating what energy use would have been for the motor application *if the high efficiency motor had not been installed.* In effect, the after-only analysis is a reversal of the usual design calculation used to estimate the savings that would result from installing a high efficiency motor. That is, at the design stage, the question addressed is how would energy use change for an application if an high efficiency motor is installed, whereas the after-only analysis addresses what the level of energy use would have been had the high efficiency motor not been installed.

For the “after only” analysis, it is not possible to use a comparison of direct measurements to determine savings, since measured data are collected only for the high efficiency motor. However, savings attributable to installation of the high efficiency motor can be estimated using information on the efficiencies of the high efficiency motor and on the motor it replaced. In particular, demand and energy savings can be calculated as follows:

$$\text{Demand Savings} = kW_{peak} \times (1/Eff_{old} - 1/Eff_{new})$$

where kWpeak = Volts x Ampspeak x Power Factor, and Ampspeak is the interval with the maximum recorded Amps during the monitoring period

$$\text{Energy Savings} = kW_{ave} \times (1/Eff_{old} - 1/Eff_{new}) \times \text{Hours of use}$$

where kWave = Volts x Ampsave x Power Factor and Ampsave is the average measured Amps for the duration of the monitored period.

$$\text{Annual Energy Savings} = kW_{ave} \times (1/Eff_{old} - 1/Eff_{new}) \times (\text{days of operation per year} / \text{days metered}) \times \text{Annual Adjustment Factor}$$

where kW_{ave} = Volts x $Amps_{ave}$ x Power Factor for the monitoring period, $Amps_{ave}$ is the average measured Amps for the duration of the monitored period, and use factor is determined from interviews with site personnel. Annual Adjustment Factor is 1 if the monitoring period is typical for the yearly operation, less than 1 if the monitoring period is expected to be higher use than typical for the rest of the year, and more than 1 if the monitoring period is expected to be lower than typical for the rest of the year.[2]

The information on motor efficiencies needed for the calculation of savings is obtained from different sources. Data on the efficiencies of high efficiency motors installed under the program should be available from program records. In some cases, the efficiencies of the replaced motors may also be noted in the DCEO's program records. Care must be taken using nameplate efficiency ratings of replaced motors, unless the company maintains good documentation of their equipment. If a motor has been rewound it may not operate as originally rated. However, if the efficiencies of the old motors are not directly available, the efficiency values can be imputed by using published data on average efficiency values for motors of given horsepower. If the motor replacement is for normal replacement, the baseline efficiency is established as the efficiency of a new, standard efficiency motor. However, in cases of early replacement, the efficiency of the old motor is used for the length of the remaining life. [3]

Because most motors monitored run only under full load conditions, some adjustments must be made from the "industry averages" of full load efficiencies. Motor efficiency curves of typical real motors that have the same full load efficiencies are used for determining part load efficiencies.

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[2] Current year weather data were compared with the *Typical Meteorological Year* from the National Oceanic & Atmospheric Administration (NOAA)

[3] Assumptions regarding measure expected useful life were taken from the most recent Database for Energy Efficiency Resources (DEER). See http://www.deeresources.com/.

Like motor efficiency, the power factor varies with motor loading. Motor power factor curves of typical real motors that have the same full load power factor are used for determining part load power factor.

Another factor to consider in demand and energy savings comparisons of motor change out programs is the rotor slip. Full load RPM ratings of motors vary. For centrifugal loads such as fans and pumps, the power supplied is dependent on the speed of the driven equipment. The power is theoretically proportional to the cube of the speed, but in practice more closely approximates the square of the speed. In general high efficiency motors have slightly higher full load RPM ratings (lower slip) than standard motors. Where nameplate ratings of full load RPM are available for replaced motors, a derating factor can be applied.[4]

The data needed to carry out these plans for determining savings are collected from several sources.

- The first source of data is the information from each project's documentation. This information is expected to include aggregate energy used at a site, disaggregated energy usage data for certain targeted processes (if available), before (actual) and after (projected) data on production, scrap, and other key performance indicators, and final reports (which include process improvement recommendations, analyses, conclusions, performance targets, etc.).
- The second source of data is energy use obtained from utilities.
- The third source is information collected through on-site inspections of the facilities. ADM staff collect the data during on-site visits using a form that is comprehensive in addressing a facility's characteristics, its modes and schedules of operation, and its electrical and mechanical systems. The form also addresses various energy efficiency measures, including high efficiency lighting (both lamps and ballasts), lighting occupancy sensors, lighting dimmers and controls, air conditioning, high efficiency motors, etc.
- As a fourth source of data, selected end-use equipment are monitored to develop information on operating schedules and power draws.

[4] As an example, take the case where a new motor has a full load RPM rating of 1770 and the old motor had a full load RPM rating of 1760. The derating factor would be:

Derating factor = $(RPM_{old})^2 / (RPM_{new})^2 = 1760^2 / 1770^2 = 0.989$

Plan for Analyzing Savings from VFDs: A variable-frequency drive (VFD) is an electronic device that controls the speed of a motor by varying the magnitude of the voltage, current, or frequency of the electric power supplied to the motor. The factors that make a motor load a suitable application for a VFD are (1) variable speed requirements and (2) high annual operating hours. The interplay of these two factors can be summarized by information on the motor's duty cycle, which essentially shows the percentage of time during the year that the motor operates at different speeds. The duty cycle should show good variability in speed requirements, with the motor operating at reduced speed a high percentage of the time.

Potential energy savings from the use of VFDs are usually most significant with variable-torque loads, which have been estimated to account for 50% to 60% of total motor energy use in the non-residential sectors. Energy saving VFDs may be found on fans, centrifugal pumps, centrifugal blowers, and other centrifugal loads, most usually where the duty cycle of the process provided a wide range of speeds of operation.

ADM's approach to determining savings from installation of VFDs involves (1) making one-time measurements of voltage, current, and power factor of the VFD/motor and (2) conducting continuous measurements of amperage over a period of time in order to obtain the data needed to develop VFD load profiles and calculate demand and energy savings. VFDs are generally used in applications where motor loading changes when motor speed changes. Consequently the true power drawn by a VFD is recorded in order to develop VFD load shapes. One-time measurements of power are made for different percent speed settings. Power and percent speed or frequency (depending on VFD display options) are recorded for as wide a range of speeds as the participant allows the process to be controlled; field staff attempt to obtain readings from 40 to 100% speed in 10 to 15% increments.

Plan for Analyzing Savings from Compressed Air Measures: Measures to improve the efficiency of a compressed air system include the reduction of air leaks, resizing of compressors, installing more efficient compressors, improved controls, or a complete system redesign. Savings from such measures are evaluated through engineering analysis of compressor performance curves, supported by data collected through short-term metering.

ADM field staff obtain nameplate information for the pre-retrofit equipment either from the project file or during the on-site survey. Performance curve data are obtained from manufacturers. Engineering staff then conduct an engineering analysis of the performance characteristics of the pre-retrofit equipment. During the on-site survey, field staff inspect the as-built system equipment, take pressure and load readings, and interview the system operator to identify seasonal variations in load. Potential interactions with other compressors are assessed and it is verified that the rebated compressor is being operated as intended.

When appropriate, short-term measurements are performed to reduce the uncertainty in defining the load on the as-built system. These measurements may be taken either with a multi-channel logger, which can record true power for several compressors, with current loggers, which can

provide average amperage values, or with motor loggers to record operating hours. The appropriate metering equipment is selected by taking into account variability in load and the cost of conducting the monitoring.

ADM used AirMaster+ to calculate the savings due to the energy efficiency measures installed within each compressed air system. The AirMaster+ as-built and baseline compressor types were inputted into the model using data points collected during on-site verification. The as-built model was then calibrated to a typical daily schedule, derived from at least two weeks of trending data. Project energy savings were calculated by subtracting the as-built from the baseline energy consumption.

Plan for Analyzing Savings from Refrigeration and Process Improvements: Analysis of savings from refrigeration and process improvements is inherently project-specific. Because of the specificity of processes, analyzing the processes through simulations is generally not feasible. Rather, reliance is made on engineering analysis of the process affected by the improvements. Major factors in ADM's engineering analysis of process savings are operating schedules and load factors. Information on these factors is developed through short-term monitoring of the affected equipment, be it pumps, heaters, compressors, etc. The monitoring is done after the process change, and the data gathered on operating hours and load factors are used in the engineering analysis to define "before" conditions for the analysis of savings.

3.1.4.2. Procedures for Estimating Savings for the Standard Incentives Program

The Illinois Statewide Technical Reference Manual (TRM) was used to estimate gross savings for deemed savings measures implemented through the Standard Incentives Program. Project specific parameters for the gross savings analysis were taken from project documentation and information collected during site visits. Non-deemed savings measures implemented through the Standard Incentives Program were estimated using proven techniques, including industry standard engineering calculations and verification of computer simulations developed by program contractors to determine energy savings as outlined in Section 3.1.4.1. Table 3-10 and Table 3-11 summarize the Illinois TRM measure number that was used to calculate the ex post savings for applicable measures in each measure category.

Table 3-10 Appropriate TRM Measure Number for Electric Measures

Incentive Type	*Incentive Subtype*	*Applicable Section(s) of TRM*
HVAC	Controls	TRM Not Applied
	Electric Equipment	4.4.6, 4.4.9, 4.4.15
Kitchen	Refrigeration Measures	4.6.2, 4.6.4
Lighting	Compact Fluorescent Lamps (Screw In)	4.5.1
	Controls	4.5.10
	Hardwired Compact Fluorescent Fixtures	TRM Not Applied
	High Performance or reduced wattage 4 foot T8	4.5.3
	Induction Lighting	TRM Not Applied
	LED Lighting	4.5.4, 4.5.6
	Metal Halide	TRM Not Applied
	New LED or Induction Wall Packs	TRM Not Applied
	Permanent Lamp Removal - Pre-approval application is required	4.5.2
	Reduced wattage 8 foot T8	TRM Not Applied
	Specialty T8 Lamps and Ballasts	TRM Not Applied
	T8/T5 Highbay Fluorescent Fixtures with Electronic Ballast	4.5.3, 4.5.12
Motors	<=200 Horse Power	TRM Not Applied
	100 Horse Power	TRM Not Applied
	125 Horse Power	TRM Not Applied
	150 Horse Power	TRM Not Applied
	25 Horse Power	TRM Not Applied
	30 Horse Power	TRM Not Applied
	40 Horse Power	TRM Not Applied
	50 Horse Power	TRM Not Applied
	60 Horse Power	TRM Not Applied
	75 Horse Power	TRM Not Applied

Table 3-11 Appropriate TRM Measure Number for Natural Gas Measures

Incentive Type	*Incentive Subtype*	*Applicable Section(s) of TRM*
HVAC	Controls	TRM Not Applied
	Gas Equipment	4.3.1, 4.3.5, 4.4.10
Kitchen	Refrigeration Measures	4.3.2

Gross savings were developed for measures not covered by the Illinois TRM using the methods described in Section 3.1.4.1.

3.1.4.3. Procedures for Estimating Savings for the New Construction Program

Data used to estimate gross savings were collected from project documentation and simulation model outputs provided by the DCEO, and utility billing data. Using the information collected, savings were assessed through a comparison of the modeled energy consumption of the as built facility with a baseline code compliant facility, review of building model outputs submitted for receiving incentives through the program, and normalized building energy usage estimated through regression analyses.

3.2. **Results of Gross Savings Estimation**

To estimate gross kWh savings, peak kW reductions, and gross therm savings for the Custom and Standard Incentives Programs, data were collected and analyzed for samples of 43 Custom Incentives Program projects and 68 Standard Incentives Program projects. Savings were estimated for all six of the projects completed through the New Construction Program. The data were analyzed using the methods described in Section 2.1 to estimate project energy savings and peak kW reductions and to determine realization rates for the three programs. The results of that analysis are reported in this section.

3.2.1. **Realized Gross kWh and Therm Savings**

The gross kWh savings for the Custom Incentives Program during the period June 2012 through May 2013 are summarized by sampling stratum in Table 3-12. Overall, the achieved gross savings of 28,708,558 kWh were equal to 83% of the expected savings.

Table 3-12 Expected and Gross Realized kWh Savings for the Custom Incentives Program by Sample Stratum

Stratum	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Gross Realization Rate*
5	13,440,692	11,087,390	82%
4	9,673,976	7,750,190	80%
3	6,067,532	6,549,404	108%
2	3,921,491	2,660,337	68%
1	1,294,231	661,237	51%
Total	34,397,922	28,708,558	83%

The gross kWh savings for the Standard Incentives Program during the period June 2012 through May 2013 are summarized in Table 3-13. Overall, the achieved gross savings of 82,214,270 kWh were equal to 124% of the expected savings.

Table 3-13 Expected and Gross Realized kWh Savings for the Standard Incentives Program by Sample Stratum

Stratum	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Gross Realization Rate*
5	8,389,610	10,961,625	131%
4	14,142,109	15,453,584	109%
3	10,685,207	11,775,144	110%
2	22,793,949	24,814,309	109%
1	10,429,877	18,549,364	178%
Total	66,440,753	82,214,740	124%

The gross kWh savings for the New Construction Program during the period June 2012 through May 2013 are summarized in Table 3-14. Overall, the achieved gross savings of 3,666,703 kWh were equal to 99% of the expected savings.

Table 3-14 Expected and Gross Realized kWh Savings for the New Construction Program

Expected kWh Savings	*Realized Gross kWh Savings*	*Gross Realization Rate*
3,715,397	3,666,703	99%

Table 3-15 shows the expected and realized kWh energy savings by sampled project for the Custom Incentives Program.

Table 3-15 Expected and Gross Realized kWh Savings for the Custom Incentives Program by Project

Project ID	*Expected kWh Savings*	*Realized Gross kWh Savings*	*kWh Gross Realization Rate*
CE-1	3,047,803	1,902,523	62%
CE-2	2,850,245	2,285,783	80%
CE-3	2,478,869	1,774,553	72%
CE-4	1,138,000	899,020	79%
CE-5	1,009,428	973,109	96%
CE-6	946,000	1,626,252	172%
CE-7	697,413	574,285	82%
CE-8	691,310	455,120	66%
CE-9	581,624	596,745	103%
CE-10	567,385	631,189	111%
CE-11	433,850	409,123	94%
CE-12	431,868	322,822	75%
CE-13	430,355	422,118	98%
CE-14	394,638	294,992	75%
CE-15	390,633	368,370	94%
CE-16	342,866	256,293	75%
CE-17	341,108	88,374	26%
CE-18	334,146	148,500	44%
CE-19	327,321	261,447	80%
CE-20	300,487	237,385	79%
CE-21	196,201	252,994	129%
CE-22	188,354	184,771	98%
CE-23	173,144	168,501	97%
CE-24	143,524	135,698	95%
CE-25	140,148	139,101	99%
CE-26	135,296	180,097	133%
CE-27	130,805	134,263	103%
CE-28	63,775	68,582	108%
CE-29	59,157	14,815	25%
CE-30	15,199	-	0%
CE-31	13,490	13,252	98%
CE-32	2,761	2,719	98%
CE-33	399	301	75%
All Non-Sample Projects	15,400,320	12,885,461	84%
Total	34,397,922	28,708,558	83%

Table 3-16 shows the expected and realized kWh energy savings by sampled project for the Standard Incentives Program.

Table 3-16 Expected and Gross Realized kWh Savings for Standard Incentives Program by Project

Project ID	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Project Gross Realization Rate*
SE-1	3,678,965	5,475,626	149%
SE-2	1,210,309	1,192,273	99%
SE-3	926,502	1,809,624	195%
SE-4	754,342	1,128,849	150%
SE-5	662,700	165,965	25%
SE-6	596,900	70,842	12%
SE-7	559,892	1,118,446	200%
SE-8	489,514	609,680	125%
SE-9	460,622	645,720	140%
SE-10	450,709	892,473	198%
SE-11	440,625	263,125	60%
SE-12	440,625	190,746	43%
SE-13	407,016	416,400	102%
SE-14	365,179	770,515	211%
SE-15	345,347	381,657	111%
SE-16	344,737	694,429	201%
SE-17	303,163	135,932	45%
SE-18	303,045	713,913	236%
SE-19	293,067	306,098	104%
SE-20	286,190	65,202	23%
SE-21	281,898	323,041	115%
SE-22	281,530	292,924	104%
SE-23	279,581	205,144	73%
SE-24	262,325	107,067	41%
SE-25	245,491	300,737	123%
SE-26	228,629	253,503	111%
SE-27	212,864	103,667	49%
SE-28	199,419	214,852	108%
SE-29	176,448	198,730	113%
SE-30	168,139	147,269	88%
SE-31	158,387	181,698	115%
SE-32	146,957	162,038	110%
SE-33	144,017	181,600	126%
SE-34	140,468	175,663	125%
SE-35	136,987	136,073	99%
SE-36	130,140	112,651	87%
SE-37	123,719	144,019	116%
SE-38	120,888	153,922	127%
SE-39	119,993	101,830	85%
SE-40	119,174	137,553	115%
SE-41	116,195	163,976	141%
SE-42	108,670	114,092	105%
SE-43	105,570	156,319	148%

Project ID	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Project Gross Realization Rate*
SE-44	100,917	104,594	104%
SE-45	99,873	65,885	66%
SE-46	72,018	82,763	115%
SE-47	50,413	84,372	167%
SE-48	36,236	23	0%
SE-49	32,470	45,024	139%
SE-50	32,146	54,060	168%
SE-51	28,724	33,511	117%
SE-52	16,840	20,277	120%
SE-53	14,362	19,736	137%
SE-54	12,960	12,864	99%
SE-55	11,451	30,625	267%
SE-56	10,920	8,290	76%
SE-57	9,840	8,787	89%
SE-58	8,588	76,700	893%
SE-59	1,080	9,142	846%
SE-60	862	1,846	214%
SE-61	432	465	108%
All Non-Sample Projects	48,573,684	60,439,894	124%
Total	66,440,753	82,214,740	124%

Table 3-17 shows the expected and realized kWh energy savings by project for the New Construction Program.

Table 3-17 Expected and Gross Realized kWh Savings for New Construction Program by Project

Project ID	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Project Gross Realization Rate*
NC-1	266,653	268,847	101%
NC-2	118,492	96,319	81%
NC-3	975,496	911,980	93%
NC-4	807,735	763,244	94%
NC-5	1,547,021	1,626,313	105%
Total	3,715,397	3,666,703	99%

Table 3-18 summarizes the gross therm savings for the Custom Incentives Program during the period June 2012 through May 2013. Overall, the achieved gross savings of 1,274,088 therms were equal to 88% of the expected savings.

Table 3-18 Expected and Gross Realized Therm Savings for the Custom Incentives Program by Sample Stratum

Stratum	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Gross Realization Rate*
5	427,731	493,706	115%
4	366,072	146,354	40%
3	302,128	236,213	78%
2	259,274	285,569	110%
1	95,996	112,247	117%
Total	1,451,202	1,274,088	88%

Table 3-19 summarizes the gross therm savings for the Standard Incentives Program during the period June 2012 through May 2013. Overall, the achieved gross savings of 526,703 therms were equal to 95% of the expected savings.

Table 3-19 Expected and Gross Realized Therm Savings for the Standard Incentives Program by Sample Stratum

Stratum	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Gross Realization Rate*
4	180,824	238,328	132%
3	156,972	147,448	94%
2	155,161	117,003	75%
1	64,051	23,923	37%
Total	557,008	526,703	95%

Table 3-20 summarizes the gross therm savings for the New Construction Program during the period June 2012 through May 2013. Overall, the achieved gross savings of 43,980 therms were equal to 81% of the expected savings.

Table 3-20 Expected and Gross Realized Therm Savings for the New Construction Program

Expected Therm Savings	*Realized Gross Therm Savings*	*Gross Realization Rate*
54,049	43,980	81%

Table 3-21 shows the expected and realized therm savings by sampled project for the Custom Incentives Program.

Table 3-21 Expected and Gross Realized Therm Savings for the Custom Incentives Program by Project

Project ID	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Project Gross Realization Rate*
CG-1	2,800	2,063	74%
CG-2	2,143	1,625	76%
CG-3	2,724	1,801	66%
CG-4	5,654	3,779	67%
CG-5	2,048	1,718	84%
CG-6	17,250	10,986	64%
CG-7	209,744	166,853	80%
CG-8	157,235	249,124	158%
CG-9	60,752	77,729	128%
CG-10	28,492	9,219	32%
CG-11	25,142	26,884	107%
CG-12	25,052	2,093	8%
CG-13	21,305	1,780	8%
CG-14	15,638	14,145	90%
CG-15	13,449	11,097	83%
CG-16	6,317	4,825	76%
CG-17	3,005	10,111	336%
CG-18	1,782	357	20%
CG-19	1,364	4,879	358%
All Non-Sample Projects	849,306	673,020	79%
Total	1,451,202	1,274,088	88%

Table 3-22 shows the expected and realized therm savings by sampled project for the Standard Incentives Program.

Table 3-22 Expected and Gross Realized Therm Savings for the Standard Incentives Program by Project

Project ID	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Project Gross Realization Rate*
SG-1	6,941	9,622	139%
SG-2	1,119	131	12%
SG-3	2,238	131	6%
SG-4	2,238	131	6%
SG-5	4,476	262	6%
SG-6	2,238	131	6%
SG-7	772	132	17%
SG-8	617	105	17%
SG-9	6,256	3,276	52%
SG-10	4,870	6,291	129%
SG-11	108	178	165%
SG-12	11,996	2,069	17%
SG-13	1,431	1,409	98%
SG-14	1,620	2,276	140%
SG-15	17,061	20,112	118%
SG-16	29,160	113,948	391%
SG-17	12,484	27,588	221%
SG-18	57,907	108,842	188%
SG-19	56,080	12,930	23%
SG-20	37,677	2,608	7%
SG-21	11,190	3,559	32%
SG-22	9,720	5,334	55%
SG-23	9,715	4,874	50%
All Non-Sample Projects	269,094	200,764	75%
Total	557,008	526,703	95%

Table 3-23 displays the expected and realized therm savings by project for the New Construction Program.

Table 3-23 Expected and Gross Realized Therm Savings for the New Construction Program by Project

Project ID	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Project Gross Realization Rate*
NC-1	23,942	17,182	72%
NC-2	28,587	24,008	84%
NC-3	370	355	96%
NC-4	1,150	2,435	212%
Total	54,049	43,980	81%

3.2.2. **Discussion of Gross Savings Analysis**

The project realization rates were reviewed to assess whether there were factors that were causing systematic differences in the realization rates.

For the Custom Incentives Program projects, sample project realization rates and expected kWh savings are plotted in Figure 3-1. There is not a strong association between realization rates and expected kWh savings. Figure 3-2 plots the custom incentive project realized energy savings against the expected energy savings for each sample point.

Similarly, for the Standard Incentives Program projects, sample project realization rates and expected kWh savings are plotted in Figure 3-3. There is not a strong association between realization rates and expected kWh savings. Figure 3-4 plots the standard incentive project realized energy savings against the expected energy savings for each sample point.

Case-by-case examination showed that project-specific factors were more likely to cause realized kWh savings to differ from expected savings. Project-specific factors include type of measure implemented, building type, facility operating schedule, and other parameters that may affect energy efficiency measure savings.

Figure 3-1 Custom Incentives Program Sample Project Realization Rate versus Expected kWh Savings

Figure 3-2 Custom Incentives Program Sample Project Realized kWh Savings versus Expected kWh Savings

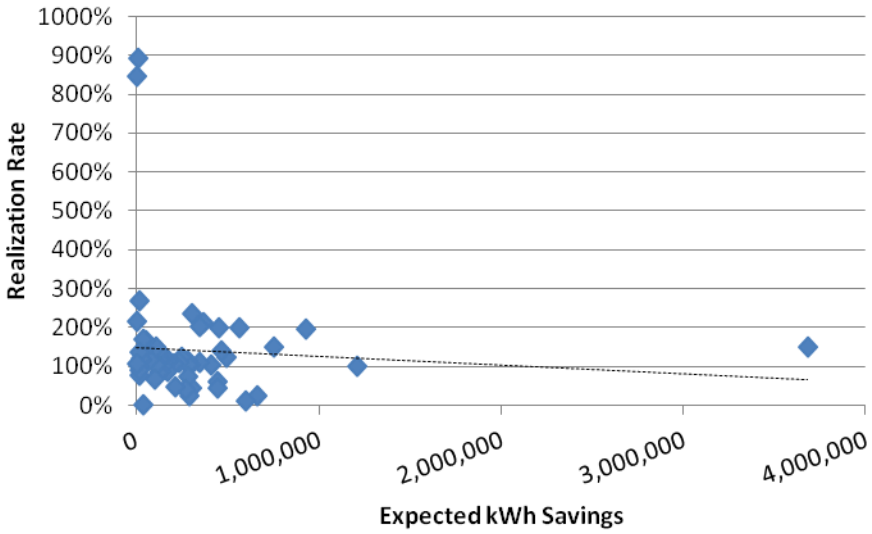

Figure 3-3 Standard Incentives Program Sample Project Realization Rate versus Expected kWh Savings

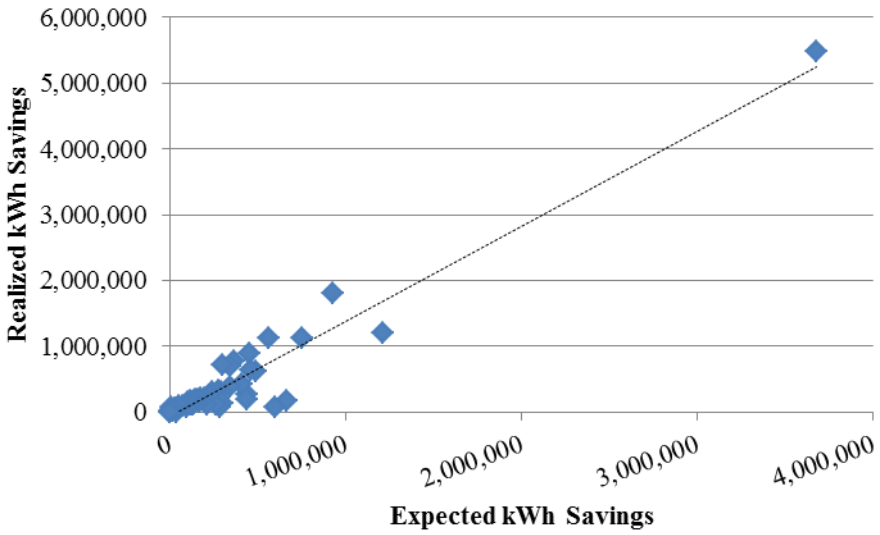

Figure 3-4 Standard Incentives Program Sample Project Realized kWh Savings versus Expected kWh Savings

Similarly, for the Custom Incentives Program projects, sample project realization rates and expected therm savings are plotted in Figure 3-5. There is not a strong association between realization rates and expected therm savings. Figure 3-6 plots the standard incentive project realized therm savings against the expected therm savings for each sample point.

Case-by-case examination showed that project-specific factors were more likely to cause realized therm savings to differ from expected savings. Project-specific factors include type of measure implemented, building type, facility operating schedule, and other parameters that may affect energy efficiency measure savings.

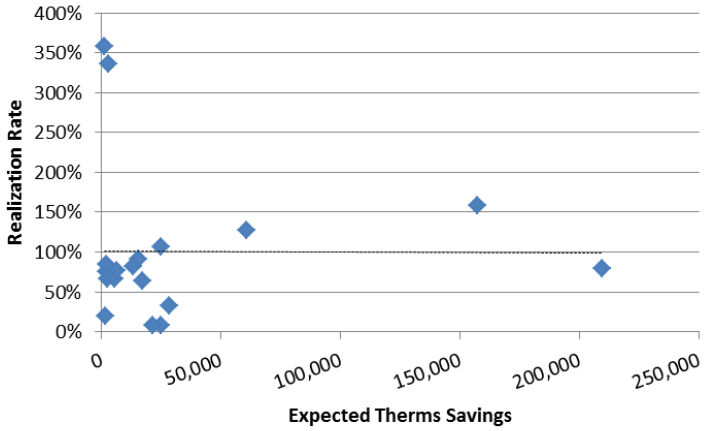

Figure 3-5 Custom Incentives Program Sample Project Realization Rate versus Expected Therm Savings

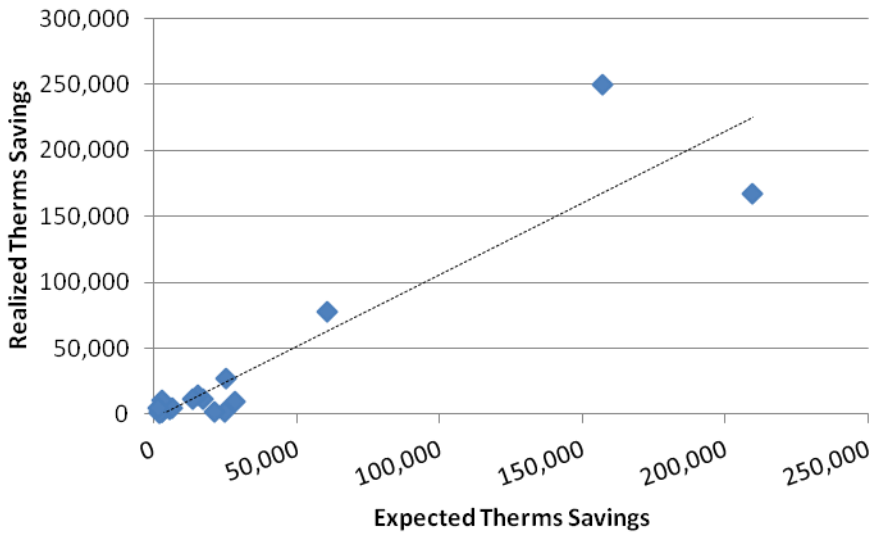

Figure 3-6 Custom Incentives Program Sample Project Realized Therm Savings versus Expected Therm Savings

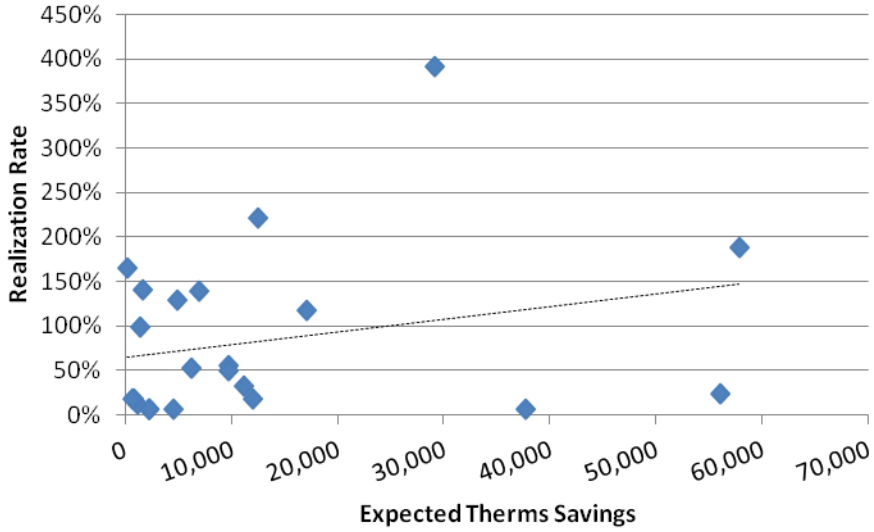

Figure 3-7 Standard Incentives Program Sample Project Realization Rate versus Expected Therm Savings

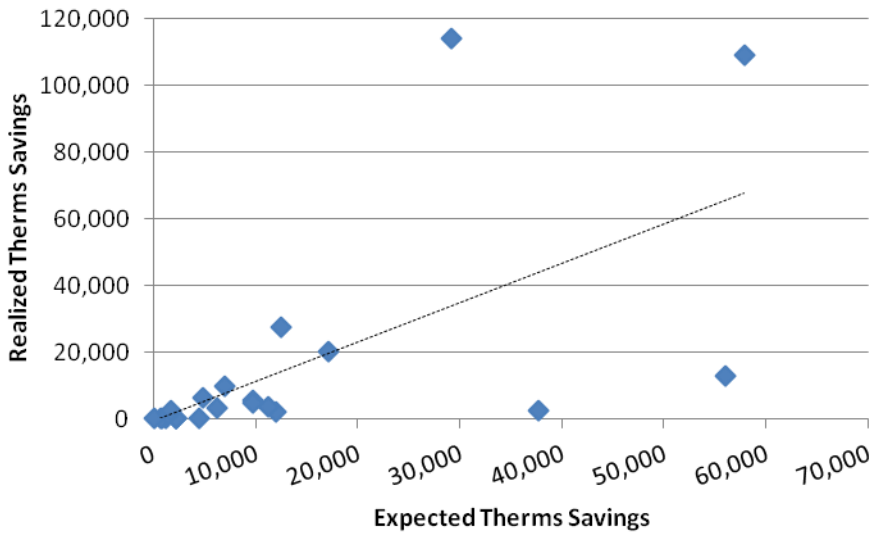

Figure 3-8 Standard Incentives Program Sample Project Realized Therm Savings versus Expected Therm Savings

As noted, for the Custom and Standard Incentives Programs, project specific factors accounted for most of the differences between expected and realized savings. These differences were generally due to the use of prescriptive per unit savings that did not incorporate site-specific factors, as well as inaccurate assumptions about how the equipment was operated. In a few cases the estimated annual project savings exceeded the total annual energy consumption for the projects. It is recommended that the program collect utility billing data in the future and use this information as a check on estimated project savings.

4. Estimation of Net Savings

This chapter reports the results from estimating the net impacts of the Custom and Standard Incentives Programs and the New Construction Program, during the period June 2012 through May 2013.

4.1. **Methodology for Estimating Net Savings**

Net savings are defined as the portion of gross savings that can be attributed to the effects of the program. Net savings may be less than gross savings as a result of free ridership. Free riders are defined as those program participants that would have implemented the same energy efficiency measures and achieved the observed energy changes, even in the absence of the program.

In general, net savings are equal to gross savings less the impact of free ridership. That is, because the energy savings realized by free riders are not induced by the program, these savings should not be included in the estimates of the program's actual (net) impacts. Without an adjustment for free ridership, some savings that would have occurred naturally would be incorrectly attributed to the program.

ADM performed a net savings analysis to estimate the impacts of the energy efficiency measures attributable to the Custom Incentives, Standard Incentives, and the New Construction Programs that were net of free ridership. Information collected from a sample of program participants through a decision maker survey was used to estimate the extent of free ridership. Appendix A provides a copy of the survey instrument for Custom and Standard Incentives Program Participants, and Appendix B presents tabulated responses for each survey question. Appendix C provides a copy of the survey instrument for New Construction Program Participants, and Appendix D presents tabulated responses for each survey question.

Based on a review of this information, the preponderance of evidence regarding free ridership inclinations was used to assess the likelihood of participant free ridership and in turn estimate net savings.

Several criteria were used for determining what portion, if any, of a participant's savings for a particular project should be attributed to free ridership. The first criterion was based on the response to the question: "Would you have been financially able to install the equipment or measures without the financial incentive from the program?" If a participant answered "No" to this question, a free ridership score of 0 was assigned to the project. That is, if a participant required financial assistance from the programs to undertake a project, then that participant was not deemed a free rider.

For decision makers that indicated that they were able to undertake energy efficiency projects without financial assistance from the program, three factors were analyzed to determine what percentage of savings may be attributed to free ridership. The three factors are:

- Plans and intentions of firm to install a measure even without support from the program;
- Influence that the program had on the decision to install a measure; and
- A firm's previous experience with a measure installed under the program.

For each of these factors, rules were applied to develop binary variables indicating whether or not a participant's behavior showed free ridership. These rules made use of answers to questions on the decision maker survey questionnaire. A copy of the questionnaire is provided in Appendix A.

The first factor required determining if a participant stated that his or her intention was to install an energy efficiency measure even without the program. The answers to a combination of several questions were used with a set of rules to determine whether a participant's behavior indicates likely free ridership. Two binary variables were constructed to account for participant plans and intentions: one, based on a more restrictive set of criteria that may describe a high likelihood of free ridership, and a second, based on a less restrictive set of criteria that may describe a relatively lower likelihood of free ridership.

The first, more restrictive criteria indicating participant plans and intentions that likely signify free ridership are as follows:

- The respondent answered "yes" to the following two questions: "Did you have plans to install the measure before participating in the program?" and "Would you have gone ahead with this planned installation of the measure even if you had not participated in the programs?"
- The respondent answered "definitely would have installed" to the following question: "If the financial incentive from the programs had not been available, how likely is it that you would have installed [Equipment/Measure] anyway?"
- The respondent answered "did not affect timing of purchase and installation" to the following question: "How did the availability of information and financial incentives through the programs affect the timing of your purchase and installation of [Equipment/Measure]?"
- The respondent answered "no, the program did not affect level of efficiency that we chose for equipment" in response to the following question: "How did the availability of information and financial incentives through the programs affect the level of energy efficiency you chose for [Equipment/Measure]?

The second, less restrictive criteria indicating participant plans and intentions that likely signify free ridership are as follows:

- The respondent answered "yes" to the following two questions: "Did you have plans to install the measure before participating in the program?" and "Would you have gone ahead

with this planned installation of the measure even if you had not participated in the programs?"

- Either the respondent answered "definitely would have installed" or "probably would have installed" to the following question: "If the financial incentive from the programs had not been available, how likely is it that you would have installed [Equipment/Measure] anyway?"
- Either the respondent answered "did not affect timing of purchase and installation" to the following question: "How did the availability of information and financial incentives through the programs affect the timing of your purchase and installation of [Equipment/Measure]?" or the respondent indicated that that while program information and financial incentives did affect the timing of equipment purchase and installation, in the absence of the program they would have purchased and installed the equipment within the next two years.
- The respondent answered "no, the program did not affect level of efficiency that we chose for equipment" in response to the following question: "How did the availability of information and financial incentives through the programs affect the level of energy efficiency you chose for [Equipment/Measure]?

The second factor required determining if a participant reported that a recommendation from a program representative or past experience with the program was influential in the decision to install a particular piece of equipment or measure.

The criterion indicating that program influence may signify a lower likelihood of free ridership is that either of the following conditions are true:

- The respondent answered "very important" to the following question: "How important was previous experience with the programs in making your decision to install [Equipment/Measure]?
- The respondent answered "yes" to the following question: "Did a representative of the programs recommend that you install [Equipment/Measure]?" and "probably would not have" or "definitely would not have" to the question: "If the Public Sector Energy Efficiency Program representative had not recommended installing the equipment, how likely is it that you would have installed it anyway?"

The third factor required determining if a participant in the program indicated that he or she had previously installed an energy efficiency measure similar to one that they installed under the program without an energy efficiency program incentive during the last three years. A participant indicating that he or she had installed a similar measure is considered to have a likelihood of free ridership.

The criteria indicating that previous experience may signify a higher likelihood of free ridership are as follows:

- The respondent answered "yes" to the following question: "Before participating in the programs, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?"
- The respondent answered "yes, purchased energy efficient equipment but did not apply for financial incentive." to the following question: "Has your organization purchased any energy efficient equipment in the last three years for which you did not apply for a financial incentive through an energy efficiency program?"

The four sets of rules just described were used to construct four different indicator variables that address free ridership behavior. For each participant, a free ridership value was assigned based on the combination of variables. With the four indicator variables, there were 11 applicable combinations for assigning free ridership scores for each respondent, depending on the combination of answers to the questions creating the indicator variables. Table 4-1 shows these values.

Table 4-1 Free Ridership Scores for Combinations of Indicator Variable Responses

Indicator Variables				*Free Ridership Score*
Had Plans and Intentions to Install Measure without the Program? (Definition 1)	*Had Plans and Intentions to Install Measure without the Program? (Definition 2)*	*Program had influence on Decision to Install Measure?*	*Had Previous Experience with Measure?*	
Y	N/A	Y	Y	100%
Y	N/A	N	N	100%
Y	N/A	N	Y	100%
Y	N/A	Y	N	67%
N	Y	N	Y	67%
N	N	N	Y	33%
N	Y	N	N	33%
N	Y	Y	Y	33%
N	Y	Y	N	0%
N	N	N	N	0%
N	N	Y	N	0%
N	N	Y	Y	0%

4.2. **Results of Net Savings Estimation**

The procedures described in the preceding section were used to estimate free ridership rates and net to gross ratios for the Custom and Standard Incentives Programs and the New Construction Program for the period June 2012 through May 2013.

4.2.1. **Realized Net kWh Savings**

For the Custom and Standard Incentives Program, the data used to assign free ridership scores were collected through a survey of 261 participant decision makers for projects completed during the period June 2012 through May 2013. For the New Construction Program, the data used to assign free ridership scores were collected through a survey of all five participant decision makers for projects completed during the period June 2012 through May 2013.

Individual free ridership rates were estimated for the Standard and Custom Incentives Programs and the New Construction Program.

As discussed in Section 4.1, the first criteria in determining what proportion of energy savings from a project should be assigned to free ridership was whether a participant was financially able to undertake the project without financial assistance from the program. If a decision maker respondent answered "No" to the question of "Would you have been financially able to install the equipment or measures without the financial incentive from the program?" a free ridership score of 0 was assigned to the project. That is, if a participant required financial assistance from the program to undertake a project, then that participant was judged to not be a free rider.

Under this criterion, the other free ridership scoring criteria were applied only to projects for participants who answered "Yes" to the question: "Would you have been financially able to install the equipment or measures without the financial incentive from the program?" However, respondents who answered "No" to this question would be judged to have zero free ridership even if the other free ridership criteria were applied, due to the nature of their specific survey responses.

Table 4-2 shows the percentage of survey respondents who relayed the following: They had plans and intentions to install the measures without any program incentive (under two alternative definitions as described in the preceding section), that the program influenced their decision to install the measure, or that they previously installed a similar energy efficiency measure without an energy efficiency program incentive during the last three years. Percentages reported are averages weighted by project gross realized savings.

Table 4-2 Weighted Average Indicator Variable Values

Program	*Had Financial Ability*	*Had Plans and Intentions to Install Measure without Program (Definition 1)*	*Had Plans and Intentions to Install Measure without Program (Definition 2)*	*Program had influence on Decision to Install Measure*	*Had Previous Experience with Measure*
Custom kWh	47%	5%	10%	38%	20%
Custom Therm	73%	3%	10%	25%	6%
Standard kWh	46%	1%	4%	18%	11%
Standard Therm	61%	9%	17%	10%	11%
New Construction kWh	65%	54%	75%	0%	0%
New Construction Therm	6%	94%	100%	0%	0%

Table 4-3 shows percentages of total realized gross Custom Incentives Program kWh savings that are associated with different combinations of free ridership indicator variable values. Fifty-three percent of the savings is associated with respondents who indicated that they were financially unable to implement the project in the absence of the program incentive.

Table 4-3 Estimated Free ridership for kWh Savings from Custom Incentives Program Projects

Had Plans and Intentions to Install Measure without the C&S Program? (Definition 1)	*Had Plans and Intentions to Install Measure without the C&S Program? (Definition 2)*	*C&S Program had influence on Decision to Install Measure?*	*Had Previous Experience with Measure?*	*Percentage of Total Realized Gross kWh Savings*	*Free Ridership Score*
N	N	N	N	20%	0%
N	N	Y	N	11%	0%
N	N	N	Y	5%	33%
Y	Y	Y	N	3%	67%
Y	Y	N	Y	2%	100%
N	Y	N	N	2%	33%
N	Y	Y	N	2%	0%
N	N	Y	Y	1%	0%
Required program incentive to implement measures.				53%	0%
Total				100%	6%

Table 4-4 shows percentages of total realized gross Standard Incentives Program kWh savings that are associated with different combinations of free ridership indicator variable values. Fifty-four percent of the savings is associated with respondents who indicated that they were financially unable to implement the project in the absence of the program incentive.

Table 4-4 Estimated Free ridership for kWh Savings from Standard Incentives Program Projects

Had Plans and Intentions to Install Measure without the C&S Program? (Definition 1)	*Had Plans and Intentions to Install Measure without the C&S Program? (Definition 2)*	*C&S Program had influence on Decision to Install Measure?*	*Had Previous Experience with Measure?*	*Percentage of Total Realized Gross kWh Savings*	*Free Ridership Score*
N	N	N	N	20%	0%
N	N	Y	N	9%	0%
N	N	N	Y	6%	33%
N	N	Y	Y	4%	0%
N	Y	Y	N	3%	0%
N	Y	N	N	2%	33%
Y	Y	N	N	1%	100%
Y	Y	Y	N	1%	67%
Required program incentive to implement measures.				54%	0%
Total				100%	4%

Table 4-5 shows percentages of total realized gross New Construction Program kWh savings that are associated with different combinations of free ridership indicator variable values. Thirty-five percent of the savings is associated with respondents who indicated that they were financially unable to implement the project in the absence of the program incentive.

Table 4-5 Estimated Free ridership for kWh Savings from New Construction Program Projects

Had Plans and Intentions to Install Measure without the NC Program? (Definition 1)	*Had Plans and Intentions to Install Measure without the NC Program? (Definition 2)*	*NC Program had influence on Decision to Install Measure?*	*Had Previous Experience with Measure?*	*Percentage of Total Realized Gross kWh Savings*	*Free Ridership Score*
Y	Y	N	N	44%	100%
N	Y	N	N	21%	33%
Required program incentive to implement measures.				35%	0%
Total				100%	51%

Table 4-6 shows percentages of total realized gross Custom Incentives Program therm savings that are associated with different combinations of free ridership indicator variable values. Twenty-seven percent of the savings is associated with respondents who indicated that they were financially unable to implement the project in the absence of the program incentive.

Table 4-6 Estimated Free ridership for Therm Savings from the Custom Incentives Program

Had Plans and Intentions to Install Measure without the C&S Program? (Definition 1)	*Had Plans and Intentions to Install Measure without the C&S Program? (Definition 2)*	*C&S Program had influence on Decision to Install Measure?*	*Had Previous Experience with Measure?*	*Percentage of Total Realized Gross kWh Savings*	*Free Ridership Score*
N	N	N	N	31%	0%
N	N	Y	N	22%	0%
N	Y	N	N	13%	33%
Y	Y	Y	N	6%	67%
Y	Y	N	Y	<1%	100%
Required program incentive to implement measures.				27%	0%
Total				100%	9%

Table 4-7 shows percentages of total realized gross Standard Incentives Program therm savings that are associated with different combinations of free ridership indicator variable values. Thirty-nine percent of the savings is associated with respondents who indicated that they were financially unable to implement the project in the absence of the program incentive.

Table 4-7 Estimated Free ridership for Therm Savings from the Standard Incentives Program

Had Plans and Intentions to Install Measure without the C&S Program? (Definition 1)	*Had Plans and Intentions to Install Measure without the C&S Program? (Definition 2)*	*C&S Program had influence on Decision to Install Measure?*	*Had Previous Experience with Measure?*	*Percentage of Total Realized Gross kWh Savings*	*Free Ridership Score*
N	N	N	N	15%	0%
Y	Y	N	N	14%	100%
N	N	N	Y	11%	33%
N	N	Y	N	10%	0%
N	Y	N	N	8%	33%
Y	Y	Y	N	2%	67%
N	Y	N	Y	1%	67%
N	Y	Y	N	<1%	0%
N	N	Y	Y	<1%	0%
Required program incentive to implement measures.				39%	0%
Total				100%	23%

Table 4-8 shows percentages of total realized gross New Construction Program therm savings that are associated with different combinations of free ridership indicator variable values. Ninety-four percent of the savings is associated with respondents who indicated that they were financially unable to implement the project in the absence of the program incentive.

Table 4-8 Estimated Free ridership for Therm Savings from the New Construction Program

Had Plans and Intentions to Install Measure without the NC Program? (Definition 1)	*Had Plans and Intentions to Install Measure without the NC Program? (Definition 2)*	*NC Program had influence on Decision to Install Measure?*	*Had Previous Experience with Measure?*	*Percentage of Total Realized Gross Therm Savings*	*Free Ridership Score*
N	Y	N	N	6%	33%
Required program incentive to implement measures.				94%	0%
Total				100%	2%

The realized electric savings of the Custom and Standard Incentives and New Construction Programs during the period June 2012 through May 2013 are summarized by utility in Table 4-9, Table 4-10, and Table 4-11. During this period, realized net electric savings for the Custom Incentives Program totaled 26,868,887 kWh, while realized net electric savings for the Standard Incentives Program totaled 78,874,975 kWh. For the New Construction Program, realized net electric savings totaled 1,788,519. The net to gross ratio for the Custom Incentives Program is 94%, while the net to gross ratio for the Standard Incentives Program is 96%; for the New Construction Program, the net to gross ratio is 49%.

The low net-to-gross ratio for New Construction Program electric savings was due to the responses provided by one of the decision makers whose project accounted for 44% of the realized electric savings for the program. This decision maker indicated that they had prior plans to install the energy saving equipment and design feature and would have incorporated them into the project without the assistance of the program. Additionally, the respondent indicated that the program did not affect the timing, scope, or level of efficiency of the building. The respondent was scored as a full free rider.

Table 4-9 Summary of kWh Savings for the Custom Incentives Program

Utility	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Realized Net kWh Savings*	*Net to Gross Ratio*
Ameren	12,547,763	9,331,474	8,733,505	94%
ComEd	21,850,159	19,377,084	18,135,382	94%
Total	34,397,922	28,708,558	26,868,887	94%

Table 4-10 Summary of kWh Savings for the Standard Incentives Program

Utility	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Realized Net kWh Savings*	*Net to Gross Ratio*
Ameren	15,435,623	18,854,290	18,682,420	96%
ComEd	51,005,130	61,390,302	60,192,555	96%
Total	66,440,753	80,244,592	78,874,975	96%

Table 4-11 Summary of kWh Savings for the New Construction Program

Utility	*Expected kWh Savings*	*Realized Gross kWh Savings*	*Realized Net kWh Savings*	*Net to Gross Ratio*
Ameren	1,783,231	1,675,224	817,129	49%
ComEd	1,932,166	1,991,479	971,390	49%
Total	3,715,397	3,666,703	1,788,519	49%

The realized natural gas savings of the Custom and Standard Incentives, and New Construction Programs during the period June 2012 through May 2013 are summarized by utility in Table 4-12, Table 4-13, and Table 4-14. During this period, realized net natural gas savings for the Custom Incentives Program totaled 1,165,493 therms, while realized net natural gas savings for the Standard Incentives Program totaled 408,153 therms; for the New Construction Program, realized net natural gas savings totaled 43,059 therms. The net to gross ratio for the Custom Incentives Program is 91%, and the net to gross ratio for the Standard Incentives Program is 77%. For the New Construction Program, the net to gross ratio is 98%.

Table 4-12 Summary of Therm Savings for the Custom Incentives Program

Utility	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Realized Net Therm Savings*	*Net to Gross Ratio*
Ameren	807,248	725,799	663,936	91%
Nicor	419,712	367,669	336,331	91%
North Shore	97,181	78,964	72,233	91%
Peoples	127,060	101,657	92,992	91%
Total	1,451,202	1,274,088	1,165,493	91%

Table 4-13 Summary of Therm Savings for the Standard Incentives Program

Utility	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Realized Net Therm Savings*	*Net to Gross Ratio*
Ameren	215,190	133,324	103,315	77%
Nicor	316,738	380,727	295,033	77%
North Shore	11,973	5,717	4,430	77%
Peoples	13,108	6,935	5,374	77%
Total	557,008	526,703	408,153	77%

Table 4-14 Summary of Therm Savings for the New Construction Program

Utility	*Expected Therm Savings*	*Realized Gross Therm Savings*	*Realized Net Therm Savings*	*Net to Gross Ratio*
Ameren	370	355	348	98%
Nicor	53,679	43,625	42,712	98%
Total	54,049	43,980	43,059	98%

4.2.2. **Realized Net Peak kW Savings**

The realized net peak kW reductions for the Custom and Standard Incentives, and New Construction Programs during the period June 2012 through May 2013 are summarized by utility in Table 4-15, Table 4-16, and Table 4-17. The achieved net peak demand savings for the Custom Incentives Program are 2,559.02 kW, while the achieved net peak demand savings for the Standard Incentives Program are 13,270.40 kW. For the New Construction Program, the achieved net peak demand savings are 252.77 kW.

Table 4-15 Summary of Net Peak kW Savings for the Custom Incentives Program

Utility	*Realized Net Peak kW Savings*
Ameren	878.89
ComEd	1,680.13
Total	2,559.02

Table 4-16 Summary of Net Peak kW Savings for the Standard Incentives Program

Utility	*Realized Net Peak kW Savings*
Ameren	3,673.72
ComEd	9,596.68
Total	13,270.40

Table 4-17 Summary of Net Peak kW Savings for the New Construction Program

Utility	*Realized Net kW Savings*
Ameren	94.14
ComEd	158.63
Total	252.77

4.2.3. **Potential Spillover or Free Drivership Effects**

Free drivership effects may occur if increased knowledge and familiarity with energy saving equipment gained through participation in a program induces participants to purchase and install additional equipment without seeking a financial incentive. Although none of the New

Construction Program participants reported purchasing additional equipment, responses to the participant survey indicate potential free drivership among Custom and Standard Incentives Program participants.

Answers to the following two questions on the survey of decision makers were used in analyzing whether there were potential "free driver" effects associated with non-rebated purchases by Custom and Standard Incentives Program participants:

- Before you knew about DCEO's energy efficiency incentive programs, had you purchased and installed any energy efficient equipment at this facility?
- Has your experience with the C&S Program led you to buy any energy efficient equipment for which you did not apply for a rebate?

If a participant answered "no" to the first question, and "yes" to the second question, the participant was considered to show a degree of potential free drivership.

Table 4-18 shows the percentage of custom incentive realized gross electric savings that is associated with different combinations of free drivership indicator variable values for the Custom Incentives Program. Table 4-19 shows the percentage of standard incentive realized gross electric savings that is associated with different combinations of free drivership indicator variable values for the Standard Incentives Program.

None of the New Construction Program participants indicated that they had installed any additional energy saving equipment.

Respondents who represented about one percent of total custom incentive realized gross energy savings and 15% of total standard incentive realized gross energy savings gave answers that were indicative of spillover effects (i.e., the no-yes combination).

Table 4-18 Summary of Potential Free Drivership from the Custom Incentives Program

Purchased and installed energy efficient equipment prior to knowledge of program	*Program experience led to purchase of unrebated energy efficient equipment*	*Percentage of Total Realized Gross kWh Savings*
N	N	46%
N	Y	1%
Y	N	39%
Y	Y	14%
Total		100%

Table 4-19 Summary of Potential Free Drivership from the Standard Incentives Program

Purchased and installed energy efficient equipment prior to knowledge of program	*Program experience led to purchase of unrebated energy efficient equipment*	*Percentage of Total Realized Gross kWh Savings*
N	N	49%
N	Y	15%
Y	N	27%
Y	Y	9%
Total		100%

Table 4-20 shows the percentage of realized gross therm savings that is associated with different combinations of free drivership indicator variable values for the Custom Incentives Program.Table 4-21 shows the percentage of realized gross therm savings that is associated with different combinations of free drivership indicator variable values for the Standard Incentives Program.

Respondents who represented less than one percent of total custom incentive realized gross therm savings and 10% of total standard incentive realized gross energy savings gave answers that were indicative of spillover effects (i.e., the no-yes combination).

Table 4-20 Summary of Potential Free Drivership from the Custom Incentives Program

Purchased and installed energy efficient equipment prior to knowledge of program	*Program experience led to purchase of unrebated energy efficient equipment*	*Percentage of Total Realized Gross Therm Savings*
N	N	60%
N	Y	<1%
Y	N	29%
Y	Y	10%
Total		100%

Table 4-21 Summary of Potential Free Drivership from the Standard Incentives Program

Purchased and installed energy efficient equipment prior to knowledge of program	*Program experience led to purchase of unrebated energy efficient equipment*	*Percentage of Total Realized Gross Therm Savings*
N	N	43%
N	Y	10%
Y	N	28%
Y	Y	19%
Total		100%

5. Process Evaluation

This chapter presents the results of the process evaluation of the Public Sector Custom and Standard Incentives Programs (Custom and Standard Incentives Programs) and the Public Sector New Construction Program (New Construction Program) during electric program year five and natural gas program year two (EPY5/GPY2). EPY5/GPY2 is the period from June 2012 to May 2013. The process evaluation focuses on the effectiveness of program policies and organization, as well as the program delivery framework. The purpose of the process evaluation is to assess the design and recent results of the programs in order to determine how effectively they are achieving their intended outcomes. This evaluation is based upon analysis of program structure, interviews with program staff, surveys of program participants, and program tracking data.

The chapter begins with a discussion of conclusions from the evaluation and an examination of certain issues that are important to the future success of the program. This chapter also presents strategic planning and process recommendations, and highlights key findings from the surveys and interviews of participants and program staff. The information in this chapter provides insight into participant decision-making behaviors, and identifies any key issues that may be addressed in future program years.

5.1. **Evaluation Objectives**

The purpose of the process evaluation is to examine program operations and results throughout the program operating year, and to identify potential program improvements that may prospectively increase program efficiency or effectiveness in terms of participation and satisfaction levels. This process evaluation was designed to document the operations and delivery of the Standard Incentives Program, Custom Incentives Program, and the New Construction Program during PY5/GPY2.

Key research questions to be addressed by this evaluation of EPY5/GPY2 activity include:

- Are the programs effectively reaching potential participants and meeting their efficiency needs?
- Was the delivery of the programs effective and successful?
- Did the programs reduce barriers to increased energy efficiency project implementation?

During the evaluation, data and information from numerous sources are analyzed to achieve the stated research objectives. Insight into the participant experience with the programs is developed from an online and telephone survey of program participants. The program operations perspective is developed through in-depth interviews with program staff members.

5.2. **Summary of Primary Data Collection**

Multiple sources of information informed the process evaluation of the Standard, Custom, and New Construction Programs.

- **Participant Surveys**: Data collected through participant surveys serve as the foundation for understanding the participant perspective. The participant surveys provide feedback and insight regarding participant experiences with the Standard Incentives Program, Custom Incentives Program, or the New Construction Program. Respondents report on their satisfaction with the program, detail their motivations and the factors affecting their decision making process, and provide recommendations related to improving the program.
- **Interviews with Registered Trade Allies**: The DCEO's implementation partner, the Energy Resources Center manages a trade ally program for contractors, vendors, and other professionals who provide services to incentive program participants. Interviews with the registered trade allies provided insight into the level of awareness of the incentive programs among their customers, the application process, and suggestions for improving the programs.
- **Interviews with Implementation Partner Staff Members**: Interviews with program implementation staff members provide information regarding program progress and observations regarding service providers and participants. Staff members report on recent program changes and future plans to improve program operational efficiency.

5.3. **Summary of Conclusions and Recommendations**

The following presents a selection of key conclusions from EPY5/GPY2:

- **Combined Gross Realized Savings Decreased from Prior Program Year**: In comparison to last year, the realized gross electric and natural gas savings for all three programs combined decreased. The lower activity was due to decreased Custom Incentive Program savings. Although the number of custom incentive projects increased from the prior year, the average savings decreased. Realized gross savings for the Standard Incentives and New Construction Programs increased from EPY4/GPY1.
- **Increased Participation from K-12 Schools**: The share of applications submitted by K-12 schools increased markedly in EPY5/GPY2 from the prior program year. In particular, the number of custom projects completed by K-12 schools increased significantly. The share of custom applications submitted by K-12 schools increased from 25% to 47% and the share of standard applications increased from 40% to 49%. The increase in participation was in part due to the participation of the Chicago Public Schools, which participated for the first time during the program year and completed projects at more than 160 locations.

  In addition to K-12 schools, the other sector that accounted for a large share of program participation were local government facilities As with the prior year, federal facilities, state

facilities, community colleges, and universities represented a small share of the number of completed applications.

- **Limited Activity in the New Construction Program**: There were a limited number of projects completed through the New Construction Program during the program year. This may reflect continued restricted building activity due to limited budget resources in the public sector. To increase participation in the program, prescriptive incentives were offered during EPY5/GPY2. The prescriptive incentives were added to increase the number of smaller new construction projects by providing incentives for energy efficient equipment without requiring the cost of completing building energy simulations. The prescriptive incentives may increase program activity in future years as awareness of the incentives increases.
- **High Program Satisfaction**: Overall, EPY5/GPY2 participants noted high levels of satisfaction with the programs. Fewer than three percent of survey respondents who participated in the Standard and Custom Programs indicated that they were dissatisfied with any of the rated aspects of the program and only one participant indicated dissatisfaction with the program overall. Additionally, none of the survey respondents who participated in the New Construction Program indicated dissatisfaction with their program experience.

  Few problems were noted regarding the implementation of the efficiency measures, the application process, the incentive amount, or the receipt of the incentive. Additionally, many of the comments in response to open ended questions indicated that participants had positive experiences with the programs.
- **Inconsistent Maintenance of Project Documentation, Status, and Storage**: It was noted during the evaluation process that the information included in project documentation was frequently inconsistent across projects. In particular, the granularity of project documentation varied and several projects involving multiple buildings did not have building level information. Additionally, some projects are not updated in the database when the project scope changes from what was presented in the initial application. Lastly, not all electronic documentation is stored in a central location.
- **Trade Allies Suggested Application Process Improvements**: Participants noted few problems with the application process and most trade allies indicated that the process was straightforward. However, some trade allies indicated that the forms and application process could be streamlined and that the application requires some additional effort in comparison to the requirements of utility programs they had participated in. Some of the suggestions made include simplifying the format and including step-by-step instructions, and to allow applicants to include multiple buildings for a single project on an application.
- **Trade Allies Offered Mixed Assessments of Program Awareness**: Interviewed trade allies offered mixed assessments of the level of awareness of the programs among their customers. Although several trade allies reported that most of their customers were aware of the

programs, others indicated that relatively few were. Furthermore, trade allies noted that when customers were aware of the programs, they tended to have a fairly superficial level of awareness. That is, their customers were generally not aware of the specific incentives available. Continued promotion of the program is needed to ensure that potential participants are aware of the specific incentives that are available, the applicability of the incentives to potential projects at their facilities, and the potential cost savings. It is important for potential participants to understand how the incentives can make energy efficiency improvements financially viable for their organizations.

Additionally, the extent to which trade allies were promoting the program and the number of DCEO projects that they had completed varied among those interviewed. Although it is difficult to form generalizations about the degree to which trade allies are promoting the program from the limited sample who were interviewed, the findings suggest that trade allies are engaged with the incentive programs to varying degrees.

- **Trade Allies Noted Budget Constraints are a Barrier to Efficiency Improvements**: Trade allies indicated that when speaking with their customers about projects they typically discuss the financial aspects of the project. The discussions tend to frame the decision in terms of the project payback, return on investment, and maintenance savings. Despite the financial benefits from implementing new equipment and the money that can be saved by receiving an incentive, trade allies noted that some customers are difficult to convince to complete a project because of budget constraints.
- **Trade Ally Rallies are Valued**: Trade allies indicated that the trade ally rallies are a good forum for learning about the programs, clarifying questions about the program, and networking. Although one or more trade allies suggested that it would be beneficial if some of the presentations were more focused and that the DCEO should consider holding rallies that are only attended by trade allies, in general they found the rallies to be valuable and worth attending.

While interviews with program staff suggest that program organization and efficiency have continually improved during the period the programs have operated, several recommendations have been developed based on interview findings, survey results, and overall analysis of program processes. These recommendations may provide strategic advantage in future program years:

- **Integrate Trade Ally Information into Project Data**: The current project tracking data does not contain names and contact information for the trade allies that assisted with the projects. It would be beneficial if this information was tracked for future projects, as the inclusion of trade ally information would be useful to better support trade allies. Project tracking data that incorporates trade ally information may be useful for targeting less active trade allies and to potentially identify ways to increase their activity. Similarly, this information may be useful for identifying trade allies who submit incomplete or incorrect

application materials so that they can receive additional instruction to improve the quality of the application submission.

- **Use Historical Billing Data to Check Expected Savings**: Although the differences between expected and realized savings were largely due to project specific factors, in a few cases the estimated projects savings were very large in comparison to the annual energy use for the site. It is recommended that the project managers use historical billing data to verify that claimed savings are reasonable.
- **Improve Application and Documentation Protocols**: Consider developing data entry protocols for all staff responsible for entering, maintaining, or updating the EEPS database. Specifically, all project data should be input at the building level with all required fields populated; when new versions of the application are submitted EEPS should be updated accordingly. Prior to incentives payment being dispersed DCEO project managers should ensure that EEPS accurately reflects all project and building level information. The above changes will further aid both project managers and management staff in the tracking project activity and estimating energy savings, in addition to streamlining evaluation efforts. Much of the need for improved data management will likely be addressed through the recent development of a new electronic application process.
- **Add Capacity to Include Multiple Buildings on Application**: A recommendation stemming from the interviews with trade allies was to add the capacity to add multiple buildings to the application form. Building this capacity into the application form may also facilitate the collection of the more detailed building specific information needed for estimating project savings. This capacity has been incorporated into EPY6/GPY3 program year form.
- **Consider Allowing New Construction Projects in the Design Phase to Apply for Incentive**s: As was mentioned last year, working with new construction projects earlier in the design process may allow for the generation of deeper savings. Additionally, it may also reduce program free ridership because participants with completed design plans may be less likely to be influenced by the program incentives because they have already committed to project and its design specifications. The DCEO's partner, the Smart Energy Design Assistance Center (SEDAC), has implemented an initiative to expand their design assistant services to more new construction projects and to focus on transistioning these projects to the incentive program.

5.4. Public Sector Programs Project Documentation Review

ADM staff encountered several challenges with the current project documentation and tracking for custom, standard, and new construction projects. DCEO and ADM staff are currently working on solutions to improve project tracking documentation with the intent of addressing the issues identified below.

- **Inconsistent Project Documentation**: A number of inconsistencies in the project tracking data were identified during project reviews. In particular, the granularity of project information varied. Many of the public sector projects involve multiple buildings within a project. Ideally project information would be disaggregated for individual buildings because buildings differ in key aspects relevant to assessing project energy savings. Namely, buildings have different energy use profiles, utility accounts, and meter numbers. In several cases, projects involving multiple buildings did not provide this information. Absence of this information required additional participant contacts in order to obtain sufficient information to evaluate project savings. With more granular information these requests can be avoided, reducing the participants' burden.
- **Document Storage Protocols**: Project documentation is sent to staff in paper and electronic formats. Although paper documentation is stored in a central location, electronic documentation may be stored in a variety of locations. Because of this, documentation such as drawings, lighting schedules, lighting surveys, floor plans, measure specifications, and invoices need to be retrieved from individual project managers to complete the evaluation.
- **Fuel Bill Release Forms**: The release of utility customer billing data requires the customer's authorization. Currently, participants are not required to provide this authorization as part of the application process, although they are required to submit a single utility bill. Absence of this authorization in advance of the project analysis delays the evaluation effort. With the release of historical billing data ADM analysts can perform billing analysis to better understand a building's energy consumption prior to the installation of the energy efficiency measures and more accurately estimate the energy savings after project completion. Forms for PY6/GPY3 include a clause allowing for the release of billing data.

5.5. Custom and Standard Incentives Programs Participant Profile

Table 5-1 presents the number of applications received during the program year and the median expected savings. The number of custom and standard applications completed during EPY5/GPY2 increased from the prior program year. During EPY5/GPY2, there were 850 Custom Incentives Program applications with median expected savings of 31,928 kWh and 3,971 therms. There were also 912 Standard Incentives Program applications for completed projects during the program year. The median expected savings for Standard Incentives Program projects were 43,324 kWh and 2,534 therms.

Table 5-1 Median Expected Savings by Program

Program	*Number of Applications*	*Median Expected kWh Savings*	*Median Expected Therm Savings*
Custom Incentives Program	850	31,928	3,971
Standard Incentives Program	912	43,324	2,534

Table 5-2 displays the range of incentives received for project applications and the median incentive amount. The median Custom Incentives Program electric incentive was $3,373 and the median natural gas incentive was $5,643. For the Standard Incentives Program the median electric incentive was $9,657 and the median natural gas incentive was $3,638.

Table 5-2 Incentive Characteristics by Program

Program	*Electric Incentive Range*	*Natural Gas Incentive Range*	*Median Electric Incentive*	*Median Natural Gas Incentive*
Custom Incentives Program	$7 - $1,429,082	$40 - $670,353	$3,373	$5,643
Standard Incentives Program	$25 - $264,652	$111 - $115,600	$9,657	$3,638

Figure 5-1 and Figure 5-2 display the share of applications by facility type for the Custom Incentives Program and Standard Incentives Program respectively. As shown in Figure 5-1, K-12 schools (47%) and local government (47%) each accounted for nearly half of the custom application submissions. This was also the case for the Standard Incentives Program. For the Standard Incentives Program, 46% of applications were for local government facilities and 49% were for K-12 schools.

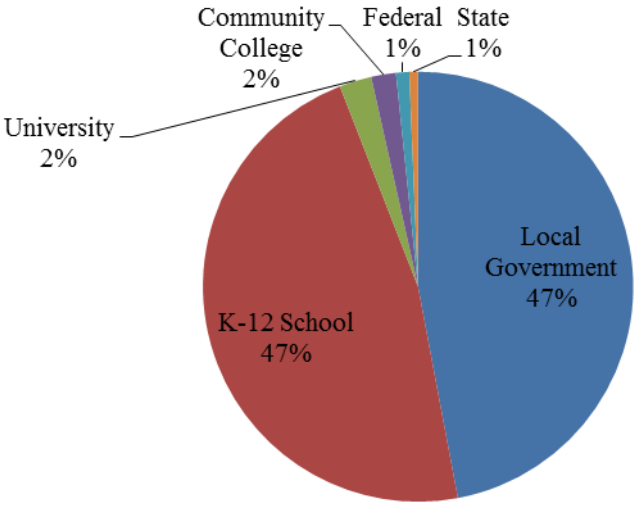

Figure 5-1 Custom Incentives Program Applications by Facility Type

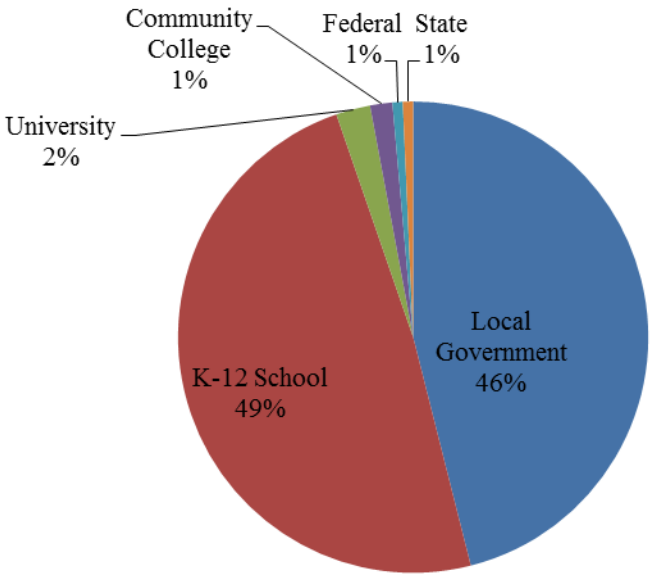

Figure 5-2 Standard Incentives Program Applications by Facility Type

5.6. **Public Sector Custom and Standard Incentives Programs Participant Outcomes**

A telephone and online survey was conducted to collect data about participant decision-making, preferences, and opinions of the Custom and Standard Incentives Programs. The programs offered incentives to public sector entities for a variety of measures, including lighting, compressed air, HVAC, refrigeration, and motor measures. In total, 241 participants who implemented a project under the program responded to the survey.

Information in this section is intended to characterize participant decision making behaviors and identify notable trends within participant responses. Some of the comments and issues raised by participants are anecdotal in nature and may reflect individual participant opinions. The Conclusions and Recommendations section of the Process Evaluation chapter provides an overall distillation of key findings from the process evaluation activities that were performed for the Custom and Standard Incentives Programs.

It is important to note that, while the survey results discussed below are used as inputs for the calculation of estimated free ridership, participant responses to individual survey items do not, in isolation from additional factors, infer specific levels of free ridership. Chapter 4 details the methodology used to estimate free ridership based on survey response data, while this chapter provides a qualitative discussion of participant responses.

5.6.1. How Participants Learn About the Program

Table 5-3 displays the participant responses regarding how they learned about the program. The percentages shown are percentages of survey respondents. Participants heard of the program in a wide variety of ways. The most frequently mentioned sources for learning about the program were equipment vendors or building contractors (31%), architects, engineers, or energy consultants (23%), friends or colleagues (20%), and attending a conference, workshop, or seminar (19%). Thirteen percent of respondents reported learning of the program from the Smart Energy Design Assistance Center (SEDAC), a DCEO partner in implementing and promoting its efficiency program. Relatively fewer participants reported hearing about the program from a DCEO representative (8%) or a program representative (7%). The fact that twenty percent of survey respondents reported that they heard of the program from friends or colleagues suggests that word-of-mouth continues to play an important role in increasing program awareness.

Table 5-3 How Participant Decision Makers Learned about the Program

	Response	*Percent of Respondents* (n=235)*
How did you learn of the Public Sector Energy Efficiency Program?	Equipment vendors or building contractors	31%
	An architect, engineer, or energy consultant	23%
	Friends or colleagues	20%
	Attended a conference, workshop or seminar	19%
	The DCEO website	15%
	Smart Energy Design Assistance Center (SEDAC)	13%
	Received an information brochure on the Public Sector Energy Efficiency Program	12%
	Past experience with the program	10%
	A DCEO representative mentioned it	8%
	A utility representative	8%
	Approached by a representative of the Public Sector Energy Efficiency Program	7%
	An energy service company	4%
	The Energy Resource Center (ERC)	2%
	Other	19%
	Don't know	3%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

As shown in Table 5-4, more than two-thirds (69%) of respondents learned about the program before they began to plan their efficiency project. Another 24% learned of the program during the project planning stage. A mere two percent of respondents reported hearing about the program after the energy efficiency project had already been planned. As a large majority of respondents reported being aware of the program during the early phases of project development, there is likely opportunity for the incentives and information available through the program to influence the efficiency of equipment, scope of the project, and timing of projects.

Table 5-4 When Participant Decision Makers Learned about the Program

	Response	*Percent of Respondents (n=232)*
When did you learn of the Public Sector Energy Efficiency Program?	Before planning for replacing the equipment began	69%
	During your planning to replace the equipment	24%
	After equipment was installed	2%
	Once equipment had been specified but not yet installed	3%
	Some other time	-
	Don't know	2%

5.6.2. **Factors Affecting Public Sector Entity Participation**

Participants were asked about the influence of the Public Sector Energy Efficiency Program on their decision to implement the energy efficiency equipment. Participants who installed multiple types of equipment were asked about the influence of the program separately for the different types of equipment they installed. Consequently, the number of responses to these questions exceeds the number of participants.

Participants reported that they had plans to implement 43% of the projects prior to participating in the program and that of these projects, 64% would have been completed even if they had not participated in the program. Although these respondents suggested that they would have completed the projects had they not participated in the program, the program may have still influenced the scope, timing, and level efficiency of the equipment chosen. Consequently, these responses do not, in isolation, designate a specific level of free ridership. Responses to individual survey items may be used to characterize certain aspects of a decision maker's program perspective or implementation behavior, but it is necessary to analyze the full set of a respondent's survey responses in order to estimate an accurate and reliable net to gross percentage. In addition to gauging participants' preexisting plans and intentions, it is important to consider how the program affected factors such as the timing and overall efficiency level of the project. Chapter 4 outlines the full net to gross estimation methodology that is applied to survey results for this evaluation.

Respondents who indicated that they had plans to implement a project were asked for how long they had their plans. As shown in Table 5-5, over half of these participants (57%) stated that they had their plans for more than one year. This suggests that while they had prior plans to complete the projects, the availability of incentives may have allowed them to implement these plans. Moreover, participants reported that for 59% of the prior-planned projects they had not specified which energy efficiency measures would be included, which indicates that the information and incentives available through the program may have influenced the efficiency of the equipment.

Table 5-5 Length of Time for Which Respondents Had Plans to Implement Energy Efficiency Measures

	Response	Percent of Responses (n=150)*
For about how long have you had plans to implement these measures prior to finding out about the program?	Less than 6 months	14%
	6-12 months	27%
	1-2 years	30%
	3-5 years	20%
	More than 5 years	7%
	Don't know	1%

*Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.

In order to gather further information about what motivated decision-makers to participate in the program, participants were asked whether the implemented project was recommended to them by a representative of the program or the DCEO, or by their partner SEDAC. Respondents indicated that for 21% of the projects implemented, a program or other DCEO representative had recommended the measures. Furthermore, respondents indicated that for over half (52%) of the projects implemented, they probably or definitely would not have implemented the equipment had it not been recommended. Similarly, respondents indicated that for 20% of the projects implemented, a representative of the DCEO's partner SEDAC had recommended the measures be installed, and for nearly half of these projects (44%), the measures would probably or definitely not have been implemented had they not been recommended. These findings emphasize the importance of non-monetary program influences on participant decision making. While the incentives may be a key factor in influencing participants to implement energy efficient equipment, informational resources are also important.

In cases where decision makers reported that they had prior plans for the projects, the Public Sector Energy Efficiency Program may have influenced various factors related to the measure installation. These factors include the timing of the installation, discussed above, as well as the quantity of units installed, and the energy efficiency of the installed equipment. Table 5-6 cross-tabulates the respondents who indicated that these factors were significantly affected by the program with whether the participant had plans to install equipment before participating. For the projects associated with prior planning, 42% stated that the quantity of installed units increased because of the program. Additionally, respondents indicated that the level of the energy efficiency of the equipment was increased for about one-quarter (25%) of the projects and over half (55%) of the projects were implemented earlier than they otherwise would have been. These findings indicate that even when participants were already planning to replace equipment, a large percentage of them would have installed fewer units, less energy efficient equipment, or installed the equipment later if they had not participated in the program.

Table 5-6 Reported Program Influences on Installation Factors by Whether There Were Plans to Install Equipment

Program Influence on Projects	*Number of Responses**	*Had plans to install measure before participating*
Yes, program increased quantity of installed equipment	65	42%
Yes, program increased efficiency of installed equipment	38	25%
Yes, purchased and installed equipment/measure earlier than otherwise would have	85	55%

*Each decision maker may have provided more than one answer for these questions. Questions may have been repeated for each measure type implemented.

5.6.3. **Energy Efficiency Attitudes and Decision Making**

Respondents were asked about how important each of several factors were in their decision to implement additional energy efficiency measures. As shown in Table 5-7, most respondents (90%) rated incentive or grant payments as "very important" to their decision to implement the additional energy efficiency measures, followed by past experience with energy efficient equipment (71%), and advice/recommendations from the DCEO (58%). These results suggest that financial incentives, positive experience with energy efficient equipment, and recommendations have all been highly influential in encouraging participation.

Table 5-7 Factors Influencing the Decision to Participate

Energy Efficiency Decision Making Factor	*Very Important*	*Somewhat Important*	*Only Slightly Important*	*Not Important At All*	*Don't Know*
Incentive or grant payments from DCEO	90%	8%	3%	-	0%
Past experience with energy efficient equipment	71%	25%	2%	-	1%
Advice and recommendations from DCEO	58%	33%	6%	1%	2%

Survey respondents were asked what kinds of energy efficiency policies and activities their organizations have in place. Their responses are shown in Table 5-8. Forty-four percent of the respondents stated that they have a staff member who is responsible for energy efficiency decisions and 26% percent of respondents indicated they have organizational policies that take energy efficiency into account. Twenty-one percent of respondents report active staff training, while 17% have an energy management plan. It is notable that the second largest group of respondents (39%) stated that they do not have polices or procedures for energy efficiency improvements.

Table 5-8 Participant Energy Efficiency Policies and Activities

	Response	*(n=230)*
Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility?	A staff member responsible for energy and energy efficiency	44%
	Do not have policies or procedures for energy efficiency improvements	39%
	Policies that incorporate energy efficiency in operations and procurement	26%
	Active training of staff	21%
	An energy management plan	17%
	Other	6%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

Respondents who indicated they had an energy management plan were asked whether this plan included specific goals. The majority (73%) of the respondents who indicated that they had an energy management plan stated that the plan included goals. These respondents were asked to describe their goals. Nearly half of these participants stated that their plan was focused on reducing energy consumption or costs. Some of these participants indicated that these goals were numeric with reduction targets ranging from three percent to fifty percent. Some examples of these comments include:

> *The next phase is to reduce our overall energy consumption by 35% by 2015.*
>
> *5% reduction in energy use per year with attendant reductions in cost.*
>
> *Baseline of 2005 actual usage minus 10%.*
>
> *The plan was started 3 years ago with a target of 20%. We surpassed that within the first year and within two years hit 30% consistently. Working on 40% consistently for the next year. Energy Star Award as well.*
>
> *We monitor kilowatt hours per month, we set goals on energy use depending on the month – each month it changes.*

Other respondents indicated that the goal of their energy management plan was focused on replacing specific equipment, such as HVAC or lighting equipment, with more efficient options. In a few cases, the goals were very practical or pragmatic ("*We look for the "low-hanging fruit" within our complex of buildings and work to change.*"). Finally, some respondents indicated that they are engaged in some form of monitoring their energy consumption.

Respondents were asked about their prior experience with purchasing and installing energy efficient equipment. Four out of ten respondents (42%) indicated that they have a prior history of making efficiency improvements without applying for a financial incentive. Smaller proportions of the respondents indicated that they had not purchased energy efficient equipment in the past three years or that they only purchased equipment for which an incentive was applied for (24% and 25% respectively).

Table 5-9 Incentives for Previous Equipment Purchased

	Response	*Percent of Responses (n=233)*
Has your organization purchased any energy efficient equipment in the last three years for which you did not apply for a financial incentive through an energy efficiency program?	Yes, purchased energy efficient equipment but did not apply for incentive.	42%
	No equipment was purchased by organization.	24%
	No, an incentive was applied for.	25%
	Don't know	8%

5.6.4. **Barriers to Energy Efficiency Improvements and Purchasing Processes**

The literature on public sector decision making and procurement of energy efficient equipment identifies a number of barriers to purchasing and installing energy efficient equipment. These barriers include a lack of consideration of energy costs when making purchasing decisions, least cost purchasing rules preventing purchase of higher cost energy efficient equipment, the perception that high efficiency equipment is a luxury item, risk aversion generated by low cost purchasing requirements and transparency of decision making, and a lack of technical expertise.[5]

[5] *Barnes, P. and Wisniewski, E. J. (2000). Making it happen: Incorporating energy efficiency into government purchasing. American Council for an Energy-Efficient Economy Summer Study Proceedings.*

Harris, J., Brown, M., Deakin, J., Jurovics, S. Khan, A., et al. (2004). Energy-efficient purchasing by state and local government: Triggering a landslide down the slippery slope to market transformation. American Council for an Energy-Efficient Economy Summer Study Proceedings.

Kunkle, R., Lutzenhizer, L. and Dethman, L. (2000). Influencing the purchase of energy-efficient products in public organizations: It's not as easy it looks. American Council for an Energy-Efficient Economy Summer Study Proceedings.

Some of these barriers were identified by participants in the Custom and Standard Incentives Programs, as shown in Table 5-10. By far the most frequently mentioned barrier was insufficient funding to make the improvements, which 75% of respondents indicated was a barrier. Not having preset equipment replacement schedules was cited 14% of respondents. The age of current equipment, the incentive program's time requirement, and lack of information on equipment and practices were cited by 15% of respondents. Although public sector organizations are often considered to have slow and difficult approval processes that hinder procurement of energy efficiency improvements, only 12% of respondents indicated that this was a significant barrier.

Table 5-10 Barriers to Making Energy Efficiency Improvements

	Response	*Percent of Responses (n=235)**
What barriers does your organization face in making energy efficiency improvements?	Insufficient funding for improvements	75%
	The age of current equipment	15%
	Lack of information on energy efficient equipment and practices	14%
	Preset schedules for replacing equipment	14%
	Incentive program time requirements	13%
	Approval processes that are slow or make purchasing difficult	12%
	Other	8%
	Don't know	5%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

When asked what their organization's approval process for equipment purchases was, about three quarters (75%) stated that the process depends on the amount of the purchase. As shown in Table 5-11, 49% indicated that an open bid is required, but only one-quarter of respondents

Rose, A., Stimmel, J., Oyhenart, J., and Ahrens, A. (2008). Breaking down silos: Bridging the communications and knowledge gap between departments to implement energy efficiency in the public sector. American Council for an Energy-Efficient Economy Summer Study Proceedings.

stated that they are required to select the lowest cost bidder. About one-third (35%) cited organization-specific procurement rules, while 10% use a specific vendor.

Additionally, one-half of the participants stated that they follow state or federal procurement guidelines (50%). Just under half indicated that an open bid is required bidder (49%), but only approximately one-quarter (26%) said that they are required to select the lowest bidder. About one-third (35%) cited organization-specific procurement rules, while 10% use a specific vendor.

Table 5-11 Respondent Approval Processes for Equipment Purchases

	Response	*Percent of Responses (n=230)**
What is the approval process for equipment purchases in your organization?	Depends on the amount of purchase	75%
	Follow state or federal procurement guidelines	49%
	An open bid is required	47%
	Follow procurement rules specific to our organization	35%
	Required to select lowest bidder	26%
	Use a specific vendor	10%
	Other	7%
	Don't know	-

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

More than three-quarters of participants reported that their organization uses its operations and maintenance budget to fund energy efficiency improvements, as shown in Table 5-12. In contrast, less than one-fifth of the respondents indicated that their organizations have dedicated funding for energy efficiency projects (19%). About one-third (37%) of participants indicated that they submit a capital request for energy efficiency projects.

Table 5-12 How Energy Efficiency Improvements are Funded

	Response	*Percent of Responses (n=234)**
How does your organization fund energy efficiency improvements?	Funds are taken from operations and maintenance budget	76%
	Through a capital request	37%
	Dedicated funding for energy efficient projects	19%
	Other	14%
	Don't know	1%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

Respondents who indicated that they had to submit a capital request for energy efficiency projects were asked if there was a specific dollar threshold for determining if a project required a capital request. A total of 56 respondents indicated that there was a dollar threshold and provided additional information on the threshold level. Threshold levels reported by participants are shown in Figure 5-3. It appears that most typically the cost threshold at which a project requires a capital request falls between $10,000 and $50,000 is the dominant threshold for capital requests among program participants. Fifty percent of respondents indicated that the dollar amount determining whether or not a project required a capital incentive request was in the $10,000 to under $50,000 range. Another 13% of respondents reported a higher threshold. Twenty two percent reported a threshold from $5,000 to under $10,000, while 13% reported a threshold range of $1,000 to under $5,000. Very few respondents (2%) indicated that small projects costing less than $1,000 required a capital request.

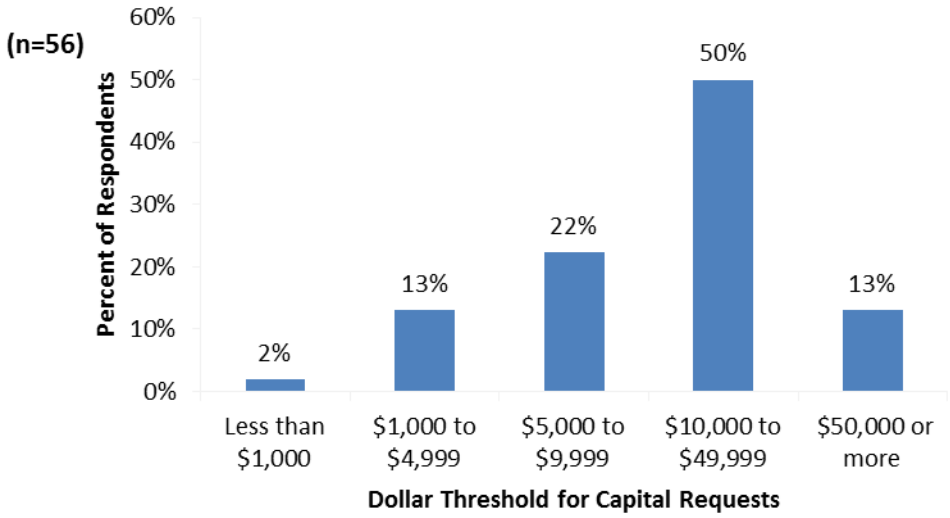

Figure 5-3 Dollar Thresholds Determining when Projects Require Capital Requests

The capital request process can act as a barrier to the implementation of energy efficiency projects in public sector organizations. One effect of the capital approval process on equipment procurement is to slow the process for equipment purchases. As shown in Figure 5-4, survey respondents reported that a larger share of capital requests require more than 90 days for approval as opposed to equipment purchases in general. For both capital requests and general equipment purchases, the most common time to approval is 30-90 days. Almost half the respondents (46%), however, indicated that approval for capital requests takes longer than this, versus one-eighth of respondents (12%) indicating an approval time over 90 days for equipment purchases.

In addition to longer approval times, another barrier created by the capital approval request process is that other projects often take precedence over efficiency improvements.[6] Consequently, incentive dollars may encourage the implementation of energy efficiency improvements by reducing the project cost so that a capital request is not required to fund it.

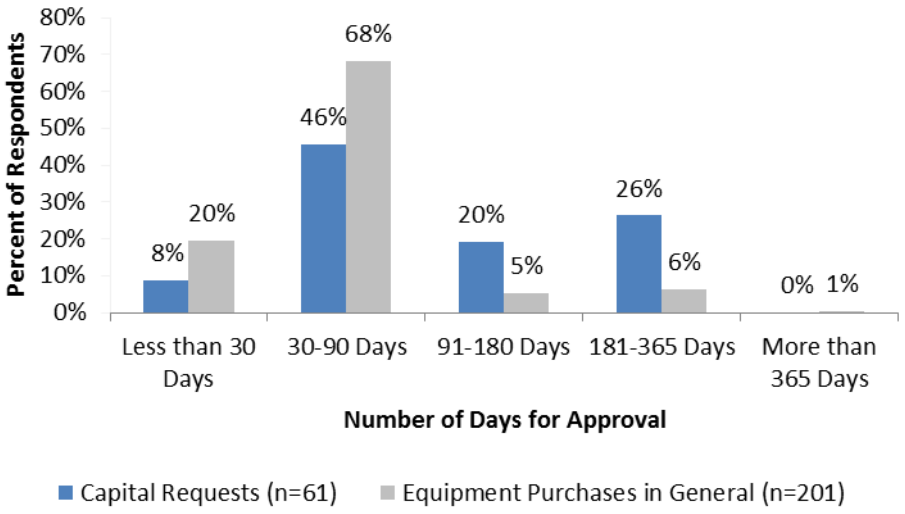

Figure 5-4 Number of Days for Purchase Approval

Program participants were asked whether or not they were able to utilize their incentive payments to fund additional energy efficiency improvements or other facility improvements. More than one-half of respondents (57%) stated that the funds could be used for energy efficiency improvements or to make facility improvements. Another 29% of respondents stated that the incentive payments went to the facilities' general operating fund. Only one percent of

[6] Zobler, N. and Hatcher, K. (2003). *Financing energy efficiency projects.* Government Finance Review.

respondents stated that incentive payments go into the state general fund, while slightly more (11%) indicated that there were other requirements.

Table 5-13 Utilization of Incentive Payments

	Response	*Percent of Responses (n=234)*
Is your organization able to utilize incentive or grant payments you receive for energy efficiency improvements, or are the payments placed in the general revenue fund?	We are able to use the incentive payments for additional facility improvements including additional energy efficiency improvements	57%
	Incentive payments return to the facility general operating fund	29%
	Incentive payments go into the state general revenue fund	2%
	Other	11%
	Don't know	2%

To gauge the importance of incentive payments for public sector entities that require the return of incentive payments to a general operating fund or state general revenue fund, the participant organizations' use of incentive payments was cross-tabulated with decision makers' ratings of the importance of incentive payments. The results are shown in Table 5-14. Incentive payments were rated as highly important regardless of how the organization uses them.

Table 5-14 Importance of Incentives for Energy Efficiency Decision Making by Use of Incentive Payments

Use of Incentive Payments	*Importance of Incentive Payments for Decision Making about Energy Efficiency Projects*				
	Very Important	*Somewhat Important*	*Only Slightly Important*	*Not Important at All*	*Don't Know*
Able to use incentive payments for facility improvements	93%	4%	2%	-	-
Payments go to facility operation fund or state general fund	83%	13%	4%	-	-

5.6.5. **The Decision Makers**

Respondents were asked how many decision makers were involved in energy efficiency planning at their facilities. As shown in Table 5-15, 39% of respondents reported that energy efficiency decisions were made by a group or committee, and slightly fewer (31%) said they are directly handled by one or two key people. Additionally, 26% of respondents reported that decisions were based on staff recommendations to a decision maker. Overall these responses suggest that the process for making decisions about energy efficiency improvements in participating public sector organizations involves multiple people rather than a single decision maker.

Table 5-15 Decision Maker Characteristics

	Response	*Percent of Responses (n=233)*
How does your organization decide to make energy efficiency improvements for this facility?	Made by a group or committee	39%
	Made by one or two key people	31%
	Based on staff recommendations to a decision maker	26%
	Other	3%

5.6.6. **Where Decision Makers Get Their Information**

Respondents were asked whom they rely on for information about energy efficient equipment, materials, and design features. Respondents were able to provide multiple responses. Table 5-16 shows percentages of respondents citing each source.

Program participants reported using a wide variety of sources for information about energy efficiency projects, none cited by a majority of respondents. The most commonly mentioned source for information about energy efficient equipment, materials, and design features were equipment vendors or building contractors (43%). Architects, engineers, or energy consultants were cited by 37%. The DCEO and its partner organizations SEDAC and the Energy Resources Center (ERC) were also important sources for information about energy efficient options. These sources include the DCEO website (27%), SEDAC (20%), DCEO representatives (16%), and the ERC (3%). Awareness of the program was also generated through word-of-mouth promotion. Twenty-three percent of respondents indicated that they had heard of the program from friends or colleagues. Trade journals or magazines (13%) and trade associations or business groups (12%) were other common sources for information about energy efficiency. Twenty-three percent of respondents indicated that they use some other source. The sources used by participants for information on energy efficiency fits well with the program marketing model of relying on trade allies and program partners to promote the program.

Table 5-16 Who Respondents Rely on for Information

	Response	*Percent of Responses (n=235)**
What are the sources your organization relies on for information about energy efficient equipment, materials and design features?	Equipment vendors or building contractors	43%
	An architect, engineer, or energy consultant	37%
	The DCEO website	27%
	Friends and colleagues	25%
	Smart Energy Design Assistance Center (SEDAC)	20%
	A DCEO representative	16%
	Trade journals or magazines	13%
	Brochures or advertisements	12%
	Trade associations or business groups you belong to	11%
	A utility representative	11%
	The Energy Resource Center (ERC)	3%
	Other	23%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

5.6.7. **Financial Methods Used by Decision Makers**

Table 5-17 displays the financial methods that respondents indicated using to review efficiency projects. Nearly all respondents (97%) used at least one financial method when deciding whether or not to make energy efficiency improvements. The two most common methods used were initial cost (67%) and simple payback (60%), followed by life cycle cost (35%), and internal rate of return (30%). The use of initial cost is consistent with most decision makers reporting that the initial cost of equipment was a barrier to energy efficiency purchases. Additionally, more public sector entities may report using initial cost to evaluate projects because they lack knowledge about energy savings to use other methods, because funds used for equipment purchases may differ from those used for utility bill payment, or because lowest cost purchasing requirements preclude an assessment of the return on the investment in the equipment.

Table 5-17 Methods Used to Evaluate Efficiency Improvements

	Response	*Percent of Responses (n=235)**
Which financial methods does your organization typically use to evaluate energy efficiency improvements for your facility?	Initial cost	67%
	Simple payback	60%
	Internal rate of return	30%
	Life cycle cost	35%
	None of these	3%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

Participants who use simple payback as a criterion were asked how long of a payback period they typically require. Their responses are shown in Figure 5-5. Twenty-eight percent of respondents indicated that they require a relatively short payback period of two years or less. One-half of respondents reported that they required an intermediate payback period ranging from two to five years. The remainder, 21%, required longer payback periods of more than five years.

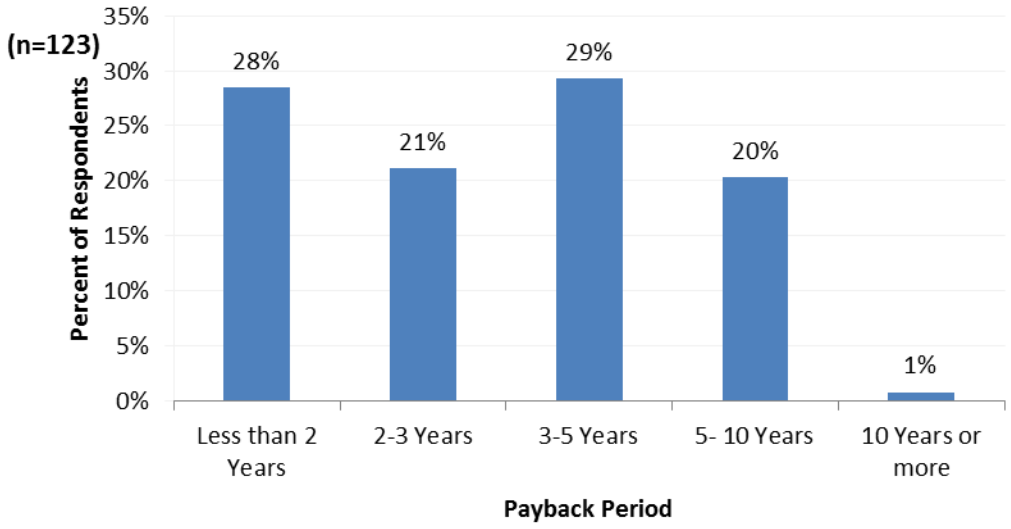

Figure 5-5 Required Payback Period

5.6.8. **Participant Satisfaction with the Program**

Respondents rated their levels of satisfaction with selected aspects of the program on a scale of very dissatisfied to very satisfied. Overall, satisfaction ratings were high, with very few respondents reporting dissatisfaction. Table 5-18 shows the results. Respondents reported the greatest satisfaction with the performance of the equipment installed followed by the quality of work and information provided by their contractor. Most (95%) of the respondents were at least

somewhat satisfied with the incentive amount. Only one percent of the respondents were somewhat dissatisfied, and none were very dissatisfied, with the incentive amount.

Comparatively, participants reported being less satisfied with the savings on their monthly bills, which is typical of satisfaction survey results. Monthly savings may be concealed by other factors influencing energy demand. For example, if seasonal factors increase energy demands, it can be very difficult for participants to compare current energy use with previous consumption and determine accurate savings. Additionally, an efficiency improvement may result in significant savings but only account for a small share of total facility energy consumption. It is important to note that no respondents reported being dissatisfied with their monthly savings and the majority (85%) of respondents was either very or somewhat satisfied with this aspect of their program experience.

Table 5-18 Decision Maker Satisfaction with Selected Aspects of Program Experience

Element of Program Experience	*Very Satisfied*	*Somewhat Satisfied*	*Neither Satisfied nor Dissatisfied*	*Somewhat Dissatisfied*	*Very Dissatisfied*
Performance of the equipment installed	79%	20%	1%	-	-
Quality of the work conducted by your contractor	76%	21%	1%	-	-
Incentive amount	70%	25%	3%	1%	-
Information provided by DCEO Account Representative	59%	28%	4%	-	-
Effort required for the application process	55%	22%	1%	-	-
Elapsed time until you received the incentive	52%	38%	7%	-	-
Savings on your monthly bill	52%	33%	4%	-	-
Information provided by Smart Energy Design Assistance Center (SEDAC)	43%	21%	8%	-	-
Information provided by the Energy Resource Center (ERC)	37%	26%	9%	-	-
Overall program experience	72%	26%	1%	-	-

Those who indicated that they were not satisfied with the program were asked to explain why. Only seven respondents described ways in which they were not satisfied with the program. Two indicated that the incentive amount did not cover the equipment needed, three critiqued the "red tape" or the technical nature of the process, while two others indicated that they had not yet received their incentive.

Table 5-19 displays levels of satisfaction for selected elements of the program by the applicant type. There were too few responses to draw general conclusions about the satisfaction of federal, community college, and university participants and there was little difference in the reported

satisfaction of local government and K-12 school participants. K-12 participants did report somewhat higher levels of overall program satisfaction.

Table 5-19 Project Decision Maker Satisfaction Levels by Decision Maker Facility Type

Applicant Type	*Effort required for the application process*	*Incentive amount*	*Savings on monthly bill*	*Elapsed time to receive incentive*	*Overall program experience*
Local Government (n=148)	4.4	4.6	4.6	4.4	4.7
K-12 School (n=81)	4.5	4.6	4.5	4.5	4.6
Community College (n=4)	4.3	5.0	4.0	4.3	4.8
Federal (n=1)	5.0	5.0	3.0	3.0	5.0
University (n=5)	4.3	5.0	4.5	4.0	4.7

In addition to their satisfaction, respondents were also asked about whether or not the measure or measures they implemented met their expectations. More than half of respondents (59%) indicated that the energy efficiency measure had met their expectations, while another 31% stated that it had exceeded their expectations. Only four participants reported that the measures mostly met their expectations, while no respondents indicated that their expectations were not met. Some of the respondents whose expectations were mostly met elaborated as to why. Four of these participants indicated that the equipment failed or needed repairs, that it was substandard, or that it was not operating properly. Two participants stated that it was too early to assess the savings that resulted from the project and one participant stated that the energy savings were less than predicted.

Table 5-20 Energy Efficiency Measure Satisfaction of Participant Expectations

	Response	*Percent of Respondents (n=231)*
Did the energy efficiency measure meet your expectation?	My expectations were exceeded	31%
	My expectations were met	59%
	My expectations were mostly met	4%
	My expectations were not met	-
	Don't know	5%

5.6.9. **Installation and Incentives**

Very few participants reported problems with receiving the incentive checks or their dollar amount. As shown in Table 5-21, 93% of survey respondents indicated that the incentive check was in the expected range. A few participants (5%) reported issues with receiving the incentive check. These respondents indicated that there were delays in the process, the check had not been received, rebate number was not printed on the check, paperwork was lost, or the check was lost or sent to the wrong address.

Table 5-21 Experience with Incentive Delivery

Question	*Percent of Respondents Saying Yes*	*n*
Was the incentive check the expected amount?	93%	229
Issues receiving incentive check?	5%	228

Participant experience with project implementation is summarized in Table 5-22. Virtually all respondents felt that they received a quality product (98%), that the incentive agreement met their expectations (96%), and that the implementation went smoothly (94%).

Table 5-22 Experience with Project Implementation

Question	*Yes*	*For the most part*	*No*	*Don't know*	*n*
Did the implementation go smoothly?	93%	7%	-	<1%	229
Do you feel you got a quality installation?	97%	3%	-	<1%	230
Did the incentive agreement that you received meet your expectations?	97%	NA	2%	2%	231

5.6.10. **Pre- and Post-Inspections**

Participants were asked whether or not pre- and post-inspections were performed at their facilities. Fifteen percent of the respondents indicated that their facility received a pre-inspection. The pre-inspections consisted of facility walk-throughs and surveys of equipment, audits, and analysis of the incentives and the implementation plan. They reportedly varied from somewhat cursory to very complete, as illustrated by the following verbatim comments:

> *Counting the number of new installations to put on the grant paperwork.*
>
> *They were really thorough. They studied everything from the roof to the insulation, the building cladding… They studied the lighting, looked at the furnaces & motors & elevators, the servers, server rooms.*

Of the 40 respondents whose facility received a pre-inspection, seven (17%) stated that the project design changed as a result of the pre-inspection. Changes included reducing the number of fixtures, constructing a new server room, replacing lights, and expanding the scope of the energy efficiency project to include.

Twenty-three percent of respondents reported that a post-inspection was performed at their facility. Three of the respondents (6%) stated that the incentive amount changed as a result of the post-inspection.

Table 5-23 Pre- and Post-Installation Inspections

Question	*Percent of Respondents Saying Yes*	*n*
Did anyone come to your facility to do a pre-inspection?	18%	229
Did anything change in the design as a result of the pre-inspection?	18%	40
Did anyone come to your facility to do a post-inspection?	23%	231
Did anything change in the incentive amount as a result of the post-inspection?	6%	52

5.6.11. **Spillover and Future Energy Efficiency Plans**

As shown in Table 5-24, (15%) of participants installed similar equipment or measures since participating in the program for which no incentive was received. Nine percent of participants reported installing energy efficient equipment after program participation that was not similar to the equipment installed through the program, and also stated that they did not receive an incentive for this equipment. About two-thirds of the respondents (68%) indicated that, given their experience with the program, they would buy energy efficient equipment in the future even if grants or incentives were not offered.

Table 5-24 Additional Energy Efficiency Projects and Future Energy Efficiency Plans

Question	*Percent of Respondents Saying Yes*	*n*
Since participating in the Public Sector Energy Efficiency Program, have you implemented any additional energy measures similar to those you implemented through the program that you did not apply or receive an incentive for?	15%	228
Since participating in the Public Sector Energy Efficiency Program, have you implemented any additional energy measures not similar to those you implemented through the program that you did not apply or receive an incentive for?	9%	228
Given your experience with the Public Sector Energy Efficiency Program, would you buy energy efficient equipment in the future even if financial incentives or grants for such equipment were not being offered through the Public Sector Energy Efficiency Program?	68%	225

5.6.12. **Participant Recommendations and Overall Impressions**

When responding to open-ended questions regarding their experiences with the program, the overwhelming majority took this opportunity to praise the program. Some merely said “thank you” or indicated that they would keep using the program as long as it is available, while others

gave more specific information about how the program, contractors, and/or incentives (including grants) were beneficial to them and their organizations. Some examples include:

> *Great program that made our project(s) possible*
>
> *We appreciated the rebate. This assisted us being able to complete the project in an efficient manner.*
>
> *We sincerely appreciate the partnership with DCEO and it's affiliates in implementing energy efficiency measures at all of our facilities.*
>
> *With budgets getting tighter being able to do efficient upgrades to an older facility is very beneficial for the city and the taxpayers. I like this program and very thankful for it.*
>
> *The incentives make a big difference in getting other staff members & city administrators to approve projects. We probably wouldn't be doing as many projects without the incentives.*
>
> *Extremely good program, very generous and highly recommended to others.*

Some participants expressed minor complaints or provided suggestions for potential program improvements. These tended to focus on reducing red tape, better management and timing of incentives, and better aligning the program timing with that of the recipient organization. A few respondents cited the difficulty of obtaining preliminary information about the program. One respondent specifically requested more funds to replace old, inefficient boilers. Examples of such commentary include:

> *It would be great if the application cycle accommodated a school construction schedule. We have to go out for bid in January and order lights so they can be installed during summer break. This does not meet the May 15 grant deadline. It would be great if we could have an extension or something so the lights could be installed over a summer period but you knew in January you would receive the funding.*
>
> *The program is great. It allows municipalities strapped for cash to save money. If they could speed up the process of payment that would be greatly appreciated.*
>
> *I think it's a great program, except that I wish I'd heard about it from someone other a vendor, you wonder about the reliability of that kind of information.*
>
> *I'm satisfied with the program, it's a little cumbersome, it wouldn't get done if I didn't take time to follow the steps to do it, I think more people would participate in the program if they didn't have to jump through so many hoop to do it.*
>
> *I wish there was more money to replace boilers.*

5.7. Public Sector Custom and Standard Incentives Programs Operation Perspective

DCEO staff administers the Public Sector Standard and Custom Incentive Programs with some additional support from their partners at the Energy Resources Center and the Smart Energy Design Assistance Center. Interviews were conducted with three key DCEO project managers responsible for the oversight, approval, and technical support of the program. Staff commented on changes that occurred from EPY4/GPY1 to EPY5/GPY2 and provided feedback about how those changes impacted program delivery and performance. Staff also provided general comments about program activity, barriers to participation and recommendations for improvements.

5.7.1. Summary of Interview Findings

Key trends and issues addressed by respondents include:

- **Changes from EPY4/GPY1 to EPY5/GPY2**: Program staff discussed some of the new developments that occurred with the Standard and Custom Incentive programs. One of the noteworthy changes was a new requirement that to receive incentives, LED lighting has to be qualified by the Design Lights Consortium.[7] The Design Lights Consortium qualifies solid state lighting products based on their performance on factors such as lumens per watt, sustained lumens over time, and light color properties. Although this requirement can ensure that realized performance of the lamps is consistent with the participants' expectations, staff voiced concerns that the requirement excludes newer products such as LED tubes. There is interest in newer measures and the DCEO is continuing to monitor technological advances and research.

  Another change that has impacted the programs is that beginning in EPY5/GPY2, electric funds that remained unspent in EPY4/GPY1 were rolled over to EPY5/GPY2. Prior to this change, electric funds that were not spent could not be used in later program years. The change was made in response to previous budgets not being fully utilized. In addition to keeping the funds available for energy saving projects, it also reduces an administrative burden for program staff. Staff members indicated that the requirement to repay the funds to the utilities created a heavy workload at the end of the program year. The reduction in the workload has allowed staff to focus on program outreach and project support.

- **Chicago Public Schools Provided a Significant Boost in Activity**: There was a substantial increase in program activity that was largely driven by projects completed through the

[7] http://www.designlights.org/

Chicago Public Schools (CPS). Prior to EPY5/GPY2, the CPS had not completed projects through the programs but they completed projects at more than 160 sites during EPY5/GPY2. In addition to the increased participation from CPS, the program also saw increased activity from universities. As with prior years, lighting projects continued to dominate the program. Engineering staff estimated that approximately 85% of projects were lighting projects.

- **Barriers to Project Completion**: Program staff discussed some of barriers to project completion that they consider to be important. One of the barriers noted is that public sector entities face fiscal constraints that make it difficult to finance energy efficiency improvements. Another factor is that a number of interested parties do not complete their paperwork on time. Program staff also discussed the need to develop a better mechanism for tracking submitted applications that are not completed. Their goal is to be able to more consistently follow up on projects for which applications were received but not completed. During the interview, staff also noted that with additional staff they could improve their responsiveness to participant inquiries.
- **Grants Require Greater Project Oversight**: Program incentives are delivered in the form of both grants and rebates, each with unique requirements. Whether a project is funded with a grant or a rebate depends on the expected amount of the incentives, specifically, grants are awarded for projects that expect incentives of more than $150,000. The reason for limiting grant awards to larger projects is that the grant terms are more structured and grant administration requires greater oversight and therefore require more staff resources. Specifically, grants require additional paperwork, more extensive project approval protocols, and closer tracking of project progress. By awarding grants to larger projects, the program is aligning the level of oversight and its associated costs with the scope of the project.
- **Clean Water Energy Efficiency Initiative**: A recent development is the Clean Water Energy Efficiency Initiative developed by the Governor. The initiative is a response to the recent federal attention on clean drinking water and importance of maintaining the state's waste water treatment facilities. The program will provide in-depth services to update waste water facilities with energy saving equipment and leverage federal funds in conjunction with the DCEO incentives. These projects will fall under Custom Incentives Program offerings.
- **EEPS Maintenance and Accuracy**: One program staff member is responsible for entering the original application details into EEPS. If modifications to the projects occur, then it is the responsibility of the Project Manger to ensure that EEPS accurately reflects the work completed. Staff indicated that this does not always happen. During the document and data collection ADM staff became aware of projects that were not accurate in the EEPS database and that discrepancies exist.
- **On-Site Verification**: During the interviews, ADM discussed on-site verification procedures with program staff. In keeping with best practice, the share of projects receiving on-site verifications increases as the size of the project increases. Specifically, the percentage of projects that receive site visits for various incentive thresholds are shown below.

Table 5-25 Percent of Projects Receiving Site Visits

Incentive Amount	*Percent of Projects Receiving Site Visits*
Less than $10,000	10%
$10,000-$150,000	25%
More than $150,000	100%

5.8. **Public Sector New Construction Program Participant Profile**

Table 5-26 presents the median electric and natural gas expected savings for the six new construction projects completed during the program year. The median expected kWh savings were 807,735 and the average expected therm savings was 14,656.

Table 5-26 Median Expected Savings for New Construction Projects

Number of Applications	*Median Expected kWh Savings*	*Median Expected Therm Savings*
6	807,735	12,546

Table 5-27 displays the incentive characteristics for the new construction applications. The median electric incentive amount was $114,619 while the median natural gas savings incentive was a much smaller $23,458.

Table 5-27 Incentive Characteristics for New Construction Projects

Electric Incentive Range	*Natural Gas Incentive Range*	*Median Electric Incentive Amount*	*Median Natural Gas Incentive Amount*
$20,236 - $173,762	$296 - $48,828	$114,619	$23,458

One half of the new construction projects were completed by local governments and one-half were completed by K-12 schools.

5.9. **Public Sector New Construction Program Participant Outcomes**

A telephone survey was conducted to collect data about participant decision-making, preferences, and opinions of the Public Sector New Construction Program (New Construction Program), which offers incentives for increasing energy efficiency in new construction projects above code requirements. A census of all five decision makers that completed projects during the program year was completed.

Information in this section is intended to characterize participant decision-making behaviors and identify notable trends within participant responses. Some of the comments and issues raised by participants are anecdotal in nature and may reflect individual participant opinions. The Conclusions and Recommendations section of the Process Evaluation chapter provides an overall distillation of key findings from the process evaluation activities that were performed for the New Construction Program.

It is important to note that, while the survey results discussed below are used as inputs for the calculation of estimated free ridership, participant responses to individual survey items do not, in isolation from additional factors, infer specific levels of free ridership. Chapter 4 details the methodology used to estimate free ridership based on survey response data, while this chapter provides a qualitative discussion of participant responses.

5.9.1. How Participants Learn About the Program

Each participant noted a different source for how they learned of the program. Program participants reported hearing of the program from an architect, engineer, or energy consultant, from a conference workshop or seminar, a DCEO staff member, a friend or colleague, or a representative of the Smart Energy Design Assistance Center.

One of the survey respondents found out about the program before planning the project and two learned of it while planning the project. Another respondent learned of the proram after construction had begun but before it was completed, and the final respondent learned of the program after construction was completed. It is most beneficial from an energy savings standpoint if participants learn of the program in the earlier in the planning stages rather than later. Learning of the program early in the project planning process provides greater opportunity for the program to impact the project design and the efficiency measures incorporated. At later points of the design and construction process, the opportunities are more limited and changes to the design that incorporate elements to improve energy efficiency may become prohibitively expensive.

5.9.2. Factors Affecting Public Sector Entity Participation

Participants were asked questions regarding the influence of the New Construction Program on their decision to design and construct buildings with greater efficiency than what is required by code. All five of the respondents indicated that they had plans to build to the same efficiency level prior to program participation.

In order to gather further information about what motivated participants to incorporate the efficiency measures, participants were asked whether the above code efficiency improvements were recommended to them by a representative of the program or the DCEO or by their partner SEDAC. Three participants reported that they had received recommendations from the DCEO or from SEDAC. One respondent indicated that they would not have built to the same level of efficiency without the recommendations received. These responses suggest that the informational assistance provided by the program influenced the efficiency of the completed project for one of the participants. Additionally, one of the participants also stated that they would not have been able to build to the higher energy efficiency level without the program's financial incentives, indicating financial benefits of participation also had a positive influence, nevertheless.

5.9.3. Participant Satisfaction with the Program and the Participation Process

All five of the participants reported that they were "satisfied" or "very satisfied" with the overall program experience. None indicated dissatisfaction with any aspect of the program. Additionally, for most of the rated components of the program, all of the participants indicated that they were satisfied or very satisfied and no respondent reported dissatisfaction with any of the program components. It is noteworthy that all five of the participants were very satisfied with the information they received from SEDAC.

5.10. Public Sector New Construction Incentive Program Operations Perspective

Interviews were conducted with New Construction Program staff. The interviews were designed to address topics related to experiences with the New Construction Incentive Program and changes to the program that have occurred since EPY5/GPY2. Interview topics also included program satisfaction, recommendations, and recent trends in the energy efficiency market environment.

In order to gather information regarding the operational efficiency and program delivery process for the New Construction Incentive Program, in-person interviews were conducted with the DCEO program administrator and key members of the program implementation staff, SEDAC. These interviews were focused on overall process effectiveness and identifying potential improvements for future program activities. SEDAC interview participants included the program manager and administrator.

Respondents discussed their perspectives on how the program has taken shape since the prior program cycle. Interview questions related to the respondents' individual program roles as well as their perceptions of overall program strengths, weaknesses, and opportunities for the future.

5.10.1. Summary of Interview Findings

Key trends and issues addressed by respondents include:

- **Addition of Prescriptive Measures**: One of the primary changes in EPY5/GPY2 has been the addition of prescriptive measures to the program. In previous program years, incentives were based on the results of modeling the building's energy use, a process that requires significant resources. For many smaller construction projects, the resources were not available to perform the energy modeling or the incentive dollars were not worth the effort required to perform the modeling. In order to reduce this barrier to participation for smaller construction projects, the program began offering some prescriptive incentives. Specifically, prescriptive incentives are available for lighting, envelope, mechanical, water heating, and kitchen efficiency measures. For these measures, the incentives are based on the number of units installed, the lighting density and square footage of the space, or the square footage of envelope improvements, as appropriate. Although the majority of applicants still apply for modeled incentives, some are beginning to pursue the prescriptive offerings.

- **Changes to Application as a Result of Inclusion of Prescriptive Measures**: The inclusion of the prescriptive measures has made the application longer and somewhat more complicated. The added length stems from the space required to list the prescriptive incentives available, as well as the space required for applicants to specify which measures they will install and their expected incentives. Although some applicants may find that the additional length adds to the complexity of the application, the additions do not affect projects with energy savings based on energy use modeling.
- **Schools and Community Colleges Continue to be Most Active in the Program**: In general, the program has seen activity across from a variety of types of public sector entities. However, similar to last program year, schools have been the most active in the program. Specifically, community colleges have been increasingly active participants.
- **Collaboration with ComEd has Benefitted Program**: SEDAC staff reported that they have collaborated extensively with ComEd to improve the administration and design of the New Construction Program. ComEd offers expertise based on their experience with a new construction program for private sector entities completing projects in their service territory. Because SEDAC and ComEd do not compete for applicants, the two organizations maintain a positive working relationship and have meetings several times a year to share information. ComEd also provides feedback with regard to incentive amounts and other ways to improve the program.

  SEDAC also regularly partners with the Midwest Energy Efficiency Alliance (MEEA). Currently there are discussions with MEEA to offer bonus incentives for some applicants.
- **New Code Requirements Create Program Challenges**: In recent years, Illinois has adopted increasingly more stringent building energy codes. Program staff noted that the changing energy codes have created some challenges for the design and administration of the New Construction Program. One challenge that has arisen as a result of the adoption of new energy codes noted is that building modeling software they use is often not current with the building code requirements. For example, program staff indicated that one of the most significant recent changes to the codes has been new requirements for system controls. However, most modeling software does not model how controls affect building energy consumption. Therefore, one of SEDAC's primary tasks is to ensure that energy consumption is accurately modeled using a makeshift model.

  A second challenge is that the cost of exceeding the code requirements increases with each newest iteration of the building energy code. Although program staff stated that the incentive levels were generally adequate, they noted that the incentives are still fairly small in comparison to the cost of energy efficient equipment. In fact, with the current incentive levels, staff members reported that exceeding energy codes was difficult, particularly for public sector entities. Public sectors organizations are often more cost conscious given that fixed budgets must be set prior to starting any projects. Unlike private sector counterparts that can potentially raise additional funds for energy efficiency improvements, all

improvements in public sector projects must be included at the outset. If they do not have the money upfront, they are less likely to pursue energy efficiency improvements.

5.11. Trade Ally Program

The DCEO launched a trade ally program in October of 2011. The program is implemented by its partner, the Energy Resources Center at the University of Illinois at Chicago. The primary objective of the trade ally program is to inform trade allies of the DCEO programs and the participation process, and to help DCEO's trade ally partners establish relationships with potential clients. Through the relationships established with these potential clients, trade allies can help educate their clients about the DCEO incentive programs and ways to save energy in the public sector or in low-income housing.

The ERC hosts a website for the trade ally program and uses an email list to communicate pertinent information to the registered trade allies.

The DCEO trade ally program provides a number of educational services to trade allies. The types of training available through the program include:

- Basic training on the DCEO Programs;
- Personalized training on DCEO Programs;
- Training on specific DCEO Programs; and
- Training on energy saving improvements.

In addition to the trainings, the DCEO holds several trade ally rallies a year. The rallies are held in several regions throughout the state to make them accessible to trade allies and their potential clients. The rallies provide an opportunity for trade allies to meet with potential clients. They are also a forum for disseminating information about the programs including the release of new guidelines or changes to the incentives. The rallies also provide trade allies and their customers an opportunity to discuss successful projects with potential customers and other trade allies, as well as opportunity for equipment manufacturers to discuss and demonstrate products with contractors.

ADM staff attended one of the rallies and discussed with attendees their goals for attendance, how they learned of the rally, and any suggestions for improvement. The goals of trade allies and potential program participants were similar. Both groups attended to learn about the incentives that would be offered in the coming program years. Trade allies mentioned that they were interested in networking with potential clients and other trade allies. The majority of trade allies and potential program participants indicated that they heard about the event through email. Several of the comments made by attendees suggested that they found the rally to be useful, although some offered suggestions for improvement for the rallies or the programs. These suggestions included discussions about how to sell efficiency improvements, to learn about

lighting and HVAC, include more lighting measures through the program, and improve awareness of programs.

ADM received a list of the DCEO registered trade allies in July 2013. The list included over three hundred trade allies. As shown in Table 5-28, the registered trade allies provide a wide array of services. The most commonly provided services were lighting services, energy audits or facility analysis, and HVAC or water heater services.

Table 5-28 Services Provided by Registered Trade Allies

	Service				
	Design	*Installation*	*Maintenance*	*Sales*	*Assessments*
Lighting (n=213)	143	145	98	161	179
Energy Audits / Facility analysis (n=133)	126	107	91	103	182
HVAC / Water heaters (n=130)	73	79	65	76	94
Building control and automation (n=120)	84	76	59	79	101
Variable frequency drives (n=107)	74	72	52	67	92
Motors (n=99)	53	65	46	64	85
Steam boiler systems (n=81)	49	49	43	38	67
Refrigeration (n=73)	39	43	35	38	63
Compressed air (n=61)	28	32	25	24	50
Portable chillers (n=61)	35	37	30	27	48
Geothermal (n=60)	37	31	23	21	47
Commercial kitchen equipment (n=41)	18	25	13	12	31
Mechanical insulation (n=35)	23	18	9	11	24

5.12. **Trade Ally Perspectives**

In-depth telephone interviews were conducted with 15 engineers, consultants, contractors, and others who participate in the DCEO's Trade Ally Program The trade allies were asked questions about:

- Types of energy efficiency services provided;
- How they first learned about DCEO energy efficiency programs;
- Energy efficiency projects completed;
- Impact of marketing DCEO incentives to customers;
- Awareness of the DCEO Programs among customers and Impact of Incentives;
- Evaluation of the DCEO application process and comparison to public utility programs;
- Interaction with DCEO program staff;

- Attendance at and value of trade ally rallies; and
- Suggestions for improving the programs.

Interviewed trade allies typically completed between five and nine DCEO projects but may have completed as few as one or as many as 40. Most of these projects were completed through the Custom and Standard Programs, although some interviewed trade allies had also completed projects through the New Construction Program or other public sector DCEO programs. Overall, the trade allies interviewed have been fairly active in the DCEO Programs.

5.12.1. **Trade Ally Background and Initial Awareness of DCEO Programs**

Almost all of the interviewed trade allies reported that they provide lighting products and services, and approximately half reported providing HVAC products and services. Several provide motors and drives, building design services, and retro-commissioning. The majority of the trade allies that were interviewed for this research project either specializes or otherwise limits what they do to one primary area – typically this is lighting. trade allies interviewed report doing projects for both public and private sector entities. Even those that primarily work with private companies note that they have done some public projects and are often looking to find more.

Most trade allies reported that they learned about the DCEO Programs in the last two to four years. Trade allies learned about DCEO Energy Efficiency Programs in a variety of ways. The ways that they learned of the programs included finding material about the programs online, from colleagues, at conferences, through industry contacts, and the Energy Resources Center. No single method or source predominated. Some examples of the comments made include:

> *I looked it up online. I knew there were rebates available to certain organizations. We had just opened up our business about two years ago and wanted to use the rebates to help facilitate sales.*
>
> *A combination of sources. Interaction with colleagues, reading about different programs on the website and attending conferences. Some interaction with DCEO people as well.*
>
> *One of our key vendors brought it to our attention.*
>
> *Through industry contacts, peers.*
>
> *The company I was working for, we were looking to expand our business offerings and we sort of got tagged on through the SEDAC smart energy design systems center program which ties into DCEO funding program as well. It was more so an energy audit assessment program that drove us to understanding the DCEO program.*

The University of Illinois has a resource center, and we had done some different demonstrations on LED lighting, and once they launched the program, he gave us contact information.

Trade allies were asked about their decision to participate in the program. Trade allies uniformly reported that the decision to participate in the DCEO programs was prompted by a desire by many trade allies to identify and compete for additional business. Trade allies recognized that the availability of the DCEO incentives can make potential sale easier.

We were looking at any and all avenues. We just wanted to make sure that if we stumbled on a government job of some kind or a municipality job of some kind that we wouldn't be singled out because we were not a trade ally.

The thought that it would help us gain more work by utilizing the programs.

Because we're a new company, not new to lighting, newer to these types of products such as LED lighting, we had come up with a patent on LED lighting specifically which applies to some of the projects we're working on in Illinois which they handle. We figured it was a good fit for us.

5.12.2. **Marketing of DCEO Programs and Customer Awareness of Programs**

About two-thirds of the interviewed trade allies indicated that they actively marketed the DCEO Programs when appropriate. The other trade allies interviewed reported that they do not actively market the DCEO Programs to their customers or clients, but will discuss DCEO programs if the client asks about them. The general reason cited for not actively marketing DCEO Programs is the feeling that most customers know about the existence of the rebates, especially for lighting programs.

Trade allies who discussed their approaches to marketing indicated that they promote the program by email, at trade shows, sales calls, and educational seminars. Some of the comments that reflect trade allies marketing efforts include the following:

It's not something we actively market. However, it's something we will bring up in conversation if the customer fits the profile for the incentive.

Yes, especially from the public side. Not that I don't use the other programs we're involved with. The public programs are the easiest to market through DCEO. Our public work is a small portion of our company's work. As you know, public entities don't have a lot of money these days. If you can't provide a service that's relatively cost free, they sometimes have a difficult time trying to fund it. I market it in a regular basis.

Every day. Word of mouth, trade shows, it's a tag on my email line. We go out and make sales calls and talk about it. Energy audits on pumps and motors. Talk about it every chance we get.

> *Any contacts we have that could utilize it, we do. We don't specifically search out that type of customer. People that are already in our database, we do keep them updated on DCEO stuff. We don't really solicit any new business currently. Anybody we've done work for in the past or have talked to in the past, we've done quite a bit of educational type seminars here, so we have a list of people we've talked to. Anytime anything new comes out on the rebates, we let them know. Other than that, no.*

Trade allies were asked about their customers' level of awareness of the DCEO programs and their interest in them. Trade allies gave varied assessments of the level of awareness of the DCEO programs. While some trade allies indicated that most of their customers were aware of the programs, several indicated that relatively few were aware. Trade allies also noted that the level of awareness among some customers was fairly superficial, that is, they were aware that there are incentives, but they were not aware of the program specifics.

> *They may know about the program or think there is a program but they don't understand the details of each program. That's where we would come in.*
>
> *Typically they already know about it. We'll certainly make them aware any time we're dealing with municipalities or schools. Typically they already know about it. It's rare that I'm the first one introducing it to them.*
>
> *I would say most of the public sector, 70% has an idea of the programs that are out there. They may not know them in detail, but they are always looking.*
>
> *It's probably 50/50. A lot of time they do, but other times we'll bring that to them when we're working on a project.*
>
> *I'd say it's more that they don't know about it. There are some that definitely do. It seems like more of the customers we've had don't know about it.*
>
> *Only if they've done it before or if it's word of mouth where one water plant talks to another water plant. They usually find out about it from us.*
>
> *A lot of times, we make them aware of it.*

Although some trade ally customers are seeking energy efficiency improvements, many are not initially focused on ways to save energy. Typically, trade allies suggest to their customers ways that they can save energy and how the incentive programs can help reduce the cost.

Trade allies indicated that the level of interest in DCEO programs is generally high among their customers. One of the main reasons that customers are interested in the programs is that they reduce the costs of energy efficiency improvements. Additionally, trade allies noted that their customers are familiar with the programs because they have been available for a while. An increasing focus on ways to cut overhead costs was also mentioned as contributing to the interest in the programs.

> *The level of interest for the program is high, but the level of interest for what we are recommending isn't high. It all depends. It's like the icing on the cake. Your saving people money and in addition to saving them money, the government will help subsidize it. That just helps with their return on investment.*
>
> *We have seen increasing numbers of interest, even within the last year. I think there's more concern about being able to sustain, cut overhead costs and ways to make companies more efficient. I think for the programs in general, word of mouth got out a little bit better. When you are offering programs like this, essentially it's free money, at first people are a little skeptical if there's a catch so to speak. The fact that it's been around a little while and people do have knowledge of it.*

Despite the general interest in saving money using the DCEO incentives and through reduced energy consumption, trade allies noted that some customers are difficult to convince to complete a project because of the budget constraints they face. In an attempt to convince reluctant customers, trade allies note that the DCEO incentives can reduce the cost of a project, and that this is generally influential. Several trade allies expressed the opinion that projects simply would not be done if there were no incentives.

Trade allies also discuss energy efficiency projects in terms of the payback period and the return on investment for the proposed project. Additionally, other financial means of evaluating proposed projects that trade allies discuss with potential customers include project life cycle costs and maintenance savings that can be realized through energy efficiency improvements. Some trade allies discussed the value of keeping the discussion simple and adhering to the use of terms that customers can easily understand so that they have little difficulty seeing the benefits of the project.

5.12.3. **Participation Process**

Trade allies were asked several questions about the process of completing a project through one of the DCEO programs. Trade allies indicated that most of the time they their initial involvement occurs at the beginning of a project. Either the trade ally brought the idea to the customer or the customer contacts in them in the early stages of the project.

Most trade allies see the application and participation process as straightforward and simple and some noted that the staff was easy to work with. In general, trade allies found the application requirements clear and straightforward, although it was mentioned that there is a learning process involved. Trade allies also noted that program staff was helpful.

> *I don't think we have any issues with any of the applications. Most are relatively simple and not cumbersome.*

It is. If it's not, the communication is top notch with the program staff. When the program year changed, a few things changed and I didn't catch that. They are very easy to work with and tell me what changed from the previous year.

I think it's a pretty good program. I'm working with other states too. I think the Illinois program is more sophisticated than some other states.

Trade allies who had completed projects through the private sector utility programs were asked to compare the DCEO application process with the process used in other programs. Trade allies indicated that the role they play in completing applications for DCEO and the utility programs are fairly similar. In general, DCEO application seems to be longer and require more effort than those used by the utilities and the approval process takes longer for DCEO projects. However, the differences in information requirements were typically minor. That is, the information requested is typically the same, but how it is to be provided varies.

I would say there's a little more ease and less paperwork with DCEO than the others. The problem is how it gets stalled because they simply can't get to it. It's not the process itself; it's the delay in getting the answer.

From my perspective, the utility applications seem to be a little easier to use, they have more prescriptive measures that are very self-explanatory. There are forms to fill out that make the process very smooth. DCEO seems to be a little more cumbersome on the paperwork.

I think the utility process for ComEd is simpler and it's faster paced, but that's partly because the State of Illinois does not have the personnel resources available that ComEd and Ameren folks do.

With either application it's about the same, especially in Illinois. They are relatively close as far as ease of application, things like that. Outside of having to put everything together in one PDF, a project of the same scope and size will take a week for turnaround and pre-approval for Ameren, and DCEO can take as long as six to seven weeks.

DCEO is not as detailed, but that's not necessarily a bad thing. I think the way DCEO is set up it's for people who maybe are not as tech savvy with information. Maybe from a customer perspective if they were filling out the paperwork, it would probably be a little easier to fill out from DCEO.

Although they were generally satisfied with the application and the process, some trade allies discussed areas for improvement.

- Increase the ability to add multiple buildings for a project to the application form;
- Increase communication with trade allies;

- Expedite application decisions (perceived as a manpower/staffing issue at DCEO);
- Simplify the format, including step-by-step instructions on what information to enter and/or provide;
- Reduce redundancy of information requested;
- Add a different way of identifying particular projects so that there is no confusion when a customer has more than one project underway; and
- Permit an electronic signature.

5.12.4. **Interactions with DCEO Staff**

Almost all of the trade allies interviewed have had telephone and/or email contact with DCEO staff. A common topic during communication with DCEO staff is when the incentive money will arrive. There seems to be more contact in the early stages of a project, particularly in determining if the project will qualify for a particular program or if a specific piece or type of equipment will qualify. Trade allies also contact staff about changes to the incentive program requirements or amounts.

Although some trade allies noted that there were delays in getting responses to their questions, the delays were attributed to understaffing at the DCEO. Nonetheless, DCEO staff generally responds to inquiries reasonably quickly, just not always as quickly as trade allies would like.

5.12.5. **Adequacy of Incentives and Ways to Increase Participation**

Trade allies generally reported that the current level of incentives is sufficient, although some customers are still unable to cover the non-incented costs.

The technology mentioned most often by trade allies who would prefer higher incentives was LED lighting, especially compared to fluorescent lighting. Many of these comments seem to focus on the additional cost of LED lighting as compared to fluorescent lighting, although some indicated that LED lighting provides greater energy savings than fluorescent. It was also noted that higher LED lighting incentives might be particularly worthwhile for exterior lighting because the operating hours are greater. Other technologies mentioned were HVAC systems, boiler tune-ups, window film, and window stripping.

> *I think for LED lighting, the incentive should be higher. I think they've put way too much emphasis, both DCEO and the ComEd program, on the high efficiency fluorescent fixtures. Clearly LED technology is high and above what the high efficiency fluorescent fixtures could be. However, the biggest issue with the LED fixtures is the cost. They can help subsidize that cost. In the end it would do better for their customers.*
>
> *Probably they should take a look at the LED incentives, especially where it relates to outdoor fixtures. I think it would be nice to see them higher for the emerging*

> *technologies, external LED, where the cost of implementation if quite a bit higher. For instance in lighting, the incentive for installing fluorescent fixtures interior versus LED fixtures interior, LED is quite a bit less incentive and you can gain higher energy savings, but fluorescent has a higher incentive.*
>
> *I would say to revisit the LED incentive. LEDs are most cost effective; however, unfortunately the price is still a little higher than most people would want to pay. It is a great option.*
>
> *Yeah, on the HVAC. The electrical for lighting is low hanging fruit, it's an easier install. HVAC is not cheap, so I wish the HVAC incentives, HVAC is a huge part of the budget for any school, so the savings would be high. I just wish the incentives were higher on the HVAC side.*

Trade allies were asked if they had noticed any trends in the types of energy efficient equipment customers are interested in. According to trade allies, LED lighting is a major area of interest, as are control systems. Customers are becoming increasingly familiar with LED lighting, and there is an increasing recognition that better automated control systems can have a positive impact on energy costs.

- Suggestions to encourage more projects were wide ranging, and included the following:
- Increase incentive levels in general or for specific technologies such as LED lighting;
- Redirect incentive dollars towards project financing;
- Shorten and simplify the application process, and reduce the paper work;
- Provide a direct contact for each trade ally; and
- Increase the marketing that the DCEO does.

Two suggestions to improve the programs that were also made were to improve communication and help trade allies identify decision makers in public sector entities.

5.12.6. **Impact of Programs on Trade Ally Businesses**

Most of the trade allies interviewed reported that the DCEO programs generally have had no impact on the types of equipment or services they offer to customers. Some trade allies indicated that offering the energy saving equipment incentivized by the DCEO was already consistent with their business. As one trade ally noted:

> *No, it's kind of the opposite. We fell into using the rebates because we had the product line for that specific type of rebate.*

However, some trade allies reported that they do recommend equipment that complies with the programs so that customers can take advantage of the rebates.

Yes, it has. There are specifications that require you to use a little bit better fixture or lamp. With LEDs, all LEDs require a DLC listing. That has helped me make sure I specify and install the possibly better equipment.

Equipment certainly, because when we look at a rooftop unit, which units we want to install, we usually look at the requirement for the incentive program, if the efficiency goes up this most, look at the actual cost, is it worth it. You are going to have efficient equipment, it may cost you more, but you are going to get incentive. In the long run, you save energy and the differential cost and payback is pretty good.

The changes were the more we got involved with energy efficiency, it caused us to probably add that to our list of what to offer clients when we were talking to them. It has helped us to offer more things to the client than we did before.

Trade allies were also asked if the program resulted in additional hiring of staff. Half of the trade allies interviewed stated that they had not changed the number of employees as a result of the DCEO Programs. The other half however, stated that they had hired additional employees.

Yes. Installation crews for both HVAC and electrical. Six sales people. Two inside support operations staff. There were only two of us two years ago, plus two crews, now we have six crews (ranges from four to fifteen). All this because of DCEO and utility programs.

We have, yes. I have project managers that do lighting retrofit surveys, project management, they are also designers that work with the customer to identify and put costs and rebate return timeframes to energy measures.

5.12.7. **Trade Ally Rallies and Ways to Better Support Trade Allies**

As previously discussed, the DCEO hosts trade ally rallies to promote its incentives and provide an opportunity for trade allies to network with each other and meet potential clients. All of the trade allies reported having attended at least one rally. One noted that he had actually presented at one of the rallies. Trade allies noted that attendance was useful both for networking and for the content of presentations. The rallies are recognized by trade allies as a good forum for getting questions answered and for learning about program changes.

One suggestion provided by a trade ally was to have a rally where only trade allies attend, separate from rallies where both potential customers and trade allies attend together. This would provide a forum to discuss program issues that affect the trade allies. Another trade ally suggested that the presentations should be improved so that they are quicker and more to the point to hold interest better. Generally, however, the trade ally rallies were well-received and judged as beneficial and worth the time to attend.

Trade allies were asked if there were additional ways that the DCEO could support them. The. suggestions made include the following:

- Additional marketing of programs;
- Better presentation of information on the website; and
- Simplify the application process.

5.12.8. **Conclusions and Recommendations**

Based on the information presented above, ADM provides the following conclusions and recommendations:

- **Varying Levels of Activity**: The range in the number of projects completed is from one project to over forty projects, and half of the trade allies have completed five or fewer projects. This would seem to indicate that some of the trade allies are much more active in pursuing project work under the DCEO programs than other trade allies. Most of the projects are lighting projects – replacing existing bulbs and fixtures with LED or fluorescent.
- **Trade Allies Promote Programs**: Most trade allies interviewed reported marketing DCEO program incentives. However, some of this marketing appears to consist of mentioning the existence of incentive programs rather than active promotion of the DCEO incentive programs. Trade allies also reported that customers often know about the existence of the programs.
- **Customer Interest in Programs is High**: Customer interest in the incentive programs is high, whether they already knew about their existence or whether the trade ally is the source of the information. There is interest in energy efficiency and in the savings that can be realized. The availability of the incentives helps trade allies sell projects, because they ease the financial barriers to project completion. Certainly fewer projects would be completed if the incentives were not available, but trade allies generally report that the incentives are rarely the sole decision factor.

  Trade allies' discussions with their customers about energy efficiency projects focus more on financial considerations (project payback, ROI, maintenance savings) than on energy conservation. Certainly energy conservation is important, but energy savings without a financial savings would not be sufficient to move most projects forward.
- **Potential Areas for Program Improvement**: Most of the trade allies have completed projects through the utility programs and also under programs in other states. The DCEO incentive programs compare favorably with similar programs in other states and with utility programs. However, the DCEO approval process seems to be slower and some found the application more cumbersome. Generally the same information is required for the application process from the DCEO as from the utilities, although some trade allies feel that the DCEO application asks for more information and that there is some redundancy.

Trade allies reported that the DCEO is understaffed. While emails and phone calls are answered, there is often a delay. Overall, however, staff members are viewed as responsive and knowledgeable.

- **Incentives Considered Sufficient**: The current amounts of incentives are deemed as sufficient, although most would like to see higher levels. Many would especially like to see higher incentives for LED projects.
- **Trade Ally Customers Interested in LED Lighting**: LED lighting was the most frequently mentioned trend in energy efficiency that trade allies reported noticing. However, trade allies noted that the initial costs of LED lighting are high and that incentives provided cover a much smaller share of the project costs than they do for a fluorescent lighting project. In addition to LED lighting, trade allies reported noticing interest in controls.
- **Programs have Impacted Trade Ally Businesses**: Trade allies reported that the DCEO and utility programs have impacted their businesses, suggesting that these programs may be transforming the energy efficiency market in Illinois. Some trade allies reported that the services offered and the products carried have changed as a result of participating in the DCEO programs. Generally this means a higher quality fixture than what was formerly carried. However, the major impact on the trade ally appears to be the addition of staff. Over half of the trade allies report having added staff to work with applications, promote the programs and projects, and do the project work.
- **Trade Ally Rallies are a Success**: All of the interviewed trade allies had attended one of the rallies and they found them to be useful. The rallies provide opportunities to network with peer and customers, and provide a forum for discussion and dissemination of information.

6. Conclusions and Recommendations

The interviews and surveys that were conducted with EPY5/GPY2 participants in the Custom and Standard Incentives Programs, and participants in the New Construction Program suggest that the programs were effective in their delivery and operations.

6.1. **Key Conclusions**

The following presents a selection of key conclusions from EPY5/GPY2:

- **Combined Gross Realized Savings Decreased from Prior Program Year**: In comparison to last year, the realized gross electric and natural gas savings for all three programs combined decreased. The lower activity was due to decreased Custom Incentive Program savings. Although the number of custom incentive projects increased from the prior year, the average savings decreased. Realized gross savings for the Standard Incentives and New Construction Programs increased from EPY4/GPY1.
- **Increased Participation from K-12 Schools**: The share of applications submitted by K-12 schools increased markedly in EPY5/GPY2 from the prior program year. In particular, the number of custom projects completed by K-12 schools increased significantly. The share of custom applications submitted by K-12 schools increased from 25% to 47% and the share of standard applications increased from 40% to 49%. The increase in participation was in part due to the participation of the Chicago Public Schools, which participated for the first time during the program year and completed projects at more than 160 locations.

  In addition to K-12 schools, the other sector that accounted for a large share of program participation were local government facilities As with the prior year, federal facilities, state facilities, community colleges, and universities represented a small share of the number of completed applications.
- **Limited Activity in the New Construction Program**: There were a limited number of projects completed through the New Construction Program during the program year. This may reflect continued restricted building activity due to limited budget resources in the public sector. To increase participation in the program, prescriptive incentives were offered during EPY5/GPY2. The prescriptive incentives were added to increase the number of smaller new construction projects by providing incentives for energy efficient equipment without requiring the cost of completing building energy simulations. The prescriptive incentives may increase program activity in future years as awareness of the incentives increases.
- **High Program Satisfaction**: Overall, EPY5/GPY2 participants noted high levels of satisfaction with the programs. Fewer than three percent of survey respondents who participated in the Standard and Custom Programs indicated that they were dissatisfied with any of the rated aspects of the program and only one participant indicated dissatisfaction with

the program overall. Additionally, none of the survey respondents who participated in the New Construction Program indicated dissatisfaction with their program experience.

Few problems were noted regarding the implementation of the efficiency measures, the application process, the incentive amount, or the receipt of the incentive. Additionally, many of the comments in response to open ended questions indicated that participants had positive experiences with the programs.

- **Inconsistent Maintenance of Project Documentation, Status, and Storage**: It was noted during the evaluation process that the information included in project documentation was frequently inconsistent across projects. In particular, the granularity of project documentation varied and several projects involving multiple buildings did not have building level information. Additionally, some projects are not updated in the database when the project scope changes from what was presented in the initial application. Lastly, not all electronic documentation is stored in a central location.
- **Trade Allies Suggested Application Process Improvements**: Participants noted few problems with the application process and most trade allies indicated that the process was straightforward. However, some trade allies indicated that the forms and application process could be streamlined and that the application requires some additional effort in comparison to the requirements of utility programs they had participated in. Some of the suggestions made include simplifying the format and including step-by-step instructions, and to allow applicants to include multiple buildings for a single project on an application.
- **Trade Allies Offered Mixed Assessments of Program Awareness**: Interviewed trade allies offered mixed assessments of the level of awareness of the programs among their customers. Although several trade allies reported that most of their customers were aware of the programs, others indicated that relatively few were. Furthermore, trade allies noted that when customers were aware of the programs, they tended to have a fairly superficial level of awareness. That is, their customers were generally not aware of the specific incentives available. Continued promotion of the program is needed to ensure that potential participants are aware of the specific incentives that are available, the applicability of the incentives to potential projects at their facilities, and the potential cost savings. It is important for potential participants to understand how the incentives can make energy efficiency improvements financially viable for their organizations.

  Additionally, the extent to which trade allies were promoting the program and the number of DCEO projects that they had completed varied among those interviewed. Although it is difficult to form generalizations about the degree to which trade allies are promoting the program from the limited sample who were interviewed, the findings suggest that trade allies are engaged with the incentive programs to varying degrees.
- **Trade Allies Noted Budget Constraints are a Barrier to Efficiency Improvements**: Trade allies indicated that when speaking with their customers about projects they typically discuss

the financial aspects of the project. The discussions tend to frame the decision in terms of the project payback, return on investment, and maintenance savings. Despite the financial benefits from implementing new equipment and the money that can be saved by receiving an incentive, trade allies noted that some customers are difficult to convince to complete a project because of budget constraints.

- **Trade Ally Rallies are Valued**: Trade allies indicated that the trade ally rallies are a good forum for learning about the programs, clarifying questions about the program, and networking. Although one or more trade allies suggested that it would be beneficial if some of the presentations were more focused and that the DCEO should consider holding rallies that are only attended by trade allies, in general they found the rallies to be valuable and worth attending.

6.2. Program Recommendations

While interviews with program staff suggest that program organization and efficiency have continually improved during the period the programs have operated, several recommendations have been developed based on interview findings, survey results, and overall analysis of program processes. These recommendations may provide strategic advantage in future program years:

- **Integrate Trade Ally Information into Project Data**: The current project tracking data does not contain names and contact information for the trade allies that assisted with the projects. It would be beneficial if this information was tracked for future projects, as the inclusion of trade ally information would be useful to better support trade allies. Project tracking data that incorporates trade ally information may be useful for targeting less active trade allies and to potentially identify ways to increase their activity. Similarly, this information may be useful for identifying trade allies who submit incomplete or incorrect application materials so that they can receive additional instruction to improve the quality of the application submission.
- **Use Historical Billing Data to Check Expected Savings**: Although the differences between expected and realized savings were largely due to project specific factors, in a few cases the estimated projects savings were very large in comparison to the annual energy use for the site. It is recommended that the project managers use historical billing data to verify that claimed savings are reasonable.
- **Improve Application and Documentation Protocols**: Consider developing data entry protocols for all staff responsible for entering, maintaining, or updating the EEPS database. Specifically, all project data should be input at the building level with all required fields populated; when new versions of the application are submitted EEPS should be updated accordingly. Prior to incentives payment being dispersed DCEO project managers should ensure that EEPS accurately reflects all project and building level information. The above changes will further aid both project managers and management staff in the tracking project

activity and estimating energy savings, in addition to streamlining evaluation efforts. Much of the need for improved data management will likely be addressed through the recent development of a new electronic application process.

- **Add Capacity to Include Multiple Buildings on Application**: A recommendation stemming from the interviews with trade allies was to add the capacity to add multiple buildings to the application form. Building this capacity into the application form may also facilitate the collection of the more detailed building specific information needed for estimating project savings. This capacity has been incorporated into EPY6/GPY3 program year form.
- **Consider Allowing New Construction Projects in the Design Phase to Apply for Incentive**s: As was mentioned last year, working with new construction projects earlier in the design process may allow for the generation of deeper savings. Additionally, it may also reduce program free ridership because participants with completed design plans may be less likely to be influenced by the program incentives because they have already committed to project and its design specifications. The DCEO's partner, the Smart Energy Design Assistance Center (SEDAC), has implemented an initiative to expand their design assistant services to more new construction projects and to focus on transistioning these projects to the incentive program.

Appendix A: Survey Instrument for Decision Maker Survey

1. What was your role in the decision making process to implement the [ALL EQUIPMENT]?

( ) Main decision maker
( ) Assisted with the decision
( ) Was not part of the decision process

2. Who was the main decision maker? If multiple people were responsible for the decision, please provide the name of the person you think is most knowledgeable about the decision making process to implement the energy efficient equipment.

2A. What is this person's telephone number?

2B. What is this person's email address?

3. What are the sources your organization relies on for information about energy efficient equipment, materials and design features? (check all that apply)

( ) A DCEO representative
( ) The DCEO website
( ) Smart Energy Design Assistance Center (SEDAC)
( ) The Energy Resource Center (ERC)
( ) A utility representative
( ) Brochures or advertisements
( ) Trade associations or business groups you belong to
( ) Trade journals or magazines
( ) Friends and colleagues
( ) An architect, engineer, or energy consultant
( ) Equipment vendors or building contractors
( ) Other (please describe)

4. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility? (check all that apply)

( ) An energy management plan
( ) A staff member responsible for energy and energy efficiency
( ) Policies that incorporate energy efficiency in operations and procurement
( ) Active training of staff
( ) Other (please specify)
( ) Do not have policies or procedures for energy efficiency improvements

4A. Does your energy management plan include goals for energy savings?

( ) Yes
( ) No
( ) Don't know

4B. Could you describe the goals specified in your energy management plan?

5. How does your organization decide to make energy efficiency improvements for this facility? Is the decision:

( ) Made by one or two key people
( ) Made by a group or committee
( ) Based on staff recommendations to a decision maker
( ) Made in some other way
( ) Don't know

6. How does your organization fund energy efficiency improvements? (Select all that apply)

( ) Through a capital request
( ) Funds are taken from operation and maintenance budget
( ) Dedicated funding for energy efficient projects
( ) Other (please specify)
( ) Don't know

6A. Is there a dollar threshold for when a project requires a capital request? If so, what is it?

6B. How long does it take to receive approval for the capital request?

7. In your organization, how long does it typically take to get approval for equipment purchases?

8. What is the approval process for equipment purchases in your organization? (Select all that apply)

( ) An open bid is required
( ) Required to select lowest bidder
( ) Use a specific vendor
( ) Depends on the amount of purchase
( ) Follow state or federal procurement guidelines
( ) Follow procurement rules specific to our organization
( ) Other (please specify)
( ) Don't know

9. What barriers does your organization face in making energy efficiency improvements? (Select all that apply)

( ) Insufficient funding for improvements
( ) Lack of information on energy efficient equipment and practices
( ) Approval processes that are slow or make purchasing difficult
( ) Schedules that dictate when equipment is to be replaced or maintained regardless of efficiency levels
( ) Incentive program time requirements
( ) Current equipment that is too new to be replaced with more efficient equipment
( ) Other (please specify)
( ) Don't know

10. Is your organization able to utilize incentive or grant payments you receive for energy efficiency improvements, or are the payments placed in the general revenue fund?

( ) We are able to use the incentive payments for additional facility improvements including additional energy efficiency improvements
( ) Incentive payments return to the facility general operating fund
( ) Incentive payments go into the state general revenue fund
( ) Other (please specify)
( ) Don't know

11. How important are incentive or grant payments from DCEO for your decision making regarding energy efficiency improvements.

( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not important at all
( ) Don't know

12. How important is past experience with energy efficient equipment for your decision making regarding energy efficiency improvements?

( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not important at all
( ) Don't know

13. How important is advice and/or recommendations received from DCEO for your decision making regarding energy efficiency improvements?

( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not important at all
( ) Don't know

14. Which financial methods does your organization typically use to evaluate energy efficiency improvements for this facility? (Select all that apply)

( ) Initial Cost
( ) Simple payback
( ) Internal rate of return
( ) Life cycle cost
( ) None of these

14A. What payback length of time do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value, or an estimated range.

14B. What rate of return do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value, or an estimated range.

14C. What discount rate do you normally apply when determining life cycle costs? Please provide either a specific value, or an estimated range.

15. Has your organization purchased any energy efficient equipment in the last three years for which you did not apply for a financial incentive through an energy efficiency program?
( ) Yes, purchased energy efficient equipment but did not apply for incentive.
( ) No equipment was purchased by organization.
( ) No, an incentive was applied for.
( ) Don't know

15A. Why didn't you apply for a financial incentive for that equipment?

( ) Didn't know whether equipment qualified for financial incentives
( ) Financial incentive was insufficient
( ) Didn't have time to complete paperwork for financial incentive application
( ) Too much paperwork for the financial incentive application
( ) Didn't know about financial incentives until after equipment was purchased
( ) Other (please specify)
( ) Don't know

15B. Did you receive all of your incentives for these past energy efficiency projects?

( ) Yes
( ) No
( ) Don't know

16. How did you learn of the Public Sector Energy Efficiency Program? (Select all that apply)
( ) Approached directly by a representative of the Public Sector Energy Efficiency Program
( ) Received an information brochure on the Public Sector Energy Efficiency Program
( ) A DCEO representative mentioned it
( ) The DCEO website
( ) Smart Energy Design Assistance Center (SEDAC)
( ) The Energy Resource Center (ERC)
( ) A utility representative
( ) Friends or colleagues
( ) An architect, engineer, or energy consultant
( ) Attended a conference, workshop or seminar
( ) An energy service company
( ) Past experience with the program
( ) Equipment vendors or building contractors
( ) Other (please explain)
( ) Don't know

17. When did you learn of the Public Sector Energy Efficiency Program?
( ) Before planning for replacing the equipment began
( ) During your planning to replace the equipment
( ) Once equipment had been specified but not yet installed

( ) After equipment was installed
( ) Some other time (please explain)
( ) Don't know

18. Before participating in the Public Sector Energy Efficiency Program, had you installed any equipment or measure similar to the [MEASURE 1] at this facility?
( ) Yes
( ) No
( ) Don't know

19. Did you have plans to install the [MEASURE 1] that you installed through the program at this facility before participating in the Public Sector Energy Efficient Program?
( ) Yes
( ) No
( ) Don't know

19A. For about how long have you had plans to implement these measures prior to finding out about the program? Did you have plans for:

( ) Less than 6 months
( ) 6 months to less than 1 year
( ) 1 year to less than 2 years
( ) 2 years to less than 5 years
( ) 5 or more years
( ) Don't know

19B. Did your plans specify which specific energy efficiency measures you were going to implement?

( ) Yes
( ) No, it was more of a general plan
( ) Don't know

19C. Would you have gone ahead with this planned installation even if you had not participated in the program?

( ) Yes
( ) No
( ) Don't know

20. Did you have experience with DCEO energy efficiency programs prior to participating in the Public Sector Energy Efficiency Program?
( ) Yes
( ) No
( ) Don't know

20A. How important was previous experience with the DCEO programs in making your decision to install the [MEASURE 1]?

( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not at all important
( ) Don't know

21. Did a Public Sector Energy Efficiency Program or other DCEO representative recommend that you install the [MEASURE 1]?
( ) Yes
( ) No
( ) Don't know

21A. If the Public Sector Energy Efficiency Program representative had not recommended installing the equipment, how likely is it that you would have installed it anyway?

( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

22. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you install the [MEASURE 1]?
( ) Yes
( ) No
( ) Don't know

22A. If the SEDAC representative had not recommended installing the equipment, how likely is it that you would have installed it anyway?

( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

23. Would you have been financially able to install the [MEASURE 1] without the financial incentive or grant from the Public Sector Energy Efficiency Program?
( ) Yes
( ) No
( ) Don't know

24. If the financial incentive or grant from the Public Sector Energy Efficiency Program had not been available, how likely is it that you would have installed the [MEASURE 1] anyway?

( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

25. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the quantity (or number of units) of [MEASURE 1] that you purchased and installed? Did you purchase and install more [MEASURE 1] than you otherwise would have without the program?
( ) Yes
( ) No, program did not affect quantity purchased and installed
( ) Don't know

25A. How much/many more [MEASURE 1] did you install?

26. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the level of energy efficiency you chose for the [MEASURE 1]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
( ) Yes
( ) No, program did not affect level of efficiency chosen for equipment
( ) Don't know

26 A. How much more efficient [MEASURE 1 – no controls] did you install? (i.e., "xx% more efficient")

27. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the timing of your purchase and installation of the [MEASURE 1]? Did you purchase and install the [MEASURE 1] earlier than you otherwise would have without the program?
( ) Yes
( ) No, the program did not affect the timing of the purchase and installation
( ) Don't know

27A. When would you otherwise have installed the equipment? Would you have done it in:

( ) Less than 6 months
( ) 6 months to less than 1 year
( ) 1 year to less than 2 years
( ) 2 years to less than 5 years
( ) 5 or more years
( ) Don't know

28. Before participating in the Public Sector Energy Efficiency Program, had you installed any equipment or measure similar to the [MEASURE 2] at this facility?
( ) Yes

( ) No
( ) Don't know

29. Did you have plans to install the [MEASURE 2] that you installed through the program at this facility before participating in the Public Sector Energy Efficient Program?
( ) Yes
( ) No
( ) Don't know

29A. For about how long have you had plans to implement these measures prior to finding out about the program? Did you have plans for:

( ) Less than 6 months
( ) 6 months to less than 1 year
( ) 1 year to less than 2 years
( ) 2 years to less than 5 years
( ) 5 or more years
( ) Don't know

29B. Did your plans specify which specific energy efficiency measures you were going to implement?

( ) Yes
( ) No, it was more of a general plan
( ) Don't know

29C. Would you have gone ahead with this planned installation even if you had not participated in the program?

( ) Yes
( ) No
( ) Don't know

30. Did you have experience with DCEO energy efficiency programs prior to participating in the Public Sector Energy Efficiency Program?
( ) Yes
( ) No
( ) Don't know

30A. How important was previous experience with the DCEO programs in making your decision to install the [MEASURE 2]?

( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not at all important
( ) Don't know

31. Did a Public Sector Energy Efficiency Program or other DCEO representative recommend that you install the [MEASURE 2]?
( ) Yes
( ) No
( ) Don't know

31A. If the Public Sector Energy Efficiency Program representative had not recommended installing the equipment, how likely is it that you would have installed it anyway?

( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

32. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you install the [MEASURE 2]?
( ) Yes
( ) No
( ) Don't know

32A. If the SEDAC representative had not recommended installing the equipment, how likely is it that you would have installed it anyway?

( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

33. Would you have been financially able to install the [MEASURE 2] without the financial incentive or grant from the Public Sector Energy Efficiency Program?
( ) Yes
( ) No
( ) Don't know

34. If the financial incentive or grant from the Public Sector Energy Efficiency Program had not been available, how likely is it that you would have installed the [MEASURE 2] anyway?
( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

35. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the quantity (or number of units) of [MEASURE 2]

that you purchased and installed? Did you purchase and install more [MEASURE 2] than you otherwise would have without the program?
( ) Yes
( ) No, program did not affect quantity purchased and installed
( ) Don't know

35A. How much/many more [MEASURE 2] did you install?

36. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the level of energy efficiency you chose for the [MEASURE 2]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
( ) Yes
( ) No, program did not affect level of efficiency chosen for equipment
( ) Don't know

36A. How much more efficient [MEASURE 2 – no controls] did you install? (i.e., "xx% more efficient")

37. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the timing of your purchase and installation of the [MEASURE 2]? Did you purchase and install the [MEASURE 2] earlier than you otherwise would have without the program?
( ) Yes
( ) No, the program did not affect the timing of the purchase and installation
( ) Don't know

37A. When would you otherwise have installed the equipment? Would you have done it in:

( ) Less than 6 months
( ) 6 months to less than 1 year
( ) 1 year to less than 2 years
( ) 2 years to less than 5 years
( ) 5 or more years
( ) Don't know

38. Before participating in the Public Sector Energy Efficiency Program, had you installed any equipment or measure similar to the [MEASURE 3] at this facility?
( ) Yes
( ) No
( ) Don't know

39. Did you have plans to install the [MEASURE 3] that you installed through the program at this facility before participating in the Public Sector Energy Efficient Program?
( ) Yes
( ) No
( ) Don't know

39A. For about how long have you had plans to implement these measures prior to finding out about the program? Did you have plans for:

( ) Less than 6 months
( ) 6 months to less than 1 year
( ) 1 year to less than 2 years
( ) 2 years to less than 5 years
( ) 5 or more years
( ) Don't know

39B. Did your plans specify which specific energy efficiency measures you were going to implement?

( ) Yes
( ) No, it was more of a general plan
( ) Don't know

39C. Would you have gone ahead with this planned installation even if you had not participated in the program?

( ) Yes
( ) No
( ) Don't know

40. Did you have experience with DCEO energy efficiency programs prior to participating in the Public Sector Energy Efficiency Program?
( ) Yes
( ) No
( ) Don't know

40A. How important was previous experience with the DCEO programs in making your decision to install the [MEASURE 3]?

( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not at all important
( ) Don't know

41. Did a Public Sector Energy Efficiency Program or other DCEO representative recommend that you install the [MEASURE 3]?
( ) Yes
( ) No
( ) Don't know

41A. If the Public Sector Energy Efficiency Program representative had not recommended installing the equipment, how likely is it that you would have installed it anyway?

( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

42. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you install the [MEASURE 3]?
( ) Yes
( ) No
( ) Don't know

42A. If the SEDAC representative had not recommended installing the equipment, how likely is it that you would have installed it anyway?

( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

43. Would you have been financially able to install the [MEASURE 3] without the financial incentive or grant from the Public Sector Energy Efficiency Program?
( ) Yes
( ) No
( ) Don't know

44. If the financial incentive or grant from the Public Sector Energy Efficiency Program had not been available, how likely is it that you would have installed the [MEASURE 3] anyway?
( ) Definitely would have installed
( ) Probably would have installed
( ) Probably would not have installed
( ) Definitely would not have installed
( ) Don't know

45. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the quantity (or number of units) of [MEASURE 3] that you purchased and installed? Did you purchase and install more [MEASURE 3] than you otherwise would have without the program?
( ) Yes
( ) No, program did not affect quantity purchased and installed
( ) Don't know

45A. How much/many more [MEASURE 3] did you install?

46. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the level of energy efficiency you chose for the

[MEASURE 3]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
( ) Yes
( ) No, program did not affect level of efficiency chosen for equipment
( ) Don't know

46A. How much more efficient [question("value"), id="189"] did you install? (i.e., "xx% more efficient")

47. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the timing of your purchase and installation of the [MEASURE 3]? Did you purchase and install the [MEASURE 3] earlier than you otherwise would have without the program?
( ) Yes
( ) No, the program did not affect the timing of the purchase and installation
( ) Don't know

47A. When would you otherwise have installed the equipment? Would you have done it in:

( ) Less than 6 months
( ) 6 months to less than 1 year
( ) 1 year to less than 2 years
( ) 2 years to less than 5 years
( ) 5 or more years
( ) Don't know

48. Did the project implementation go smoothly?
( ) Yes
( ) For the most part
( ) No
( ) Don't know

48A. Please explain in what ways project implementation did not go smoothly.

49. Did the energy efficiency measure(s) meet your expectations?
( ) My expectations were exceeded
( ) My expectations were met
( ) My expectations were mostly met
( ) My expectations were not met
( ) Don't know

49A. Please explain in what ways the energy efficiency measure did not meet you expectations.

50. Do you feel you got a quality installation?
( ) Yes
( ) For the most part
( ) No

( ) Don't know

50A. Please explain in what ways you did not receive a quality installation.

51. Did the incentive agreement that you received meet your expectations?
( ) Yes
( ) No
( ) Don't know

51A. Please explain in what ways the incentive you received did not meet your expectations.

52. Did anyone from Public Sector Energy Efficiency Program or any other DCEO representative come to this facility to do a pre-inspection?
( ) Yes
( ) No
( ) Don't know

52A. Who performed the inspection?

52B. What did the inspection consist of?

53. Did anything change in the project design as a result of the pre-inspection?
( ) Yes
( ) No
( ) Don't know

53A. Please explain the way in which the program design changed as a result of the pre-inspection.

54. Did anyone from Public Sector Energy Efficiency Program or any other DCEO representative come to this facility to do a post-inspection?
( ) Yes
( ) No
( ) Don't know

54A. Who performed the inspection?

54B. What did the post-inspection consist of?

55. Did anything change in the incentive amount as a result of the post-inspection?
( ) Yes
( ) No
( ) Don't know

55A. Please explain how the incentive amount changed as a result of the post-inspection.

56. Were there any issues with receiving the incentive check?

( ) Yes
( ) No
( ) Don't know

56A. Please describe the issues you had with receiving the incentive check.

57. Was the incentive amount what you expected?
( ) Yes
( ) No
( ) Don't know

57A. Please explain how the incentive amount differed from what you expected.

58. Since participating in the Public Sector Energy Efficiency Program, have you implemented any additional energy measures similar to those you implemented through the program that you did not apply or receive an incentive for?
( ) Yes
( ) No
( ) Don't know

58A. Did the additional energy efficiency measures result in the same or higher level of efficiency improvement as the measures implemented through the program?

( ) Yes
( ) No
( ) Don't know

58B. Were these additional measures installed at the same facility (or facilities) as the energy efficiency measures that you received an incentive for?

( ) Yes
( ) Don't know
( ) No; Where was the equipment installed?:

58C. Did a recommendation from a program staff member or contractor influence your decision to implement the additional measures?

( ) Yes
( ) No
( ) Don't know

58D. How important was this recommendation to your decision to implement the additional energy efficiency measures?

( ) Very important
( ) Somewhat important
( ) Neither important or unimportant
( ) Somewhat unimportant

( ) Unimportant
( ) Don't know

58E. How important was your experience with the program or the [ALL EQUPIMENT] implemented through the program to your decision to implement the additional energy efficiency measures?

( ) Very important
( ) Somewhat important
( ) Neither important or unimportant
( ) Somewhat unimportant
( ) Unimportant
( ) Don't know

58F. How important was your participation in any past programs offered by DCEO to your decision to implement the additional energy efficiency measures.

( ) Very important
( ) Somewhat important
( ) Neither important or unimportant
( ) Somewhat unimportant
( ) Unimportant
( ) Don't know

58G. Why didn't you apply for or receive any financial assistance or incentives for those items?

( ) Didn't know whether equipment qualified for financial incentives
( ) Too much paperwork for the financial incentive application
( ) Financial incentive was insufficient
( ) Didn't have time to complete paperwork for financial incentive application
( ) Didn't know about financial incentives until after equipment was purchased
( ) For some other reason (please describe):

59. Since participating in the Public Sector Energy Efficiency Program, have you implemented any other energy efficient equipment that was not similar to what you implemented through the program that you did not apply or receive an incentive for?
( ) Yes
( ) No
( ) Don't know

59A. What energy efficient equipment did you purchase?

59B. Was this equipment installed at the same facility (or facilities) as the equipment for which you received a rebate?

( ) Yes
( ) Don't know
( ) No; Where was the equipment installed?:

59C. Did a recommendation from a program staff member or contractor influence your decision to implement the additional measures?

( ) Yes
( ) No
( ) Don't know

59D. How important was this recommendation in to your decision to implement the additional energy efficiency measures?

( ) Very important
( ) Somewhat important
( ) Neither important or unimportant
( ) Somewhat unimportant
( ) Unimportant
( ) Don't know

59E. How important was your experience with the program or the [ALL EQUPIMENT] implemented through the program to your decision to implement the additional energy efficiency measures?

( ) Very important
( ) Somewhat important
( ) Neither important or unimportant
( ) Somewhat unimportant
( ) Unimportant
( ) Don't know

59F. How important was your participation in any past programs offered by DCEO to your decision to implement the additional energy efficiency measures.

( ) Very important
( ) Somewhat important
( ) Neither important or unimportant
( ) Somewhat unimportant
( ) Unimportant
( ) Don't know

59G. Why didn't you apply for receive any financial assistance or incentives for those items?

( ) Didn't know whether equipment qualified for financial incentives
( ) Too much paperwork for the financial incentive application
( ) Financial incentive was insufficient
( ) Didn't have time to complete paperwork for financial incentive application
( ) Didn't know about financial incentives until after equipment was purchased
( ) For some other reason (please describe)
( ) Don't know

60. Given your experience with the Public Sector Energy Efficiency Program, would you buy energy efficient equipment in the future even if financial incentives or grants for such equipment were not being offered through the Public Sector Energy Efficiency Program?

( ) Yes
( ) No
( ) Don't know

61. How would you rate your satisfaction with the following - Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied?

- Information provided by DCEO Account Representative
- The effort required for the application process
- Performance of the equipment installed
- Quality of the work conducted by your contractor
- Information provided by Smart Energy Design Assistance Center (SEDAC)
- Savings on your monthly bill
- The elapsed time until you received the incentive
- Incentive amount
- Information provided by the Energy Resource Center (ERC)
- Overall program experience

61A. Please describe in what ways you were not satisfied with the program.

62. Do you have any other comments that you would like to relay to DECO about energy efficiency in public entities, or about their programs?

Thank You!

Thank you for taking our survey. Your response is very important to us.

Appendix B: Custom and Standard Decision Maker Survey Responses

As part of the evaluation work effort, a survey was made of a sample of decision makers for facilities that received incentives from the Custom and Standard Incentives Programs. The survey provided the information used in Chapter 4 to estimate free ridership for projects in the Custom and Standard Incentives Programs. However, the survey also provided more general information pertaining to the making of decisions to improve energy efficiency by program participants.

Each participant was interviewed using the survey instrument provided in Appendix A. The interviews were conducted by telephone or internet. During the interview, a participant was asked questions about (1) his or her general decision making regarding purchasing and installing energy efficient equipment, (2) his or her knowledge of and satisfaction with the program, and (3) the influence that the program had on his or her decision to install energy efficiency measures (e.g., lighting measures, HVAC measures,).

The following tabulations summarize participant survey responses. Two columns of data are presented. The first column presents the number of survey respondents (n). The second column presents the percentage of survey respondents.

1. What was your role in the decision making process to implement the energy efficiency project?	*Response*	*(n=241)*	*Percent of Respondents*
	Main decision maker	129	54%
	Assisted with the decision	103	43%
	Was not part of the decision process	9	4%

3. What are the sources your organization relies on for information about energy efficient equipment, materials and design features?	*Response*	*(n=235)*	*Percent of Respondents**
	A DCEO representative	37	16%
	The DCEO website	64	27%
	Smart Energy Design Assistance Center (SEDAC)	46	20%
	The Energy Resource Center (ERC)	8	3%
	A utility representative	25	11%
	Brochures or advertisements	28	12%
	Trade associations or business groups you belong to	26	11%
	Trade journals or magazines	31	13%
	Friends and colleagues	58	25%
	An architect, engineer, or energy consultant	88	37%
	Equipment vendors or building contractors	102	43%
	Other (please describe)	55	23%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

4. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility?	*Response*	*(n=230)*	*Percent of Respondents**
	An energy management plan	40	17%
	A staff member responsible for energy and energy efficiency	101	44%
	Policies that incorporate energy efficiency in operations and procurement	60	26%
	Active training of staff	48	21%
	Other	13	6%
	Do not have policies or procedures for energy efficiency improvements	90	39%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

4A. Does your energy management plan include goals for energy savings?	*Response*	*(n=40)*	*Percent of Respondents*
	Yes	29	73%
	No	9	23%
	Don't Know	2	5%

	Response	*(n=235)*	*Percent of Respondents*
5. How does your organization decide to make energy efficiency improvements for this facility? Is the decision:	Made by one or two key people	73	31%
	Made by a group or committee	92	39%
	Based on staff recommendations to a decision maker	62	26%
	Made in some other way	8	3%
	Don't know	0	0%

	Response	*(n=234)*	*Percent of Respondents**
6. How does your organization fund energy efficiency improvements?	Through a capital request	87	37%
	Funds are taken from operation and maintenance budget	177	76%
	Dedicated funding for energy efficient projects	44	19%
	Other (please specify)	33	14%
	Don't know	3	1%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

	Response	*(n=81)*	*Percent of Respondents*
6A. Is there a dollar threshold for when a project requires a capital request? If so, what is it?	Yes	57	70%
	No	23	28%
	Average Theshold if "Yes" (in Dollars)		$18,009

	Average Number of Days, (n=61)		
6B. How long does it take to receive approval for the capital request?	Average		143

	Average Number of Days, (n=201)		
7. In your organization, how long does it typically take to get approval for equipment purchases?	Average		66

	Response	*(n=230)*	*Percent of Respondents**
8. What is the approval process for equipment purchases in your organization?	An open bid is required	108	47%
	Required to select lowest bidder	59	26%
	Use a specific vendor	22	10%
	Depends on the amount of purchase	172	75%
	Follow state or federal procurement guidelines	112	49%
	Follow procurement rules specific to our organization	81	35%
	Other	16	7%
	Don't know	0	0%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

	Response	*(n=235)*	*Percent of Respondents**
9. What barriers does your organization face in making energy efficiency improvements?	Insufficient funding for improvements	176	75%
	Lack of information on energy efficient equipment and practices	34	14%
	Approval processes that are slow or make purchasing difficult	28	12%
	Preset schedules for replacing equipment	32	14%
	Incentive program time requirements	31	13%
	The age of current equipment	35	15%
	Other (please specify)	19	8%
	Don't know	11	5%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

	Response	*(n=234)*	*Percent of Respondents*
10. Is your organization able to utilize incentive or grant payments you receive for energy efficiency improvements, or are the payments placed in the general revenue fund?	Use the incentives for additional improvements including energy efficiency improvements	134	57%
	Incentive payments return to the facility general operating fund	67	29%
	Incentive payments go into the state general revenue fund	4	2%
	Other	25	11%
	Don't know	4	2%

11. How important are incentive or grant payments from DCEO for your decision making regarding energy efficiency improvements?	*Response*	*(n=234)*	*Percent of Respondents*
	Very important	210	90%
	Somewhat important	18	8%
	Only slightly important	6	3%
	Not important at all	0	0%
	Don't know	0	0%

12. How important is past experience with energy efficient equipment for your decision making regarding energy efficiency improvements?	*Response*	*(n=234)*	*Percent of Respondents*
	Very important	167	71%
	Somewhat important	58	25%
	Only slightly important	5	2%
	Not important at all	1	0%
	Don't know	3	1%

13. How important is advice and/or recommendations received from DCEO for your decision making regarding energy efficiency improvements?	*Response*	*(n=233)*	*Percent of Respondents*
	Very important	134	58%
	Somewhat important	78	33%
	Only slightly important	14	6%
	Not important at all	3	1%
	Don't know	4	2%

14. Which financial methods does your organization typically use to evaluate energy efficiency improvements for your facility?	*Response*	*(n=235)*	*Percent of Respondents**
	Initial cost	155	67%
	Simple payback	138	60%
	Internal rate of return	68	30%
	Life cycle cost	81	35%
	None of these	6	3%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

14A. What payback (length of time) do you normally require in order to consider an energy investment cost effective?	*Average (Years) (n=127)*	
	Average	4.1

14C. What discount rate do you normally apply when determining life cycle costs? Please provide either a specific value, or an estimated range.	*Discount rate (n=26)*	
	Average	25.4

15. Has your organization purchased any energy efficient equipment in the last three years for which you did not apply for a financial incentive through an energy efficiency program?	*Response*	*(n=233)*	*Percent of Respondents*
	Yes, purchased energy efficient equipment but did not apply for incentive	98	42%
	No equipment was purchased by organization	57	24%
	No, an incentive was applied for	59	25%
	Don't know	19	8%

15A. Why didn't you apply for a financial incentive for that equipment?	*Response*	*(n=97)*	*Percent of Respondents*
	Didn't know whether equipment qualified for financial incentives	17	18%
	Financial incentive was insufficient	3	3%
	Didn't have time to complete paperwork for financial incentive application	11	11%
	Too much paperwork for the financial incentive application	6	6%
	Didn't know about financial incentives until after equipment was purchased	18	19%
	Other	40	41%
	Don't know	2	2%

15B. Did you receive all of your incentives for these past energy efficiency projects?	*Response*	*(n=58)*	*Percent of Respondents*
	Yes	54	93%
	No	3	5%
	Don't know	1	2%

	Response	*(n=235)*	*Percent of Respondents**
16. How did you learn of the Public Sector Energy Efficiency Program?	Approached by a representative of the Public Sector Energy Efficiency Program	15	7%
	Received an information brochure on the Public Sector Energy Efficiency Program	28	12%
	A DCEO representative mentioned it	18	8%
	The DCEO website	34	15%
	Smart Energy Design Assistance Center (SEDAC)	30	13%
	The Energy Resource Center (ERC)	4	2%
	A utility representative	18	8%
	Friends or colleagues	46	20%
	An architect, engineer, or energy consultant	54	23%
	Attended a conference, workshop or seminar	43	19%
	An energy service company	10	4%
	Past experience with the program	24	10%
	Equipment vendors or building contractors	72	31%
	Other (please explain)	43	19%
	Don't know	6	3%

**Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.*

	Response	*(n=232)*	*Percent of Respondents*
17. When did you learn of the Public Sector Energy Efficiency Program?	Before planning for replacing the equipment began	159	69%
	During your planning to replace the equipment	56	24%
	Once equipment had been specified but not yet installed	4	2%
	After equipment was installed	7	3%
	Some other time (please explain)	1	0%
	Don't know	5	2%

	Response	*(n=361)**	*Percent of Respondents*
18, 28, and 38. Before participating in the Public Sector Energy Efficiency Program, had you installed any equipment or measure similar to the [MEASURE 1] at this facility?	Yes	139	39%
	No	210	58%
	Don't know	12	3%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

19, 29, and 39. Did you have plans to install the [MEASURE 1] that you installed through the program at this facility before participating in the Public Sector Energy Efficient Program?	*Response*	*(n=362)**	*Percent of Respondents*
	Yes	155	43%
	No	186	51%
	Don't Know	21	6%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

19A, 29A, and 39A. For about how long have you had plans to implement these measures prior to finding out about the program? Did you have plans for:	*Response*	*(n=150)**	*Percent of Respondents*
	Less than 6 months	21	14%
	6 months to less than 1 year	41	27%
	1 year to less than 2 years	45	30%
	2 years to less than 5 years	30	20%
	5 or more years	11	7%
	Don't know	2	1%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

19B, 29B, and 39B. Did your plans specify which specific energy efficiency measures you were going to implement?	*Response*	*(n=153)**	*Percent of Respondents*
	Yes	62	41%
	No	91	59%
	Don't know	0	0%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

19C, 29C, and 39C. Would you have gone ahead with this planned installation even if you had not participated in the program?	*Response*	*(n=153)**	*Percent of Respondents*
	Yes	98	64%
	No	32	21%
	Don't know	23	15%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

20, 30, and 40. Did you have experience with DCEO energy efficiency programs prior to participating in the Public Sector Energy Efficiency Program?	*Response*	*(n=360)**	*Percent of Respondents*
	Yes	105	29%
	No	242	67%
	Don't know	13	4%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

20A, 30A, and 40A. How important was previous experience with the DCEO programs in making your decision to install [Equipment/Measure]?	*Response*	*(n=103)**	*Percent of Respondents*
	Very important	73	71%
	Somewhat important	26	25%
	Only slightly important	4	4%
	Not at all important	0	0%
	Don't know	0	0%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

21, 31, and 41. Did a Public Sector Energy Efficiency Program or other DCEO representative recommend that you install the [MEASURE 1]?	*Response*	*(n=358)**	*Percent of Respondents*
	Yes	76	21%
	No	250	70%
	Don't know	32	9%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

21A, 31A, and 41A. If the Public Sector Energy Efficiency Program representative had not recommended installing the equipment, how likely is it that you would have installed it anyway?	*Response*	*(n=74)**	*Percent of Respondents*
	Definitely would have installed	5	7%
	Probably would have installed	28	38%
	Probably would not have installed	32	43%
	Definitely would not have installed	7	9%
	Don't know	2	3%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

22, 32, and 42. Did a representative of the Smart Energy Design Assistance Center (SEDAC) recommend that you install the [MEASURE 1]?	*Response*	*(n=358)**	*Percent of Respondents*
	Yes	73	20%
	No	243	68%
	Don't know	42	12%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

22A, 32A, and 42A. If the SEDAC representative had not recommended installing the equipment, how likely is it that you would have installed it anyway??	*Response*	*(n=70)**	*Percent of Respondents*
	Definitely would have installed	7	10%
	Probably would have installed	28	40%
	Probably would not have installed	28	40%
	Definitely would not have installed	3	4%
	Don't know	4	6%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

23, 33, and 43. Would you have been financially able to install the [MEASURE 1] without the financial incentive or grant from the Public Sector Energy Efficiency Program?	*Response*	*(n=357)**	*Percent of Respondents*
	Yes	116	32%
	No	197	55%
	Don't know	44	12%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

24, 34, and 44. If the financial incentive or grant from the Public Sector Energy Efficiency Program had not been available, how likely is it that you would have installed the [MEASURE 1] anyway?	*Response*	*(n=360)**	*Percent of Respondents*
	Definitely would have installed	37	10%
	Probably would have installed	125	35%
	Probably would not have installed	135	38%
	Definitely would not have installed	47	13%
	Don't know	16	4%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

25, 35, and 45. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the quantity (or number of units) of [MEASURE 1] that you purchased and installed? Did you purchase and install more [MEASURE 1] than you otherwise would have without the program?	*Response*	*(n=358)**	*Percent of Respondents*
	Yes	162	45%
	Did not affect quantity purchased and installed	167	47%
	Don't know	29	8%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

26, 27, and 28. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the level of energy efficiency you chose for the [MEASURE 1]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?	*Response*	*(n=172)**	*Percent of Respondents*
	Yes	89	52%
	No, program did not affect level of efficiency chosen for equipment	78	45%
	Don't know	5	3%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

26A, 36A, and 46A. How much more efficient [MEASURE 1 – no controls] did you install? (i.e., "xx% more efficient")	*Percent more efficient., (n=51)*		
	Average		43.74509804

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

27, 28, and 29. How did the availability of information and financial incentives or grants through the Public Sector Energy Efficiency Program affect the timing of your purchase and installation of the [MEASURE 1]? Did you purchase and install the [MEASURE 1] earlier than you otherwise would have without the program?	*Response*	*(n=358)**	*Percent of Respondents*
	Yes	224	63%
	No, the program did not affect the timing of the purchase and installation	113	32%
	Don't know	21	6%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

	Response	*(n=224)**	*Percent of Respondents*
27A, 37A, and 47A. When would you otherwise have installed the equipment? Would you have done it in:	Less than 6 months	1	0%
	6 months to less than 1 year	13	6%
	1 year to less than 2 years	38	17%
	2 years to less than 5 years	75	33%
	5 or more years	59	26%
	Don't know	38	17%

**Each decision maker may have answered more than one time. Questions may have been repeated for each measure type implemented.*

	Response	*(n=229)*	*Percent of Respondents*
48. Did the project implementation go smoothly?	Yes	213	93%
	For the most part	15	7%
	No	0	0%
	Don't know	1	0%

	Response	*(n=231)*	*Percent of Respondents*
49. Did the energy efficiency measure(s) meet your expectations?	My expectations were exceeded	72	31%
	My expectations were met	137	59%
	My expectations were mostly met	10	4%
	My expectations were not met	0	0%
	Don't know	12	5%

	Response	*(n=230)*	*Percent of Respondents*
50. Do you feel you got a quality installation?	Yes	223	97%
	For the most part	6	3%
	No	0	0%
	Don't know	1	0%

	Response	*(n=231)*	*Percent of Respondents*
51. Did the incentive agreement that you received meet your expectations?	Yes	223	97%
	No	4	2%
	Don't know	4	2%

	Response	*(n=229)*	*Percent of Respondents*
52. Did anyone from Public Sector Energy Efficiency Program or any other DCEO representative come to this facility to do a pre-inspection?	Yes	41	18%
	No	134	59%
	Don't know	54	24%

53. Did anything change in the project design as a result of the pre-inspection?	*Response*	*(n=40)*	*Percent of Respondents*
	Yes	7	18%
	No	32	80%
	Don't know	1	3%

54. Did anyone from Public Sector Energy Efficiency Program or any other DCEO representative come to this facility to do a post-inspection?	*Response*	*(n=231)*	*Percent of Respondents*
	Yes	54	23%
	No	129	56%
	Don't know	48	21%

55. Did anything change in the incentive amount as a result of the post-inspection?	*Response*	*(n=52)*	*Percent of Respondents*
	Yes	3	6%
	No	45	87%
	Don't know	4	8%

56. Were there any issues with receiving the incentive check?	*Response*	*(n=228)*	*Percent of Respondents*
	Yes	12	5%
	No	207	91%
	Don't know	9	4%

57. Was the incentive amount what you expected?	*Response*	*(n=229)*	*Percent of Respondents*
	Yes	213	93%
	No	8	3%
	Don't know	8	3%

58. Since participating in the Public Sector Energy Efficiency Program, have you implemented any additional energy measures similar to those you implemented through the program that you did not apply or receive an incentive for?	*Response*	*(n=228)*	*Percent of Respondents*
	Yes	34	15%
	No	187	82%
	Don't know	7	3%

58A. Did the additional energy efficiency measures result in the same or higher level of efficiency improvement as the measures implemented through the program?	*Response*	*(n=34)*	*Percent of Respondents*
	Yes	28	82%
	No	2	6%
	Don't know	4	12%

58B. Were these additional measures installed at the same facility (or facilities) as the energy efficiency measures that you received an incentive for?	*Response*	*(n=34)*	*Percent of Respondents*
	Yes	21	62%
	No	10	29%
	Don't know	3	9%

58C. Did a recommendation from a program staff member or contractor influence your decision to implement the additional measures?	*Response*	*(n=32)*	*Percent of Respondents*
	Yes	13	41%
	No	19	59%
	Don't know	0	0%

58D. How important was this recommendation to your decision to implement the additional energy efficiency measures?	*Response*	*(n=13)*	*Percent of Respondents*
	Very important	7	54%
	Somewhat important	5	38%
	Neither important or unimportant	0	0%
	Somewhat unimportant	1	8%
	Unimportant	0	0%
	Don't know	0	0%

58E. How important was your experience with the program or the [ALL EQUPIMENT] implemented through the program to your decision to implement the additional energy efficiency measures?	*Response*	*(n=33)*	*Percent of Respondents*
	Very important	21	64%
	Somewhat important	11	33%
	Neither important or unimportant	1	3%
	Somewhat unimportant	0	0%
	Unimportant	0	0%
	Don't know	0	0%

58F. How important was your participation in any past programs offered by DCEO to your decision to implement the additional energy efficiency measures.	*Response*	*(n=32)*	*Percent of Respondents*
	Very important	17	53%
	Somewhat important	11	34%
	Neither important or unimportant	0	0%
	Somewhat unimportant	0	0%
	Unimportant	3	9%
	Don't know	1	3%

	Response	*(n=32)*	*Percent of Respondents*
58G. Why didn't you apply for or receive any financial assistance or incentives for those items?	Didn't know whether equipment qualified for financial incentives	2	6%
	Too much paperwork for the financial incentive application	1	3%
	Didn't have time to complete paperwork for financial incentive application	9	28%
	For some other reason (please describe)	13	41%
	Don't know	6	19%

59. Since participating in the Public Sector Energy Efficiency Program, have you implemented any other energy efficient equipment that was not similar to what you implemented through the program that you did not apply or receive an incentive for?	*Response*	*(n=228)*	*Percent of Respondents*
	Yes	21	9%
	No	196	86%
	Don't know	11	5%

59B. Was this equipment installed at the same facility (or facilities) as the equipment for which you received a rebate?	*Response*	*(n=20)*	*Percent of Respondents*
	Yes	14	70%
	No	6	30%
	Don't know	0	0%

59C. Did a recommendation from a program staff member or contractor influence your decision to implement the additional measures?	*Response*	*(n=20)*	*Percent of Respondents*
	Yes	7	35%
	No	13	65%
	Don't know	0	0%

59D. How important was this recommendation in to your decision to implement the additional energy efficiency measures?	*Response*	*(n=20)*	*Percent of Respondents*
	Very important	6	30%
	Somewhat important	2	10%
	Neither important or unimportant	3	15%
	Somewhat unimportant	1	5%
	Unimportant	3	15%
	Don't know	5	25%

59E. How important was your experience with the program or the [ALL EQUPIMENT] implemented through the program to your decision to implement the additional energy efficiency measures?	*Response*	*(n=20)*	*Percent of Respondents*
	Very important	7	35%
	Somewhat important	6	30%
	Neither important or unimportant	4	20%
	Somewhat unimportant	0	0%
	Unimportant	3	15%
	Don't know	0	0%

59F. How important was your participation in any past programs offered by DCEO to your decision to implement the additional energy efficiency measures.	*Response*	*(n=20)*	*Percent of Respondents*
	Very important	8	40%
	Somewhat important	6	30%
	Neither important or unimportant	2	10%
	Somewhat unimportant	0	0%
	Unimportant	4	20%
	Don't know	0	0%

59G. Why didn't you apply for receive any financial assistance or incentives for those items??	*Response*	*(n=20)*	*Percent of Respondents*
	Didn't know whether equipment qualified for financial incentives	4	20%
	Too much paperwork for the financial incentive application	1	5%
	Didn't have time to complete paperwork for financial incentive application	3	15%
	For some other reason (please describe)	11	55%
	Don't know	0	0%

60. Given your experience with the Public Sector Energy Efficiency Program, would you buy energy efficient equipment in the future even if financial incentives or grants for such equipment were not being offered through the Public Sector Energy Efficiency Program?	*Response*	*(n=225)*	*Percent of Respondents*
	Yes	153	68%
	No	30	13%
	Don't know	42	19%

61a. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the information provided by DCEO Account Representative?	*Response*	*(n=229)*	*Percent of Respondents**
	5	136	59%
	4	65	28%
	3	9	4%
	2	0	0%
	1	0	0%
	Not Applicable	19	8%
	Average		4.6

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

61b. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the effort required for the application process?	*Response*	*(n=229)*	*Percent of Respondents**
	5	125	55%
	4	82	36%
	3	12	5%
	2	4	2%
	1	1	0%
	Not Applicable	5	2%
	Average		4.5

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

61c. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the performance of the equipment installed?	*Response*	*(n=229)*	*Percent of Respondents**
	5	180	79%
	4	46	20%
	3	2	1%
	2	0	0%
	1	0	0%
	Not Applicable	1	0%
	Average		4.8

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

61d. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the quality of the work conducted by your contractor?	*Response*	*(n=229)*	*Percent of Respondents**
	5	173	76%
	4	48	21%
	3	2	1%
	2	0	0%
	1	0	0%
	Not Applicable	6	3%
	Average		4.8

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

61e. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the information provided by Smart Energy Design Assistance Center (SEDAC)?	*Response*	*(n=229)*	*Percent of Respondents**
	5	99	43%
	4	49	21%
	3	19	8%
	2	0	0%
	1	0	0%
	Not Applicable	62	27%
	Average		4.5

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

61f. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the savings on your monthly bill?	*Response*	*(n=229)*	*Percent of Respondents**
	5	118	52%
	4	76	33%
	3	9	4%
	2	0	0%
	1	0	0%
	Not Applicable	26	11%
	Average		4.5

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

61g. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the elapsed time until you received the incentive?	*Response*	*(n=229)*	*Percent of Respondents**
	5	120	52%
	4	87	38%
	3	15	7%
	2	1	0%
	1	1	0%
	Not Applicable	5	2%
	Average		4.4

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

61h. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the incentive amount?	*Response*	*(n=227)*	*Percent of Respondents**
	5	159	70%
	4	56	25%
	3	6	3%
	2	3	1%
	1	1	0%
	Not Applicable	2	1%
	Average		4.6

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

61i. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the information provided by the Energy Resource Center (ERC)?	*Response*	*(n=229)*	*Percent of Respondents**
	5	85	37%
	4	60	26%
	3	21	9%
	2	0	0%
	1	0	0%
	Not Applicable	63	28%
	Average		4.4

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

	Response	*(n=229)*	*Percent of Respondents**
61j. On a scale of 1 to 5, where "5" is very satisfied and "1" is very unsatisfied, how satisfied are you with the overall program experience?	5	165	72%
	4	60	26%
	3	2	1%
	2	1	0%
	1	0	0%
	Not Applicable	1	0%
	Average		4.7

**Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)*

Appendix C: Questionnaire for New Construction Survey

1. Name of public entity

2. Your name (please correct if necessary)

3. What was your role in making the decision to implement the energy efficiency measures in the new construction project completed through the program?
( ) Main decision maker
( ) Assisted with the decision to implement the measure
( ) Was not part of the decision process (If checked, go to 3A)
3A. Who was the main decision maker? If multiple people were responsible for the decision, please provide the name of the person you think is most knowledgeable about the decision making process for implementing the energy efficiency measures in the new construction process.
3B. What is this person's telephone number?
3C. What is this person's email address?

4. What are the sources your organization relies on for information about energy efficient equipment, materials and design features? (Check all that apply)
( ) A DCEO Representative
( ) The DCEO Website
( ) Utility representatives
( ) Brochures or advertisements
( ) Trade associations or business groups you belong to
( ) Trade journals or magazines
( ) Friends and colleagues
( ) Representatives of the Smart Energy Design Assistance Center (SEDAC)
( ) Representative of the Energy Resource Center (ERC)
( ) Architects, engineers or energy consultants
( ) Equipment vendors or building contractors
( ) Other (please describe)
( ) Don’t know

5. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements? (Check all that apply)
( ) An energy management plan (If checked, go to 5A)
( ) A designated staff member responsible for energy tracking and energy efficiency
( ) Policies that incorporate energy efficiency in operations and procurement

( ) Active training of staff
( ) None
( ) Other (please specify)
( ) Don't know

5A. Does your energy management plan include goals for energy savings?
( ) Yes (If checked, go to 5B)
( ) No
( ) Don't know

5B. Could you describe the goals specified in your energy management plan?

5C. How does your organization decide to incorporate energy efficient equipment or design features into new construction projects?

( ) Made by one or two key people
( ) Made by a group or committee
( ) Based on staff recommendations to a decision maker
( ) Made in some other way
( ) Don't know

6. In your organization, how long does it typically take to get approval for new construction projects?

7. What barriers does your organization face in developing energy efficient new construction projects? (Select all that apply)
( ) Insufficient funding for energy efficiency
( ) Lack of information on energy efficient equipment and design features
( ) Approval processes that slow or make incorporating energy efficiency difficult
( ) Incentive program time requirements
( ) Other (please specify)
( ) Don't know

8. Is your organization able to utilize incentive or grant payments you receive for energy efficiency improvements or are the payments placed in a general fund?
( ) We are able to use the incentive payments for additional facility improvements, including additional energy efficiency improvements
( ) Incentive payments return to the facility general operating fund
( ) Incentive payments go into the state general revenue fund
( ) Other (please specify)
( ) Don't know

9. How important are incentive payments from the DCEO for your decision making regarding implementing energy efficient equipment or design features?

( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not important at all
( ) Don't know

10. How important is advice and/or recommendations received from DCEO for your decision making regarding implementing energy efficient equipment or design features?
( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not important at all
( ) Don't know

11. Which financial methods does your organization typically use to evaluate energy efficiency investments? (Select all that apply)
( ) Initial Cost
( ) Simple payback (If checked, go to 11A)
( ) Internal rate of return (If checked, go to 11B)
( ) Life cycle cost (If checked, go to 11C)
( ) None of these
( ) Don’t know
11A. What payback length of time do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value or an estimated range.
11B. What rate of return do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value or an estimated range.
11C. What discount rate do you normally apply when determining life cycle costs? Please provide either a specific value or an estimated range.

12. Has your organization undertaken any energy efficient new construction projects in the last three years for which you did not apply for a financial incentive through an energy efficiency program?
( ) Yes, undertook energy efficient construction projects but did not apply for incentive. (If checked, go to 12A)
( ) No energy efficient construction projects were undertaken.
( ) No, an incentive was applied for. (If checked, go to 12B)
( ) Don't know
12A. Why didn't you apply for a financial incentive for that project?
( ) Didn't know whether project qualified for financial incentives
( ) Didn't know about financial incentives until after project was completed

( ) Didn't have time to complete paperwork for financial incentive application
( ) Too much paperwork for the financial incentive application
( ) Financial incentive was insufficient
( ) Other (please specify)
( ) Don’t know

12B. Did you receive all of your incentives for these past energy efficient projects?
( ) Yes
( ) No
( ) Don't know

13. How did you learn of the New Construction Program? (Select all that apply)
( ) From a New Construction Program Representative
( ) A DCEO representative mentioned it
( ) The DCEO Website
( ) From a utility representative
( ) Brochures or advertisements
( ) Trade association or business group you belong to
( ) Trade journal or magazine
( ) Friend or colleague
( ) From a representative of the Smart Energy Design Assistance Center (SEDAC)
( ) From a representative of the Energy Resource Center (ERC)
( ) An architect, engineer or energy consultant
( ) Equipment vendor or building contractor
( ) Attended a conference workshop or seminar
( ) Past experience with the program
( ) An energy service company
( ) Other (please specify)
( ) Don’t know

14. When did you learn of the New Construction Program?
( ) Before planning the project
( ) During the project planning and concept phase
( ) Once construction documents were completed but prior to beginning construction
( ) Once construction had begun but before completion of construction
( ) After construction was completed
( ) Some other time (please specify)
( ) Don't know

15. Before participating in the New Construction Program, had you completed new construction projects with similar levels of energy efficiency?

( ) Yes
( ) No
( ) Don't know

16. For the project you completed through the New Construction Program, did you have plans to build to the same efficiency level prior to participating in the program?
( ) Yes (If checked, go to 16A)
( ) No
( ) Don't know
16A. How long before finding out about the New Construction program did you have plans to complete the new construction project? Did you have plans for…
( ) Less than 6 months
( ) 6 months to less than a year
( ) 1 year to less than 2 years
( ) 2 years to less than 5 years
( ) 5 or more years
( ) Don't know
16B. Did your plans specify the design features related to the level of energy efficiency for the building?
( ) Yes
( ) No
( ) Don't know
16C. Would you have gone ahead with the same design specifications if you had not participated in the program?
( ) Yes
( ) No
( ) Don't know

17. Did you have experience with DCEO energy efficiency programs prior to participating in the New Construction Program?
( ) Yes (If checked, go to 17A)
( ) No
( ) Don't know
17A. How important was previous experience with the DCEO programs in making your decision to build to this efficiency level?
( ) Very important
( ) Somewhat important
( ) Only slightly important
( ) Not at all important
( ) Don't know

18. Did you receive any advice or recommendations from the DCEO or another program representative regarding energy efficiency design features for this project?
( ) Yes (If checked, go to 18A)
( ) No
( ) Don't know
18A. If the program representative had not recommended the design features, how likely is it that you would have built to the same efficiency level anyway?
( ) Definitely would have built to the same level
( ) Probably would have built to the same level
( ) Probably would not have built to the same level
( ) Definitely would not have built to the same level
( ) Don't know

19. Did you receive any advice or recommendations from the Smart Energy Design Assistance Center (SEDAC) regarding energy efficiency design features for this project?
( ) Yes
( ) No
( ) Don't know
19A. If the SEDAC representative had not recommended the design features, how likely is it that you would have built to the same efficiency level anyway?
( ) Definitely would have built to the same level
( ) Probably would have built to the same level
( ) Probably would not have built to the same level
( ) Definitely would not have built to the same level
( ) Don't know

20. Would you have been financially able to build to this efficiency level without the financial incentive from the New Construction Program?
( ) Yes
( ) No
( ) Don't know

21. If the financial incentive from the New Construction Program had not been available, how likely is it that you would have built to the same level of efficiency anyway?
( ) Definitely would have built to the same level
( ) Probably would have built to the same level
( ) Probably would not have built to the same level
( ) Definitely would not have built to the same level
( ) Don't know

22. How did the availability of information and financial incentives through the New Construction Program affect the quantity (or number of units) of energy efficient equipment or design features that you implemented in the project? Did you incorporate more energy efficient equipment or design features than you otherwise would have without the program?
( ) Yes (If checked, go to 22A)
( ) No, Program did not affect quantity purchased and installed
( ) Don't know
22A. Which additional energy efficient equipment or design features did you implement?

23. How did the availability of information and financial incentives through the New Construction Program affect the level of energy efficiency you built to? Did you build to a higher level of efficiency than you otherwise would have because of the program?
( ) Yes (If checked, go to 23A)
( ) No, program did not affect the level of efficiency.
( ) Don't know
23A. Without the program, to what level of efficiency would you have built to?
( ) A lower energy efficiency level, but still above code
( ) Built to code
( ) Other (please specify)
( ) Don't know

24. How did the availability of information and financial incentives through the New Construction Program affect the timing of the energy efficient new construction project? Did you complete the project earlier than you otherwise would have without the program?
( ) Yes
( ) No, program did not affect the timing of the project
( ) Don't know
24A. When would you otherwise have completed the project? Would you have done it in…
( ) Less than 6 months
( ) 6 months to less than a year
( ) 1 year to less than 2 years
( ) 2 years to less than 5 years
( ) 5 or more years
( ) Don't know

25. Did the implementation of the efficiency measures go smoothly?
( ) Yes
( ) For the most part (If checked, go to 25A)
( ) No (If checked, go to 25A)

( ) Don't know
25A. Please explain in what ways project implementation did not go smoothly.

26. Did the energy efficiency measures you adopted for this project meet your expectations?
( ) My expectations were exceeded
( ) My expectations were met
( ) My expectations were mostly met (If checked, go to 26A)
( ) My expectations were not met (If checked, go to 26A)
( ) Don't know
26A. Please explain in what ways the energy efficiency measures did not meet your expectations.

27. Did you have any problems with the application process?
( ) Yes (If checked, go to 27A)
( ) No
( ) Don't know
27A. What problems did you have?

28. Do you feel you got a quality installation of the efficiency measures?
( ) Yes
( ) For the most part (If checked, go to 28A)
( ) No (If checked, go to 28A)
( ) Don't know
28A. Please explain in what ways you did not receive a quality installation.

29. Did the incentive agreement that you received meet your expectations?
( ) Yes
( ) No (If checked, go to 29A)
( ) Don't know
29A. Please explain in what ways the incentive you received did not meet your expectations.

30. Did anyone from the New Construction Program or other DCEO or SEDAC representative come to this facility to do a pre-inspection?
( ) Yes (If checked, go to 30A, 30B, 30C)
( ) No
( ) Don't know
30A. Who performed the inspection?
30B. What did the pre-inspection consist of?
30C. Did anything change in the project design as a result of the pre-inspection?
( ) Yes (If checked, go to 30D)
( ) No

( ) Don't know
30D. Please explain the way in which the project design changed as a result of the pre-inspection.

31. Did anyone from the New Buildings Program or other DCEO or SEDAC representative come to this facility to do a post-inspection?
( ) Yes (If checked, go to 31A, 31B, 31C)
( ) No
( ) Don't know
31A. Who performed the inspection?
31B. What did the post-inspection consist of?
31C. Did anything change in the incentive amount as a result of the post-inspection?
( ) Yes (If checked, go to 31D)
( ) No
( ) Don't know
31D. Please explain how the incentive amount changed as a result of the post-inspection.

32. Were there any issues receiving the incentive check?
( ) Yes (If checked, go to 32A)
( ) No
( ) Don't know
32A. Please describe the issues you had with receiving the incentive check.

33. Was the incentive amount what you expected?
( ) Yes (If checked, go to 33A)
( ) No
( ) Don't know
33A. Please explain how the incentive amount differed from what you expected.

34. Since participating in the New Construction Program, have you implemented any additional energy efficiency measures similar to those you implemented through the program that you did not apply or receive an incentive for?
( ) Yes (If checked, go to 34A-34F)
( ) No
( ) Don't know
34A. Did the additional energy efficiency measures result in the same or higher level of efficiency improvement as the measures implemented through the program?
( ) Yes, they were the same or higher efficiency
( ) No
( ) Don't know

34B. Were these additional measures implemented at the same facility (or facilities) as the new construction project completed through the program?
( ) Yes
( ) No; Where was the equipment installed? (please specify)
( ) Don't know
34C. Did a recommendation from a program staff member or contractor influence your decision to implement the additional measures?
( ) Yes (If checked, go to 34C1)
( ) No
( ) Don't know
34C1. How important was the recommendation from a program staff member or contractor to your decision to implement the additional energy efficiency measures?
( ) Very important
( ) Somewhat important
( ) Neutral
( ) Somewhat unimportant
( ) Not important
( ) Don't know
34D. How important was your experience with the program or the energy efficient design features implemented through the program to your decision to implement the additional energy efficiency measures?
( ) Very important
( ) Somewhat important
( ) Neutral
( ) Somewhat unimportant
( ) Not important
( ) Don't know
34E. How important was your participation in any past programs offered by DCEO to your decision to implement the additional energy efficiency measures?
( ) Very important
( ) Somewhat important
( ) Neutral
( ) Somewhat unimportant
( ) Not important
( ) Don't know
34F. Why didn't you apply for or receive financial assistance or incentives for those items?
( ) Didn't know about financial incentives
( ) Didn't know whether the measures qualified for financial incentives
( ) Financial incentive was insufficient

( ) No financial incentive was offered
( ) Too much paperwork for the financial incentive application
( ) For some other reason (please describe)
( ) Don't know

35. Since participating in the program, have you implemented any other energy efficiency equipment that was not similar to what you implemented through the program and that you did not apply or receive an incentive for?
( ) Yes
( ) No
( ) Don't know
35A. What energy efficient equipment did you implement?
35B. Was this equipment installed at the same facility (or facilities) as the energy efficiency measures that you received an incentive for?
( ) Yes
( ) No; Where was the equipment installed? (please specify)
( ) Don't know
35C. Did a recommendation from a program staff member or contractor influence your decision to implement the additional measures?
( ) Yes
( ) No
( ) Don't know
35C1. How important was the recommendation from a program staff member or contractor to your decision to implement the additional energy efficiency measures?
( ) Very important
( ) Somewhat important
( ) Neutral
( ) Somewhat unimportant
( ) Not important
( ) Don't know
35D. How important was your experience with the program or the energy efficient equipment or design features implemented through the program to your decision to implement the additional energy efficiency measures?
( ) Very important
( ) Somewhat important
( ) Neutral
( ) Somewhat unimportant
( ) Not important
( ) Don't know

35E. How important was your participation in any past programs offered by DCEO to your decision to implement the additional energy efficiency measures?
( ) Very important
( ) Somewhat important
( ) Neutral
( ) Somewhat unimportant
( ) Not important
( ) Don't know
35F. Why didn't you apply for or receive financial assistance or incentives for those items?
( ) Didn't know about financial incentives
( ) Didn't know whether the measures qualified for financial incentives
( ) Financial incentive was insufficient
( ) No financial incentive was offered
( ) Too much paperwork for the financial incentive application
( ) For some other reason (please specify)
( ) Don't know

36. How would you rate your satisfaction with the following - Very Satisfied, Somewhat Satisfied, Neither Satisfied nor Dissatisfied, Somewhat Dissatisfied, or Very Dissatisfied?
- Performance of the equipment installed
- Savings on your monthly bill
- Incentive amount
- The effort required for the application process
- Information provided by your contractor
- Quality of the work conducted by your contractor
- Information provided by DCEO
- Information provided by Smart Energy Design Assistance Center (SEDAC)
- Information provided by the Energy Resource Center (ERC)
- The elapsed time until you received the incentive
- Overall program experience

36L. (If very dissatisfied or somewhat dissatisfied for any) Please describe in what ways you were not satisfied with the program.

37. Do you have any other comments that you would like to relay to DCEO about energy efficiency in public entities or about their programs?
Thank you for taking our survey. Your response is very important to us.

Appendix D: New Construction Survey Responses

As part of the evaluation work effort, a survey was made of a sample of decision makers for facilities that received incentives from the New Construction Program. The survey provided the information used in Chapter 4 to estimate free ridership for projects in the New Construction Program. However, the survey also provided more general information pertaining to the making of decisions to improve energy efficiency by program participants.

Each participant was interviewed using the survey instrument provided in Appendix C. The interviews were conducted by telephone. During the interview, a participant was asked questions about (1) his or her general decision making regarding the decision to incorporate beyond-code efficiency improvements in the construction project, (2) his or her knowledge of and satisfaction with the program, and (3) the influence that the program had on his or her decision to implement the beyond-code efficiency improvements.

The following tabulations summarize participant survey responses. Two columns of data are presented. The first column presents the number of survey respondents (*n*). The second column presents the percentage of survey respondents.

3. What was your role in making the decision to implement the energy efficiency measures in the new construction project completed through the program?	Response	(n=5)	Percent of Respondents
	Main decision maker	0	0%
	Assisted with the decision to implement the measure	5	100%
	Was not part of the decision process	0	0%

4. What are the sources your organization relies on for information about energy efficient equipment, materials and design features? (Do not read list. Check all that apply)	Response	(n=5)	Percent of Respondents*
	A DCEO Representative	2	40%
	The DCEO Website	1	20%
	Utility representatives	0	0%
	Brochures or advertisements	1	20%
	Trade associations or business groups you belong to	2	40%
	Trade journals or magazines	4	80%
	Friends and colleagues	3	60%
	Representatives of the Smart Energy Design Assistance Center (SEDAC)	2	40%
	Representative of the Energy Resource Center (ERC)	0	0%
	Architects, engineers or energy consultants	3	60%
	Equipment vendors or building contractors	2	40%
	Other (please describe)	3	60%
	Don't know	0	0%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

5. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility? (Read list. Check all that apply)	Response	(n=5)	Percent of Respondents*
	An energy management plan	1	20%
	A designated staff member responsible for energy tracking and energy efficiency	3	60%
	Policies that incorporate energy efficiency in operations and procurement	3	60%
	Active training of staff	0	0%
	None	0	0%
	Other (please describe)	0	0%
	Don't know	0	0%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

5a. Does your energy management plan include goals for energy savings?	Response	(n=1)	Percent of Respondents
	Yes	0	0%
	No	1	100%
	Don't know	0	0%

	Response	(n=5)	Percent of Respondents
5C. How does your organization decide to incorporate energy efficient equipment or design features into new construction projects?	Made by one or two key people	1	20%
	Made by a group or committee	2	40%
	Based on staff recommendations to a decision maker	2	40%
	Made in some other way	0	0%
	Don't know	0	0%

6. In your organization, how long does it typically take to get approval for new construction projects?	*Average Number of Days, (n=5)*	
	Average Months	3.0

	Response	(n=5)	Percent of Respondents*
7. What barriers does your organization face in developing energy efficient new construction projects? (Do not read list. Use as possible prompts. Select all that apply)	Insufficient funding for energy efficiency	4	80%
	Lack of information on energy efficient equipment and design features	2	40%
	Approval processes that slow or make incorporating energy efficiency difficult	2	40%
	Incentive program time requirements	2	40%
	Other (please specify)	1	20%
	Don't know	0	0%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

	Response	(n=5)	Percent of Respondents
8. Is your organization able to utilize incentive or grant payments you receive for energy efficiency improvements or are the payments placed in a general fund? (Do not read list. Use as possible prompts.)	We are able to use the incentive payments for additional facility improvements, including additional energy efficiency improvements	1	20%
	Incentive payments return to the facility general operating fund	2	40%
	Incentive payments go into the state general revenue fund	0	0%
	Other (please specify)	2	40%
	Don't know	0	0%

	Response	(n=5)	Percent of Respondents
9. How important are incentive payments from the DCEO for your decision making regarding implementing energy efficient equipment or design features? Would you say...(Read list)	Very important	4	80%
	Somewhat important	1	20%
	Only slightly important	0	0%
	Not important at all	0	0%
	Don't know	0	0%

10. How important is advice and/or recommendations received from DCEO for your decision making regarding implementing energy efficient equipment or design features? Would you say... (Read list)	Response	(n=5)	Percent of Respondents
	Very important	1	20%
	Somewhat important	3	60%
	Only slightly important	1	20%
	Not important at all	0	0%
	Don't know	0	0%

11. Which financial methods does your organization typically use to evaluate energy efficiency investments? (Read list. Select all that apply)	Response	(n=5)	Percent of Respondents*
	Initial Cost	4	80%
	Simple payback	4	80%
	Internal rate of return	1	20%
	Life cycle cost	1	20%
	None of these	0	0%
	Don't know	0	0%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

11A. What payback length of time do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value or an estimated range.	*Average Number of Years, (n=2)*	
	Average Years	4.8

11B. What rate of return do you normally require in order to proceed with an energy efficiency project? Please provide either a specific value or an estimated range.	*Average Rate of Return, (n=1)*	
	Average	4%

11C. What discount rate do you normally apply when determining life cycle costs? Please provide either a specific value or an estimated range.	*Average Discount Rate, (n=1)*	
	Average	4%

12. Has your organization undertaken any energy efficient new construction projects in the last three years for which you did not apply for a financial incentive through an energy efficiency program? (Do not read list)	Response	(n=5)	Percent of Respondents
	Yes, undertook energy efficient construction projects but did not apply for incentive.	1	20%
	No energy efficient construction projects were undertaken.	1	20%
	No, an incentive was applied for.	2	40%
	Don't know	1	20%

	Response	(n=1)	Percent of Respondents
12a. Why didn't you apply for a financial incentive for that project?	Didn't know whether project qualified for financial incentives	1	100%
	Didn't know about financial incentives until after project was completed	0	0%
	Didn't have time to complete paperwork for financial incentive application	0	0%
	Too much paperwork for the financial incentive application	0	0%
	Financial incentive was insufficient	0	0%
	Other (please specify)	0	0%
	Don't know	0	0%

	Response	(n=2)	Percent of Respondents
12b. Did you receive all of your incentives for these past energy efficient projects?	Yes	0	0%
	No	1	50%
	Don't know	1	50%

	Response	(n=5)	Percent of Respondents*
13. How did you learn of the New Construction Program? (Do not read list. Select all that apply)	From a New Construction Program Representative	0	0%
	A DCEO representative mentioned it	1	20%
	The DCEO Website	0	0%
	From a utility representative	0	0%
	Brochures or advertisements	0	0%
	Trade association or business group you belong to	0	0%
	Trade journal or magazine	0	0%
	Friend or colleague	1	20%
	From a representative of the Smart Energy Design Assistance Center (SEDAC)	1	20%
	From a representative of the Energy Resource Center (ERC)	0	0%
	An architect, engineer or energy consultant	1	20%
	Equipment vendor or building contractor	0	0%
	Attended a conference workshop or seminar	1	20%
	Past experience with the program	0	0%
	An energy service company	0	0%
	Other (please specify)	0	0%
	Don't know	0	0%

*Since respondents were able to select more than one response, the sum of the percentages in the table above can exceed 100%.

14. When did you learn of the New Construction Program? Was it...(Read list)	Response	(n=5)	Percent of Respondents
	Before planning the project	1	20%
	During the project planning and concept phase	2	40%
	Once construction documents were completed but prior to beginning construction	0	0%
	Once construction had begun but before completion of construction	1	20%
	After construction was completed	1	20%
	Some other time (please describe)	0	0%
	Don't know	0	0%

15. Before participating in the New Construction Program, had you completed new construction projects with similar levels of energy efficiency?	Response	(n=5)	Percent of Respondents
	Yes	2	40%
	No	3	60%
	Don't know	0	0%

16. For the project you completed through the New Construction Program, did you have plans to build to the same efficiency level prior to participating in the program?	Response	(n=5)	Percent of Respondents
	Yes	5	100%
	No	0	0%
	Don't know	0	0%

16A. How long before finding out about the New Construction program did you have plans to complete the new construction project? Did you have plans for…	Response	(n=5)	Percent of Respondents
	Less than 6 months	1	20%
	6 months to less than a year	1	20%
	1 year to less than 2 years	2	40%
	2 years to less than 5 years	0	0%
	5 or more years	0	0%
	Don't know	1	20%

16B. Did your plans specify the design features related to the level of energy efficiency for the building?	Response	(n=5)	Percent of Respondents
	Yes	5	100%
	No	0	0%
	Don't know	0	0%

16C. Would you have gone ahead with the same design specifications if you had not participated in the program?	Response	(n=5)	Percent of Respondents
	Yes	4	80%
	No	1	20%
	Don't know	0	0%

17. Did you have experience with DCEO energy efficiency programs prior to participating in the New Construction Program?	Response	(n=5)	Percent of Respondents
	Yes	2	40%
	No	3	60%
	Don't know	0	0%

17a. How important was your previous experience with the DCEO programs in making your decision to build to this efficiency level? Would you say...(Read list)	Response	(n=2)	Percent of Respondents
	Very important	0	0%
	Somewhat important	1	50%
	Only slightly important	1	50%
	Not at all important	0	0%
	Don't know	0	0%

18. Did you receive any advice or recommendations from the DCEO or another program representative regarding energy efficiency design features for this project?	Response	(n=5)	Percent of Respondents
	Yes	3	60%
	No	2	40%
	Don't know	0	0%

18a. If the program representative had not recommended the design features, how likely is it that you would have built to the same efficiency level anyway? Would you say...(Read list)	Response	(n=3)	Percent of Respondents
	Definitely would have built to the same level	0	0%
	Probably would have built to the same level	2	67%
	Probably would not have built to the same level	0	0%
	Definitely would not have built to the same level	1	33%
	Don't know	0	0%

19. Did you receive any advice or recommendations from the Smart Energy Design Assistance Center (SEDAC) regarding energy efficiency design features for this project?	Response	(n=5)	Percent of Respondents
	Yes	3	60%
	No	2	40%
	Don't know	0	0%

19a. If the SEDAC representative had not recommended the design features, how likely is it that you would have built to the same efficiency level anyway?(Read list)	Response	(n=3)	Percent of Respondents
	Definitely would have built to the same level	1	33%
	Probably would have built to the same level	1	33%
	Probably would not have built to the same level	1	33%
	Definitely would not have built to the same level	0	0%
	Don't know	0	0%

20. Would you have been financially able to build to this efficiency level without the financial incentive from the New Construction Program?	Response	(n=5)	Percent of Respondents
	Yes	3	60%
	No	2	40%
	Don't know	0	0%

21. If the financial incentive from the New Construction Program had not been available, how likely is it that you would have built to the same level of efficiency anyway?(Read list)	Response	(n=5)	Percent of Respondents
	Definitely would have built to the same level	2	40%
	Probably would have built to the same level	2	40%
	Probably would not have built to the same level	0	0%
	Definitely would not have built to the same level	1	20%
	Don't know	0	0%

22. How did the availability of information and financial incentives through the New Construction Program affect the quantity (or number of units) of energy efficient equipment or design features that you implemented in the project? Did you incorporate more energy efficient equipment or design features than you otherwise would have without the program?	Response	(n=5)	Percent of Respondents
	Yes	0	0%
	No, Program did not affect quantity purchased and installed	4	80%
	Don't know	1	20%

23. How did the availability of information and financial incentives through the New Construction Program affect the level of energy efficiency you built to? Did you build to a higher level of efficiency than you otherwise would have because of the program?	Response	(n=5)	Percent of Respondents
	Yes	1	20%
	No, program did not affect the level of efficiency.	4	80%
	Don't know	0	0%

23a. Without the program, to what level of efficiency would you have built?(Read list)	Response	(n=1)	Percent of Respondents
	A lower energy efficiency level, but still above code	1	100%
	Built to code	0	0%
	Other (please specify)	0	0%

24. How did the availability of information and financial incentives through the New Construction Program affect the timing of the energy efficient new construction project? Did you complete the project earlier than you otherwise would have without the program?	Response	(n=5)	Percent of Respondents
	Yes	0	0%
	No, program did not affect the timing of the project	5	100%

24A. When would you otherwise have completed the project? Would you have done it in…	Response	(n=0)	Percent of Respondents
	Less than 6 months	0	0%
	6 months to less than a year	0	0%
	1 year to less than 2 years	0	0%
	2 years to less than 5 years	0	0%
	5 or more years	0	0%
	Don't know	0	0%

25. Did the implementation of the efficiency measures go smoothly?	Response	(n=5)	Percent of Respondents
	Yes	5	100%
	For the most part	0	0%
	No	0	0%
	Don't know	0	0%

26. Did the energy efficiency measures you adopted for this project meet your expectations? Would you say...(Read list)	Response	(n=5)	Percent of Respondents
	My expectations were exceeded	1	20%
	My expectations were met	2	40%
	My expectations were mostly met	1	20%
	My expectations were not met	0	0%
	Don't know	1	20%

27. Did you have any problems with the application process?	Response	(n=5)	Percent of Respondents
	Yes	1	20%
	No	4	80%
	Don't know	0	0%

28. Do you feel you got a quality installation of the efficiency measures?	Response	(n=5)	Percent of Respondents
	Yes	5	100%
	No	0	0%
	Don't know	0	0%

29. Did the incentive agreement that you received meet your expectations?	Response	(n=5)	Percent of Respondents
	Yes	5	100%
	No	0	0%
	Don't know	0	0%

30. Did anyone from the New Construction Program or other DCEO or SEDAC representative come to this facility to do a pre-inspection?	Response	(n=5)	Percent of Respondents
	Yes	3	60%
	No	0	0%
	Don't know	2	40%

30C. Did anything change in the project design as a result of the pre-inspection?	Response	(n=3)	Percent of Respondents
	Yes	0	0%
	No	3	100%
	Don't know	0	0%

31. Did anyone from the New Buildings Program or other DCEO or SEDAC representative come to this facility to do a post-inspection?	Response	(n=5)	Percent of Respondents
	Yes	1	20%
	No	3	60%
	Don't know	1	20%

31C. Did anything change in the incentive amount as a result of the post-inspection?	Response	(n=1)	Percent of Respondents
	Yes	0	0%
	No	1	100%
	Don't know	0	0%

32. Were there any issues receiving the incentive check?	Response	(n=5)	Percent of Respondents
	Yes	0	0%
	No	5	100%
	Don't know	0	0%

33. Was the incentive amount what you expected?	Response	(n=5)	Percent of Respondents
	Yes	5	100%
	No	0	0%
	Don't know	0	0%

34. Since participating in the New Construction Program, have you implemented any additional energy efficiency measures similar to those you implemented through the program that you did not apply or receive an incentive for?	Response	(n=5)	Percent of Respondents
	Yes	1	20%
	No	4	80%
	Don't know	0	0%

34A. Did the additional energy efficiency measures result in the same or higher level of efficiency improvement as the measures implemented through the program?	Response	(n=1)	Percent of Respondents
	Yes, they were the same or higher efficiency	0	0%
	No	0	0%
	Don't know	1	100%

34B. Were these additional measures implemented at the same facility (or facilities) as the new construction project completed through the program?	Response	(n=1)	Percent of Respondents
	Yes	1	100%
	No; Where was the equipment installed? (please specify)	0	0%
	Don't know	0	0%

34C. Did a recommendation from a program staff member or contractor influence your decision to implement the additional measures?	Response	(n=1)	Percent of Respondents
	Yes	0	0%
	No	1	100%
	Don't know	0	0%

34C1. How important was the recommendation from a program staff member or contractor to your decision to implement the additional energy efficiency measures?	Response	(n=0)	Percent of Respondents
	Very important	0	0%
	Somewhat important	0	0%
	Neutral	0	0%
	Somewhat unimportant	0	0%
	Not important	0	0%
	Don't know	0	0%

34D. How important was your experience with the program or the energy efficient design features implemented through the program to your decision to implement the additional energy efficiency measures?	Response	(n=1)	Percent of Respondents
	Very important	0	0%
	Somewhat important	1	100%
	Neutral	0	0%
	Somewhat unimportant	0	0%
	Not important	0	0%
	Don't know	0	0%

34E. How important was your participation in any past programs offered by DCEO to your decision to implement the additional energy efficiency measures?	Response	(n=1)	Percent of Respondents
	Very important	1	100%
	Somewhat important	0	0%
	Neutral	0	0%
	Somewhat unimportant	0	0%
	Not important	0	0%
	Don't know	0	0%

	Response	(n=4)	Percent of Respondents
34F. Why didn't you apply for or receive financial assistance or incentives for those items?	Didn't know about financial incentives	0	0%
	Didn't know whether the measures qualified for financial incentives	1	100%
	Financial incentive was insufficient	0	0%
	No financial incentive was offered	0	0%
	Too much paperwork for the financial incentive application	0	0%
	For some other reason (please describe)	0	0%
	Don't know	0	0%

	Response	(n=5)	Percent of Respondents
35. Since participating in the program, have you implemented any other energy efficiency equipment that was not similar to what you implemented through the program and that you did not apply or receive an incentive for?	Yes	0	0%
	No	4	80%
	Don't know	1	20%

	Response	(n=0)	Percent of Respondents
35B. Was this equipment installed at the same facility (or facilities) as the energy efficiency measures that you received an incentive for?	Yes	0	0%
	No; Where was the equipment installed?	0	0%
	Don't know	0	0%

	Response	(n=0)	Percent of Respondents
35C. Did a recommendation from a program staff member or contractor influence your decision to implement the additional measures?	Yes	0	0%
	No	0	0%
	Don't know	0	0%

	Response	(n=0)	Percent of Respondents
35C1. How important was the recommendation from a program staff member or contractor to your decision to implement the additional energy efficiency measures?	Very important	0	0%
	Somewhat important	0	0%
	Neutral	0	0%
	Somewhat unimportant	0	0%
	Not important	0	0%
	Don't know	0	0%

	Response	(n=0)	Percent of Respondents
35D. How important was your experience with the program or the energy efficient equipment or design features implemented through the program to your decision to implement the additional energy efficiency measures?	Very important	0	0%
	Somewhat important	0	0%
	Neutral	0	0%
	Somewhat unimportant	0	0%
	Not important	0	0%
	Don't know	0	0%

	Response	(n=0)	Percent of Respondents
35E. How important was your participation in any past programs offered by DCEO to your decision to implement the additional energy efficiency measures?	Very important	0	0%
	Somewhat important	0	0%
	Neutral	0	0%
	Somewhat unimportant	0	0%
	Not important	0	0%
	Don't know	0	0%

	Response	(n=0)	Percent of Respondents
35F. Why didn't you apply for or receive financial assistance or incentives for those items?	Didn't know about financial incentives	0	0%
	Didn't know whether the measures qualified for financial incentives	0	0%
	Financial incentive was insufficient	0	0%
	No financial incentive was offered	0	0%
	Too much paperwork for the financial incentive application	0	0%
	For some other reason (please describe)	0	0%
	Don't know	0	0%

	Response	(n=5)	Percent of Respondents*
36a. How would you rate your satisfaction with the performance of the equipment installed?	5	1	20%
	4	4	80%
	3	0	0%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		4.2

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36b. How would you rate your satisfaction with the savings on your monthly bill?	5	3	60%
	4	2	40%
	3	0	0%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		4.6

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36c. How would you rate your satisfaction with the incentive amount?	5	2	40%
	4	3	60%
	3	0	0%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		4.4

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36d. How would you rate your satisfaction with the effort required for the application process?	5	1	20%
	4	2	40%
	3	2	40%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		3.8

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36e. How would you rate your satisfaction with the information provided by your contractor?	5	1	20%
	4	3	60%
	3	1	20%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		4.0

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36f. How would you rate your satisfaction with the quality of the work conducted by your contractor?	5	3	60%
	4	2	40%
	3	0	0%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		4.6

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36g. How would you rate your satisfaction with the information provided by DCEO?	5	4	80%
	4	1	20%
	3	0	0%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		4.8

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36h. How would you rate your satisfaction with the information provided by Smart Energy Design Assistance Center (SEDAC)?	5	5	100%
	4	0	0%
	3	0	0%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		5.0

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36i. How would you rate your satisfaction with the information provided by the Energy Resource Center (ERC)?	5	2	40%
	4	1	20%
	3	1	20%
	2	0	0%
	1	0	0%
	Not Applicable	1	20%
	Average		4.3

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36j. How would you rate your satisfaction with the elapsed time until you received the incentive?	5	1	20%
	4	3	60%
	3	1	20%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		4.0

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

	Response	(n=5)	Percent of Respondents*
36k. How would you rate your satisfaction with the overall program experience?	5	2	40%
	4	3	60%
	3	0	0%
	2	0	0%
	1	0	0%
	Not Applicable	0	0%
	Average		4.4

*Each response was assigned a numerical value from one to five (5=Very Satisfied, 4=Satisfied, 3=Neither Satisfied nor Dissatisfied, 2=Dissatisfied, 1=Very Dissatisfied)

Appendix E: Trade Ally Interview Guide

1. What types of services and products do you provide for your customers and clients?

( ) Lighting

( ) HVAC

( ) Motors and drives

( ) Refrigeration

( ) Retro-commissioning

( ) Building design services

( ) Other

2. Do you typically provide services to public sector entities, private sector entities, or both?

3. When did you first learn about DCEO's energy efficiency programs?

3a. How did you learn about DCEO's energy efficiency programs?

3b. What led to your decision to participate in these programs?

4. Have you completed any DCEO energy efficiency incentive projects in the last two years?

( ) Yes (Go to 4A and 4B and then skip to 6)

( ) No (Skip to 5)

( ) Don't know (Go to 4C)

4a. In the last two years, which DCEO incentive programs have you participated in? (select all that apply)

( ) Custom or Standard Incentives Programs

( ) New Construction Program

( ) Retro-commissioning Program

( ) Boiler Tune-up Program

( ) Low Income Programs (Which Low Income Program? _____)

( ) Some other response _____

4b.Approximately how many projects have you completed that received incentives from a DCEO program in the last two years?

4c. Are you not sure if you completed any DCEO energy efficiency incentive projects at any point or have you completed projects but you are not sure if this was in the last two years?

( ) Not sure if completed projects at any point (terminate interview)

( ) Have completed DCEO projects, but not sure if this was in the last two years (go to question

5. What barriers have prevented you from completing any DCEO incentive projects?

5a. Do you market the DCEO incentives to your customers? If so, what level of interest have you seen in the incentive programs?

5b. What barriers do organizations face in making energy efficiency improvements?

5c. Is there anything that DCEO could do to improve their programs so that more incentive projects are completed?

[Terminate the interview after this question]

6. Do you market the DCEO incentives to your customers?

6a. If so, what level of interest have you seen in the incentive programs?

6b. If you don't market the incentive programs, why not?

7. Would you say that your customers typically already know about the DCEO programs or do you make them aware of them?

7a. How often are customers expressing interest in energy efficiency improvements? How often are you suggesting it?

7b. Is it difficult to convince customers to incorporate energy efficiency into projects?

7c. How do you talk to customers about the financial benefits of energy efficiency? [probe for: payback, life cycle costs, maintenance savings]

7d. How influential are the DCEO incentives to your customers' decisions about energy efficiency projects?

8. At what point do you typically become involved in your customers' projects? [probe for: before they have an idea for an energy saving project, during the initial planning phase, after planning has been completed, once the project is already being implemented]

9. Can you provide some feedback on the process of participating in DCEO's programs?

9a. Is it clear what information needs to be submitted for the applications?

9b. What information do you provide for the application submission?

9c. Do you estimate energy savings for projects?

9d. Do you record baseline and new equipment specifications?

9e. Do you have any suggestions for improving the application process?

10. Can you describe a recent project that you completed?

10a. What energy efficiency improvements were made?

10b. What type of facility was the project completed in?

10c. Which DCEO program was the project completed through?

10d. Did you approach the customer initially or did the customer contact you with the project in mind?

10e. Had the customer already started the project when you became involved?

10f. Were there any issues in implementing the project? If so, what?

10g. Did you submit the application materials?

10h. Did the process of applying for and receiving incentives go smoothly? If not, what did not go smoothly?

11. After completing energy efficiency projects for your customers, do you offer any information or training to the customer on how to operate the equipment or building systems to maximize energy savings? Please describe what information or training you provide.

12. Have you completed projects through any of the incentive programs offered by the utilities, not by DCEO?

12a. How does the DCEO application process compare with the application process for these utility incentive programs?

12b. Does your role in completing DCEO program applications differ in any way from your role in submitting utility program applications? How so?

12c. How does the effort required to complete a DCEO application compare to the effort required for a utility incentive application? Does it require less effort, a similar effort, or more effort? If more or less effort, why?

12d. Does the information required for a DCEO application differ from what is required by a utility incentive program?

13. Have you had any telephone calls or email exchanges with any DCEO staff about incentive projects you were working on?

13a. What did you speak about?

13b. How responsive where they?

13c. Have you raised any concerns about projects that you were working on? If so, were they adequately addressed?

14. DCEO offers a variety of programs to its customers. Have you or any of your customers had any confusion regarding the available programs?

14a. Is there confusion about what programs are most applicable to a given project?

14b. Is there confusion about differences in the participation requirements or the application process for different programs?

14c. Do you have any suggestions for how DCEO could reduce the confusion about their programs?

15. Are the incentives offered by DCEO adequate to encourage your customers to make energy efficiency improvements?

15a. Are there specific technologies or other energy efficiency improvements for which incentives should be higher?

16. Have you noticed any trends in the types of energy efficiency improvements customer are interested in?

16a. If so, what are they?

17. Do you have any suggestions for how the DCEO programs could increase the number of projects completed?

18. Has your involvement with the DCEO energy efficiency programs affected the types of equipment or services you provide?

18a. Have you increased your stocks of energy efficiency equipment as result of your involvement with the DCEO programs?

18b. Has your involvement with the DCEO energy efficiency programs affected what energy saving equipment you offer your customers?

18c. Have you offered new services that help customers save energy as a result of your involvement with the DCEO programs?

18d. Have you more heavily promoted existing services that help customers save energy as a result of your involvement with the DCEO programs?

18e. Have you hired any additional employees because of your involvement with the DCEO programs? If so, what work do these employees perform?

19. Have you attended a DCEO Trade Ally Rally?

19a. Was attending the Rally useful for understanding the DCEO program offerings?

19b. Was the Rally useful for networking and promoting your services?

19c. Do you have any suggestions for improving the Rally?

20. Do you have any suggestions for how DCEO could better support its trade allies?

21. Do you have any suggestions for how DCEO could improve its energy efficiency programs?