

Evaluation of Illinois Energy Now Public Sector Retro-Commissioning Program

June 2014 through May 2015

Prepared for:
Illinois Department of Commerce & Economic Opportunity

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Executive Summary

This report presents the results of the impact and process evaluations of the Illinois Department of Commerce & Economic Opportunity (the Department of Commerce) Public Sector Retro-Commissioning Program for activity during electric program year seven and natural gas program year four (EPY7/GPY4), from June 2014 through May 2015. The Public Sector Retro-Commissioning Program is offered to public sector entities in the state of Illinois to help them identify and implement energy saving projects through the completion of retro-commissioning studies.

The main features of the approach used for the evaluation are as follows:

- Data for the study were collected through review of program materials, and interviews with program staff, participants, and service providers.
- ADM Associates developed a sample design for on-site data collection using data provided by the Department of Commerce and its program implementation partner. Samples were drawn for both the electricity and natural gas program participants. The sample provided savings estimates with precision of $\pm 10.19\%$ and $\pm 10.73\%$ respectively at the 90% confidence level for each program component.
- ADM Associates staff performed an analytical desk review to verify gross savings estimates.

The realized gross energy savings of the Retro-Commissioning Program during the period June 2014 through May 2015 are summarized in Table ES-1. During this period, realized gross energy savings totaled 7,117,764 kWh. The electric gross realization rate for the program is 92%.

Table ES-1 Summary of Gross kWh Savings for Retro-Commissioning Program

Utility	Ex Ante kWh Savings	Gross Ex Post kWh Savings	Gross Realization Rate	Net Ex Post kWh Savings	Net-to-Gross Ratio	Lifetime Savings
Ameren	1,313,602	1,144,282	87%	1,171,070	102%	18,807,122
ComEd	6,449,821	5,973,482	93%	6,044,128	101%	90,146,242
Total	7,763,423	7,117,764	92%	7,215,197	101%	108,953,364

The realized gross peak kW reductions of the Retro-Commissioning Program during the period June 2014 through May 2015 are summarized in Table ES-2. During this period, realized gross peak kW reduction totaled 368.84 kW. The peak kW reduction gross realization rate for the program is 119%.

Table ES-2 Summary of Gross Peak kW Savings for Retro-Commissioning Program

<i>Utility</i>	<i>Ex Ante kW Savings</i>	<i>Gross Ex Post kW Savings</i>	<i>Gross Realization Rate</i>	<i>Net Ex Post kW Savings</i>	<i>Net-to-Gross Ratio</i>
Ameren	34.00	56.74	167%	55.71	98%
ComEd	275.00	312.10	113%	325.38	104%
Total	309.00	368.84	119%	381.08	103%

The realized gross therm savings for the Retro-Commissioning Program during EPY7/GPY4 are summarized in Table ES-3. The ex post therm savings for the program are 565,727 therms. The natural gas realization rate for the program is 98%.

Table ES-3 Summary of Gross Therm Savings for Retro-Commissioning Program

<i>Utility</i>	<i>Ex Ante Therm Savings</i>	<i>Gross Ex Post Therm Savings</i>	<i>Gross Realization Rate</i>	<i>Net Ex Post Therm Savings</i>	<i>Net-to-Gross Ratio</i>	<i>Lifetime Savings</i>
Ameren	97,678	101,973	104%	99,109	97%	1,301,102
Nicor	442,237	424,029	96%	403,824	95%	5,173,528
North Shore	9,167	10,216	111%	10,216	100%	120,102
Peoples	28,534	31,509	110%	30,456	97%	415,113
Total	577,616	567,727	98%	543,604	96%	7,009,844

1. Introduction

This report presents the results of the impact and a limited process evaluation of the Public Sector Retro-Commissioning Program that DCEO offers to public sector entities in Illinois. The report presents results of the program for activity during electric program year six and natural gas program year three (EPY7/GPY4), the period from June 2014 through May 2015.

1.1 Description of Program

The Retro-Commissioning Program is operated through the Smart Energy Design Assistance Center (SEDAC) and managed by staff at the 360 Energy Group (360 Energy).

1.1.1 Program Incentive Strategy

The Retro-Commissioning Program offers a service incentive that fully funds the cost of the retro-commissioning study if the participant agrees to implement \$10,000 worth of energy saving measures with a payback of 18 months or less. The program does not provide incentives to the participant to implement the measures.

1.1.2 Project Eligibility Requirements

The Retro-Commissioning Program is available to public sector entities that receive electrical service from Ameren Illinois or ComEd. Natural gas saving measures may also be included in projects for public sector entities that receive natural gas from Ameren Illinois, Nicor, North Shore, or Peoples Gas.

To be eligible for the service incentive, buildings are generally required to have 150,000 square feet of conditioned space and be at least 5 years old. However, newer and smaller buildings with an energy use profile suggesting a large potential for savings are also eligible for inclusion. Regardless of size or age, buildings must have a functioning building automation system to which the participants will grant access.

In addition to the eligibility requirements, buildings with certain characteristics are given preference for selection. These characteristics are:

- Buildings with automation systems that include direct digital controls;
- Strong commitment by the facility owner to implement recommended measures and to be actively involved in the study;
- No planned major system renovations or retrofits; and
- Accessible and up to date building documentation and records.

1.1.3 Mini Retro-Commissioning

The program introduced mini retro-commissioning projects that target facilities ranging in size from 50,000 to 120,000 square feet. These projects are based on savings that can be quickly identified through looking at energy use profiles and scheduling systems.

1.1.4 EPY7/GPY4 Program Activity

Data provided by the program implementer stated that during EPY7/GPY4, there were 33 full RCx and 4 Mini RCx projects completed during the program year. These projects were expected to provide a combined savings of 7,763,423 kWh, 309.00 kW and 577,616 therms.

1.2 Overview of Evaluation Approach

The overall objective for the impact evaluation of the Retro-Commissioning Program was to determine the gross and net energy savings and peak demand (kW) reductions resulting from program projects implemented during EPY7/GPY4.

The approach for the evaluation had the following main features.

- Available documentation (e.g., audit reports, invoices, savings calculation work papers, etc.) was reviewed for projects, with particular attention given to the calculation procedures and documentation for savings estimates.
- Gross savings were verified via analytical desk review.
- A participant survey was conducted from a sample of program participants to gather information on their decision making, their likes and dislikes of the program, and factors determining net-to-gross savings ratios for the program.

1.3 Organization of Report

This report on the impact and process evaluation of the Retro-Commissioning Program for the period June 2014 through May 2015 is organized as follows:

- Chapter 2 presents and discusses the analytical methods and results of estimating gross savings for measures implemented under the program.
- Chapter 3 presents and discusses the analytical methods and results of estimating program net savings.
- Chapter 4 presents and discusses the analytical methods and results of the process evaluation of the program.
- Chapter 5 presents evaluation conclusions and recommendations for the program.
- Appendix A provides site and measure-specific notes for sampled projects.

- Appendix B provides additional analysis of the data collected on free ridership that pertains to the free ridership methodology employed in the calculation of net savings.
- Appendix C provides a copy of the questionnaire used in the decision maker survey.
- Appendix D provides a copy of the tabulated responses of the decision maker survey.

2. Estimation of Gross Savings

This chapter addresses the estimation of gross ex post kWh savings, peak kW reductions, and therm reductions resulting from projects completed during Public Sector Retro-Commissioning (RCx) Program EPY7/GPY4. Section 2.1 describes the methodology used for calculating gross savings. Section 2.2 presents the results from the calculation of gross savings.

2.1 Methodology for Estimating Gross Savings

2.1.1 Review of Documentation

The Department of Commerce's program implementation partner provided documentation pertaining to the projects completed during EPY7/GPY4.

For each project, available documentation for each rebated measure was reviewed, with particular attention given to the calculation procedures and documentation for savings estimates. Types of documentation reviewed included program forms, audit reports, work papers, databases, billing data, weather data, and other documentation that may provide useful data. Each application was reviewed to determine whether the following types of information had been provided:

- Documentation of the energy efficiency improvements, including (1) descriptions, (2) schematics, (3) performance data, and (4) other supporting information
- Information about the savings calculation methodology, including (1) the methodology used, (2) specifications of assumptions and sources for these specifications, and (3) correctness of calculations

2.1.2 Sampling Plan

Data used to estimate the gross savings achieved through the RCx program were collected for a sample of projects completed during EPY7/GPY4.

Data provided by the program implementer stated that during EPY7/GPY4, there were 33 full RCx and 4 Mini RCx projects. These projects were expected to provide a combined savings of 7,763,423 kWh and 577,616 therms. Inspection of expected kWh and therm savings for individual projects indicated that the distribution of savings was positively skewed, with a relatively small number of projects accounting for a high percentage of the estimated savings. Estimation of savings was based on a ratio estimation procedure, allowing precision and confidence requirements to be met with a smaller sample size. The sample was drawn from the combined population of the full RCx and the Mini RCx projects from sites that included both electric and natural gas measures. This allowed the measures to be evaluated in context of the entire building wherever possible, rather than in isolation. Both combined and separate project component results will be presented.

The precision for gross ex post electricity and natural gas savings is $\pm 10.19\%$ and $\pm 10.73\%$ at the 90% confidence level.

Table 2-1 Relative Precision for Gross Ex Post Electricity and Natural Gas Savings

<i>Fuel Type</i>	<i>Precision for 90% Confidence Level</i>
Electricity	±10.19%
Natural Gas	±10.73%

Table 2-2 shows the number of projects and expected electric savings by sample stratum. Table 2-3 shows the number of projects and expected savings for the natural gas savings by sample stratum.

Table 2-2 Population Statistics Used for Sample Design for kWh Savings

	<i>Stratum 1</i>	<i>Stratum 2</i>	<i>Stratum 3</i>	<i>Stratum 4</i>	<i>Totals</i>
Strata boundaries (kWh)	< 80,000	80,000 - 170,000	170,001 - 300,000	> 300,001	
Number of projects	13	7	10	7	37
Total kWh savings	641,626	816,451	2,271,891	4,033,455	7,763,423
Average kWh savings	49,356	116,636	227,189	576,208	209,822
Standard deviation of kWh savings	16,950	29,937	35,203	153,438	204,087
Coefficient of variation	0.343	0.257	0.155	0.266	0.343
Final design sample	2	1	2	4	9

Table 2-3 Population Statistics Used for Sample Design for Therm Savings

	<i>Stratum 1</i>	<i>Stratum 2</i>	<i>Stratum 3</i>	<i>Stratum 4</i>	<i>Totals</i>
Strata boundaries (therms)	< 7,000	7,001 - 15,000	15,001 - 30,000	> 30,001	
Number of projects	10	10	8	7	35
Total therm savings	27,423	115,433	164,745	270,015	577,616
Average therm savings	2,742	11,543	20,593	38,574	16,503
Standard deviation of therm savings	2,123	1,415	3,886	8,857	13,632
Coefficient of variation	0.774	0.123	0.189	0.230	0.826
Final design sample	1	2	3	3	9

As shown in Table 2-4, the sample projects account for approximately 39% the expected kWh savings for the whole program. As shown in Table 2-5, the sample projects account for approximately 37% of standard incentive expected therm savings for the whole program.

Table 2-4 Expected Savings for Electricity Saving Projects by Stratum

<i>Stratum</i>	<i>Sample Ex Ante kWh Savings</i>	<i>Total Ex Ante kWh Savings</i>	<i>Percent of Ex Ante kWh Savings in Sample</i>
1	78,267	641,626	12%
2	113,866	816,451	14%
3	502,547	2,271,891	22%
4	2,269,634	4,033,455	56%
Total	2,964,314	7,763,423	38%

Table 2-5 Expected Savings for Therm Incentives Sampled Projects by Stratum

<i>Stratum</i>	<i>Sample Ex Ante Therm Savings</i>	<i>Total Ex Ante Therm Savings</i>	<i>Percent of Ex Ante Therm Savings in Sample</i>
1	6,616	27,423	24%
2	24,612	115,433	21%
3	61,680	164,745	37%
4	166,725	270,015	62%
Total	259,633	577,616	45%

2.1.3 Analytical Desk Review

If there was uncertainty, or incomplete project documentation provided, ADM staff contacted the implementation contractor to request further information.

Evaluation staff reviewed the energy savings algorithms to verify that the assumptions were reasonable and the algorithm was correct for assigning ex ante gross kWh, kW and therm savings per measure.

2.1.4 Procedures for Estimating Savings from Measures Installed through Retro-Commissioning Projects

The savings estimation was based on ex ante estimates of gross savings as reported in the project documentation and tracking system, and ex post gross savings calculated by ADM Associates using program data.

Energy savings realization rates¹ were calculated for each sampled project. Projects with high or low realization rates were further analyzed to determine the reasons for the discrepancy between expected and realized energy savings.

¹ The savings realization rate for a project is calculated as the ratio of the achieved savings for the project to the expected savings (as determined through the project application procedure and recorded in the tracking system for the program).

2.2 Results of Gross Savings Estimation

To estimate gross kWh savings, peak kW reductions, therm savings of the program, and project level realization, data were collected and analyzed for a sample of nine projects. The data were analyzed using the methods described in Section 2.1. The results of that analysis are reported in this section.

2.2.1 Realized Gross kWh Savings by Utility

The gross ex post kWh savings of the RCx program during EPY7/GPY4 are summarized by utility in Table 2-6. The achieved gross savings of 7,117,764 kWh are equal to 92% of the expected savings.

Table 2-6 Expected and Gross Realized kWh Savings by Utility

<i>Utility</i>	<i>Ex Ante kWh Savings</i>	<i>Gross Ex Post kWh Savings</i>	<i>Gross Realization Rate</i>	<i>Lifetime Savings</i>
Ameren	1,313,602	1,144,282	87%	18,807,122
ComEd	6,449,821	5,973,482	93%	90,146,242
Total	7,763,423	7,117,764	92%	108,953,364

2.2.2 Realized Gross Peak kW Savings by Utility

The realized gross ex post peak kW reductions of the RCx Program during EPY7/GPY4 are summarized by utility in Table 2-7. The achieved gross peak demand savings of 368.84 kW are 119% of expected savings.

Table 2-7 Expected and Gross Realized Peak kW Savings by Utility

<i>Utility</i>	<i>Ex Ante Peak kW Savings</i>	<i>Gross Ex Post Peak kW Savings</i>	<i>Gross Realization Rate</i>
Ameren	34.00	56.74	167%
ComEd	275.00	312.10	113%
Total	309.00	368.84	119%

2.2.3 Realized Gross Therm Savings by Utility

The gross ex post therm reductions of the RCx Program during EPY7/GPY4 are summarized by utility in Table 2-8. The achieved gross savings of 567,727 therms are 98% of expected savings.

Table 2-8 Expected and Gross Realized Therm Savings by Utility

<i>Utility</i>	<i>Ex Ante Therm Savings</i>	<i>Gross Ex Post Therm Savings</i>	<i>Gross Realization Rate</i>	<i>Lifetime Savings</i>
Ameren	97,678	101,973	104%	1,301,102
Nicor	442,237	424,029	96%	5,173,528
North Shore	9,167	10,216	111%	120,102
Peoples	28,534	31,509	110%	415,113
Total	577,616	567,727	98%	7,009,844

2.2.4 Realized Gross kWh Savings by Program Component

The gross ex post kWh savings of the RCx Program during EPY7/GPY4 are summarized by project component in Table 2-9.

Table 2-9 Expected and Gross Realized kWh Savings by Program Component

<i>Utility</i>	<i>Ex Ante kWh Savings</i>	<i>Gross Ex Post kWh Savings</i>	<i>Gross Realization Rate</i>	<i>Lifetime Savings</i>
Full RCx	7,467,273	6,955,314	93%	104,895,349
Mini RCx	296,150	162,449	55%	4,058,015
Total	7,763,423	7,117,764	92%	108,953,364

2.2.5 Realized Gross Peak kW Savings by Program Component

The gross ex post peak kW savings of the RCx Program during EPY7/GPY4 are summarized by project component in Table 2-10.

Table 2-10 Expected and Gross Realized Peak kW Savings by Program Component

<i>Utility</i>	<i>Ex Ante kW Savings</i>	<i>Gross Ex Post kW Savings</i>	<i>Gross Realization Rate</i>
Full RCx	309.00	368.84	119%
Mini RCx	-	-	-
Total	309.00	368.84	119%

2.2.6 Realized Gross Therm Savings by Program Component

The gross ex post therm savings of the RCx Program during EPY7/GPY4 are summarized by project component in Table 2-11.

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Table 2-11 Expected and Gross Realized Therm Savings by Program Component

<i>Utility</i>	<i>Ex Ante Therm Savings</i>	<i>Gross Ex Post Therm Savings</i>	<i>Gross Realization Rate</i>	<i>Lifetime Savings</i>
Full RCx	549,234	536,178	98%	6,629,264
Mini RCx	28,382	31,550	111%	380,580
Total	577,616	567,727	98%	7,009,844

2.3 Discussion of Gross Savings Analysis

The project realization rates were reviewed to assess whether there were factors causing systematic differences in the realization rates. No systematic factors or issues were found.

Table 2-12, shown below, displays project level realization rates.

Table 2-12 Project-Level Gross Realized Savings Analysis Results

Project	Measure	Electric Energy (kWh)			Peak Demand (kW)			Natural Gas (therm)		
		Ex Ante Savings	Ex Post Savings	Realization Rate	Ex Ante Savings	Ex Post Savings	Realization Rate	Ex Ante Savings	Ex Post Savings	Realization Rate
Project 1	Schedules	198,052	167,001	84%	0	93	-	3,149	3,082	98%
	Schedules	2,954	3,621	123%	0	-93	-	447	405	91%
	Schedules	76,241	74,805	98%	0	10	-	2,100	1,950	93%
	Temperature Reset	108,891	110,443	101%	0	8	-	2,649	2,595	98%
	Water Valve	154,586	154,586	100%	0	0	-	1,460	1,460	100%
	Sensor/Damper Maintenance	1,655	1,655	100%	0	0	-	2,249	2,249	100%
Project 2	Schedules	573,691	526,899	92%	0	0	-	25,153	15,522	62%
	Schedules	36,539	26,950	74%	0	0	-	1,445	1,965	136%
Project 3	Daylight Sensors	1,480	1,480	100%	0	0	-	0	0	-
	Schedules	28,854	28,854	100%	0	0	-	1,965	1,885	96%
	Schedules	0	0	-	0	0	-	10,214	7,729	76%
	Economizer	-19,820	-19,820	100%	0	0	-	6,754	6,754	100%
Project 4	Schedules	148,093	148,093	100%	0	0	-	8,188	8,188	100%
	Static Pressure Reset	29,079	29,079	100%	0	0	-	0	0	-
	Temperature Reset	1,541	1,541	100%	0	0	-	184	184	100%
	DCV	5,863	5,863	100%	0	0	-	1,180	1,180	100%
	Schedules	57,440	57,594	100%	0	0	-	12,065	12,065	100%
	Sensor/Damper Maintenance	0	0	-	0	0	-	8,286	9,943	120%
	DCV	-656	-643	98%	0	0	-	563	563	100%
Project 5	Chilled Water Reset	1,017	290	29%	0	0	-	0	0	-
	Schedules	25,731	25,762	100%	0	0	-	776	761	98%
	Water Valve	20,080	44,517	222%	3.90	9.43	242%	0	3,260	-
	ERU	2,890	2,879	100%	7.70	4.32	56%	6,977	7,096	102%
	Schedules	10,987	12,342	112%	(32.60)	16.04	-49%	3,960	3,762	95%
	Schedules	8,065	7,652	95%	31.20	1.27	4%	799	808	101%

Project	Measure	Electric Energy (kWh)			Peak Demand (kW)			Natural Gas (therm)		
		Ex Ante Savings	Ex Post Savings	Realization Rate	Ex Ante Savings	Ex Post Savings	Realization Rate	Ex Ante Savings	Ex Post Savings	Realization Rate
Project 6	Schedules	404,893	454,836	112%	0	0	-	2,512	3,565	142%
	Sensor/Damper Maintenance	6,233	6,233	100%	0	0	-	9,386	9,386	100%
	Water Valve	0	0	-	0	0	-	24,739	24,879	101%
	Economizer	40,340	40,340	100%	0	0	-	0	0	-
Project 7	Chilled Water Reset	26,505	36,218	137%	9.30	25.00	269%	0	0	-
	Temperature Reset	2,960	148	5%	6.00	-	0%	0	-4	-
	DCV	24,058	17,622	73%	27.00	16.00	59%	6,616	7,381	112%
	Static Pressure Reset	60,343	44,764	74%	13.10	34.00	260%	0	-119	-
Project 8	Schedules	177,607	166,088	94%	0	0	-	0	0	-
	Schedules	68,577	68,577	100%	0	0	-	0	0	-
	Sensor/Damper Maintenance	0	0	-	0	0	-	4,442	4,442	100%
	DCV	13,986	11,709	84%	3.92	3.22	82%	11,706	8,206	70%
Project 9	Static Pressure Reset	76,856	128,042	167%	20.10	27.72	138%	0	0	-
	Schedules	428,013	411,166	96%	-	-	-	0	0	-
	Schedules	0	0	-	-	-	-	2,178	2,766	127%
	Schedules	86,004	75,938	88%	-	-	-	46,160	48,709	106%
	Schedules	74,666	55,201	74%	39.30	33.49	85%	5,967	6,624	111%

For notes regarding each measure please refer to Appendix A.

3. Estimation of Net Savings

This chapter presents the net impacts of the Public Sector Retro-Commissioning (RCx) Program during the period June 2014 through May 2015.

3.1 Procedures Used To Estimate Net Savings

Net savings are defined as the portion of gross savings that can be attributed to the effects of the program. The savings attributed to the program are comprised of two components, the program gross savings less any free ridership effects and spillover effects.

Free riders of a program are defined as those participants that would have implemented the same energy efficiency measures and achieved the observed energy changes, even in the absence of the program. 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.

Spillover effects occur when energy savings accrue that are not included in program gross energy savings but are attributable to the program. That is, spillover savings result from program induced measures implemented outside of the program.

ADM performed a net savings analysis to estimate the impacts of the energy efficiency measures attributable to the RCx Program that were net of free ridership and inclusive of participant spillover using a self-report methodology. Information on the program's impact on the participants' decision making was collected from a sample of program participants through a decision-maker survey. Appendix A provides a copy of the survey instrument. The following sections describe the procedures used to estimate net savings.

3.1.1 Free-Ridership

The following subsections describe the procedures used to develop participant free-ridership scores.

3.1.1.1. Free-Ridership Scores

Free ridership was calculated using the procedures outlined in the Illinois Statewide Technical Reference Manual (TRM) Version 5.0, Vol. 4, Core Non-Residential Free Ridership Protocol (p.28).. The attachment provides for the calculation of multiple free ridership scores. The alternative scores are presented in Appendix B.

Three component scores to estimate the likelihood that a participant would have implemented the project in the absence of the program were calculated to estimate free ridership.

The No-Program Score is based on the participant's assessment of the likelihood of completing the retro-commissioning project in the absence of the program. Survey respondents are asked the following question:

Using a scale where 0 is "Not at all likely" and 10 is "Extremely likely, if the program had not been available, what is the likelihood that you would have retro-commissioned the facility?"

The No-Program Score is equal to:

$$[Likelihood\ in\ Absence\ of\ Program]/10$$

The Program Components Score is based on ratings of the impact of various factors on the decision to implement the project. Participants rate the impact of the program and non-program factors. The Program Components Score is equal to:

$$1 - ([Highest\ Rated\ Program\ Factor]/10)$$

The program factors respondents rated include the following:

- The recommendation of your service provider;
- The availability of the free retro-commissioning study;
- The impact of technical assistance you received from program staff;
- The impact of a recommendation from the Department of Commerce program staff; and
- The impact of information from Department of Commerce marketing materials.

Additionally, program respondents are asked if any other factor influenced the project. These responses were coded as program or non-program factors and incorporated in the analysis.

The Program Influence Score is based on the relative importance of program and non-program factors in the decision to implement the project. After rating the program and non-program factors, survey respondents were asked to allocate 100 points to program and non-program factors that reflected the importance of the program and other considerations to their decision to implement the project. Specifically, respondents were asked the following:

"If you were given a TOTAL of 100 points that reflect the importance in your decision to retro-commission the facility, and you had to divide those 100 points between: 1) the program and 2) other factors, how many points would you give to the importance of the PROGRAM?"

The Program Influence Score is equal to:

$$1 - ([Program\ Points]/100)$$

The preliminary free-ridership score is calculated as the average of the No-Program, Program Components, and Program Influence Score.

To account for the effect the program may have had on project timing, a timing adjustment factor was developed and applied to the overall free ridership score. This adjustment factor is based on responses to questions on when the project would have occurred in the absence of the program. A component of the adjustment factor is the number of months the respondent reported the program expedited the project. Respondents who reported that in the absence of the program they would have completed the project at the same time were scored as 0 months expedited. For those that reported that without the program they never would have completed the project, the months expedited was scored as 48. For all other responses, the number of months expedited were scored as shown in Table 3-1.

Table 3-1 Number of Months Expedited Scoring

<i>Survey Response</i>	<i>Number of Months Expedited</i>
0 to 6 months	3
7 months to 1 year	9
more than 1 year up to 2 years	18
more than 2 years up to 3 years	30
more than 3 years up to 4 years	42
Over 4 years	48

Respondents also estimated the likelihood of completing the project in the next 12 months. The response to this question was incorporated into the calculation of the timing adjustment factor. Specifically, the timing adjustment factor is equal to:

$$1 - ((\text{Number of Months Expedited} - 6)/42) * ((10 - \text{Likelihood of Implementing within One Year})/10)$$

3.1.1.1. Consistency Checks

Additional questions were administered to respondents that provided responses that appeared inconsistent with other responses. Specifically, respondents were asked to provide explanations or provide a new response if:

- The Program Influence Score was inconsistent with the ratings of the importance of the program components;
- The No Program Score was inconsistent with the ratings of the importance of the program components; or
- The respondent indicated that they learned of the program after deciding to complete the retro-commissioning project, but the Program Influence Score was greater than 70, the likelihood of completing the project was rated as less than 3, or any of the ratings of the importance of the program factors were rated greater than 7.

3.1.1.2. Energy Efficiency Plans Score

ADM developed an Energy Efficiency Plans Score and incorporated it into the algorithm for calculation of participant free ridership. Program participants were asked a series of questions regarding plans they may have had prior to deciding to participate in the program. Respondents that provided a response that indicated the presence of plans were asked to rate how certain they were of the indication that they had plans using a 0 – 10 scale, where 0 indicated that they were “Not at all certain” and 10 indicated that they were “Extremely certain.”

The Energy Efficiency Plans Score is equal to 0 for participants if either of the following was true:

- The respondent stated that they did not have plans before deciding to participate and provided a certainty rating greater than 7; or
- The respondent stated that they did not have funds to complete the retro-commissioning before deciding to participate and provided a certainty rating greater than 7.

3.1.1.3. Calculation of Project Free Ridership

Overall, project free ridership is equal to:

$$([No\ Program\ Score] + [Program\ Influence\ Score] + [Program\ Components\ Score]) * Timing\ Adjustment\ Factor * Energy\ Efficiency\ Plans\ Score$$

3.1.1.4. Application of Free Ridership Scores to Additional Projects

The questions used to calculate free ridership were asked in regards to a single project. Respondents that completed additional project(s) were asked the following question:

Our records show that [ORGANIZATION] also completed retro-commissioning projects through [PROGRAM ADMINISTRATOR]’s [PROGRAM] at [NSAME] other [FACILITY/IES]. Was it a single decision to complete the additional retro-commissioning [PROJECT/PROJECTS] through the program or did each project go through its own decision process?

Free ridership scores calculated for the primary project were applied to additional projects at other locations if the respondent indicated that it was a single decision.

3.1.2 Participant Spillover

To assess whether or not spillover savings were associated with program participants, survey respondents were asked about energy saving projects implemented outside of the program.

To determine whether or not the savings associated with measures are attributable to the program, respondents were asked the following two questions:

- 1) “How important was your experience in the <PROGRAM> in your decision to implement this measure, using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?”
- 2) “If you had not participated in the <PROGRAM>, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?”

Based on responses to these two questions, a spillover score is calculated as follows:

$$\frac{(\text{Rating of Program Importance} + (10 - \text{Likelihood of Implementing without Participation}))}{2}$$

Savings are considered attributable to the program if the score is greater than 7.

3.1.3 Survey Administration

EPY7/GPY4 program participants were surveyed by telephone. The sample was developed from data reported in the program-tracking database. Data were reviewed for missing or incomplete information. Additionally, participants were crosschecked across participation records from other programs in order to prevent the administration of multiple surveys to the same participant.

Program projects were defined based on unique identifiers in program tracking data. In total there were 26 unique decision-makers who completed 33 full-RCx projects through the program.²

Program participants were contacted up to five times to complete the survey. In total 17 decision-makers completed the survey. Table 3-2 displays final response and cooperation rates for the survey.

² None of the participants in the Mini-RCx component were surveyed. In total, these projects accounted for less than 5% of the program expected natural gas and electricity savings.

Table 3-2 Final Dispositions and Response and Cooperation Rates

	<i>Percent of Contacts</i>
Interview	
Complete	65%
Partial	0%
Eligible, non-interview	35%
Unknown eligibility, non-interview	0%
Not eligible	0%
Response Rate*	65%
Cooperation Rate*	94%

*AAPOR Cooperation Rate 1 and Response Rate 1 were used for the purpose of calculating response and cooperation rates.

3.2 Results of Net Savings Estimation

The procedures described in the preceding section were used to estimate free ridership, spillover and net-to-gross ratios for the RCx Program for the period June 2014 through May 2015.

3.2.1 Free Ridership

Table 3-3 summarizes the free ridership scores for the sample of program participants. Overall program level free ridership for electricity savings is .03.

Table 3-3 Summary of Free Ridership Scores for kWh Savings Sample

<i>Sample Frame</i>		<i>Survey Respondents</i>		<i>Weighted Free Ridership</i>	<i>Percent of Savings Sampled</i>
<i>Number of Projects</i>	<i>kWh Savings</i>	<i>Number of Respondents</i>	<i>kWh Savings</i>		
33	7,117,764	17	5,462,767	0.03	77%

Table 3-4 summarizes the free ridership scores for the sample of program participants. Overall program level free ridership for natural gas savings is .04.

Table 3-4 Summary of Free Ridership Scores for Therm Savings Sample

<i>Sample Frame</i>		<i>Survey Respondents</i>		<i>Weighted Free Ridership</i>	<i>Percent of Savings Sampled</i>
<i>Number of Projects</i>	<i>Therm Savings</i>	<i>Number of Respondents</i>	<i>Therm Savings</i>		
31	567,727	17	391,153	0.04	69%

The distribution of reported free ridership for survey respondents is displayed in Figure 3-1. As shown, most free ridership scores were .05 or less.

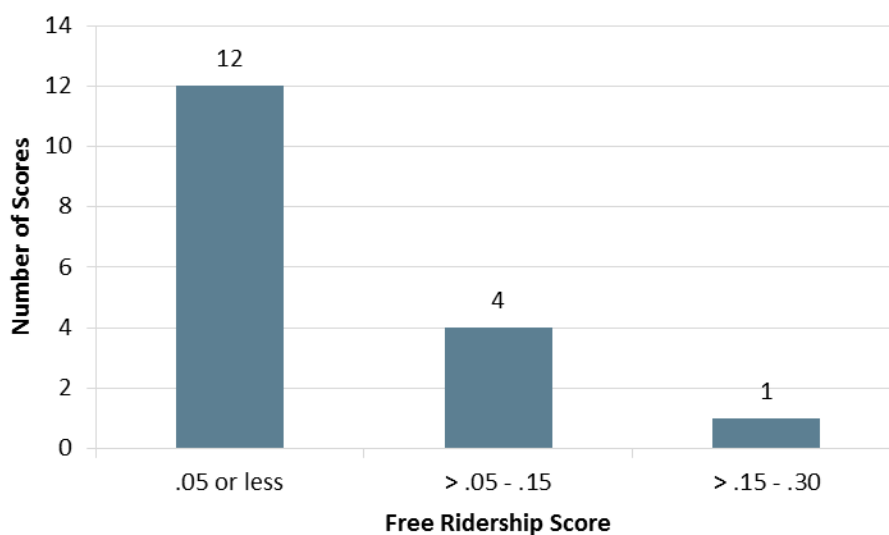


Figure 3-1 Distribution of Free Ridership Scores

3.2.2 Participant Spillover

Table 3-5 displays the results of the spillover analysis. As shown, eight survey respondents reported implementing additional energy saving projects and of these three respondents reported projects that met the attribution criteria for inclusion in program spillover savings.

Table 3-5 Summary of Spillover Projects

<i>Spillover Metric</i>	<i>Number of Respondents</i>
Number of Participants Reporting Additional Measures	8
Number of Participants with Projects that Met Attribution Criteria	3
Number of Respondents with Quantified Spillover Savings	2

All three respondents were contacted to get additional information on the spillover measures reported in order to estimate energy savings. One respondent indicated during a follow up call that their organization had received an incentive for the measure that was reported as spillover and was consequently dropped from the analysis.

Table 3-7 summarizes the results of the spillover analysis. Project one included the installation of occupancy sensors and variable frequency drives on an HVAC system. Savings were calculated using the procedures outlined for TRM measure numbers 4.5.10 and 4.4.17, respectively. For project two, the participant installed occupancy sensors and the savings were evaluated using the procedures outlined for TRM measure number 4.5.10.

Table 3-6 Summary of Spillover Savings

<i>Metric</i>	<i>Spillover kWh Savings</i>	<i>Spillover kW Savings</i>	<i>Spillover Therm Savings</i>
Project 1 Spillover Savings	193,102	23.93	0
Project 2 Spillover Savings	38,046	0.91	0
Total Spillover Savings	231,148	24.84	0
Total Gross Savings for NTG Sample	5,046,046	329.50	314,046
Spillover Rate	5%	8%	0%

3.2.3 Net Savings by Utility

Table 3-7 summarizes the net kWh savings of the RCx Program for EPY7/GPY4. The net ex post electricity savings for the period are 7,215,197 kWh and equal 101% of gross ex post peak demand reductions.

Table 3-7 Summary of Net kWh Savings by Utility

<i>Utility</i>	<i>Ex Ante kWh Savings</i>	<i>Gross Ex Post kWh Savings</i>	<i>Net Ex Post kWh Savings</i>	<i>Net-to-Gross Ratio</i>
Ameren	1,313,602	1,144,282	1,171,070	102%
ComEd	6,449,821	5,973,482	6,044,128	101%
Total	7,763,423	7,117,764	7,215,197	101%

Table 3-8 summarizes the net peak kW reductions of the RCx Program for EPY7/GPY4. The net ex post peak kW reductions for the period are 381.08 kW and equal 103% of gross ex post savings.

Table 3-8 Summary of Net Peak kW Savings by Utility

<i>Utility</i>	<i>Ex Ante kW Savings</i>	<i>Gross Ex Post kW Savings</i>	<i>Net Ex Post kW Savings</i>	<i>Net-to-Gross Ratio</i>
Ameren	34.00	56.74	55.71	98%
ComEd	275.00	312.10	325.38	104%
Total	309.00	368.84	381.08	103%

Table 3-9 summarizes the net therm savings of the RCx Program for EPY7/GPY4. The net ex post natural gas savings for the period are 543,604 therms and equal 96% of gross ex post savings.

Table 3-9 Summary of Net Therm Savings by Utility

<i>Utility</i>	<i>Ex Ante Therm Savings</i>	<i>Gross Ex Post Therm Savings</i>	<i>Net Ex Post Therm Savings</i>	<i>Net-to-Gross Ratio</i>
Ameren	97,678	101,973	99,109	97%
Nicor	442,237	424,029	403,824	95%
North Shore	9,167	10,216	10,216	100%
Peoples	28,534	31,509	30,456	97%
Total	577,616	567,727	543,604	96%

Table 3-10 summarizes the net lifetime kWh savings of the RCx Program for EPY7/GPY4. The net ex post lifetime electricity savings for the period are 106,792,261 kWh.

Table 3-10 Summary of Net Lifetime kWh Savings by Utility

<i>Utility</i>	<i>Net Ex Post Lifetime kWh Savings</i>
Ameren	18,623,426
ComEd	88,168,835
Total	106,792,261

Table 3-11 summarizes the net lifetime therm savings of the RCx Program for EPY7/GPY4. The net ex post lifetime natural gas savings for the period are 6,664,402 therms.

Table 3-11 Summary of Net Lifetime Therm Savings by Utility

<i>Utility</i>	<i>Net Ex Post Lifetime Therm Savings</i>
Ameren	1,264,815
Nicor	4,879,731
North Shore	120,102
Peoples	399,754
Total	6,664,402

3.2.1 Net Savings by Program Component

This section presents net savings results by program component. Table 3-12 displays net ex post kWh savings. The net ex post kWh savings for the full RCx component totaled 7,050,524 kWh and totaled 164,673 kWh for the mini RCx component.

Table 3-12 Summary of Net kWh Savings by Program Component

<i>Program Component</i>	<i>Ex Ante kWh Savings</i>	<i>Gross Ex Post kWh Savings</i>	<i>Net Ex Post kWh Savings</i>	<i>Net-to-Gross Ratio</i>
Full	7,467,273	6,955,314	7,050,524	101%
Mini	296,150	162,449	164,673	101%
Total	7,763,423	7,117,764	7,215,197	101%

All ex post net peak demand reductions resulted from the full-RCx program component and are not reproduced here.

As shown in Table 3-13, net ex post natural gas reductions totaled 513,395 therms and 30,209 therms for the full and mini RCx components, respectively.

Table 3-13 Summary of Net Therm Savings by Program Component

<i>Utility</i>	<i>Ex Ante Therm Savings</i>	<i>Gross Ex Post Therm Savings</i>	<i>Net Ex Post Therm Savings</i>	<i>Net-to-Gross Ratio</i>
Full	549,234	536,178	513,395	96%
Mini	28,382	31,550	30,209	96%
Total	577,616	567,727	543,604	96%

Table 3-14 and Table 3-15 summarize net lifetime kWh and therm savings by program component.

Table 3-14 Summary of Net Lifetime kWh Savings by Program Component

<i>Utility</i>	<i>Net Ex Post Lifetime kWh Savings</i>
Full	102,705,438
Mini	4,086,823
Total	106,792,261

Table 3-15 Summary of Net Lifetime Therm Savings by Program Component

<i>Utility</i>	<i>Net Ex Post Lifetime Therm Savings</i>
Full	6,302,577
Mini	361,826
Total	6,664,402

4. Process Evaluation

This chapter presents the results of the process evaluation of the Public Sector Retro-Commissioning Program (Retro-Commissioning Program) during electric program year seven and natural gas program year four (EPY7/GPY4).

4.1 Methodology for Process Evaluation

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. Key research questions addressed by this evaluation include:

- Does the program meet the needs of various public sector market segments?
- How effective are the outreach efforts?
- How effective is the participation processes?
- How effective are internal communications and administrative processes?
- Do the documentation and project tracking systems and procedures support reporting, monitoring, and evaluation needs?
- How satisfied are participants?

4.1.1 Review of Program Documentation

ADM reviewed documentation developed by program staff. These documents included the service provider manual, marketing materials posted on the program website, a sample verification report, the customer measure selection form, and the verification form. These documents were reviewed for changes from the versions used in prior years.

4.1.2 Review of Program Tracking Data

Project tracking data submitted in the form of a Microsoft Excel spreadsheet was reviewed.

4.1.3 Interviews with Program Staff

ADM completed three interviews with SEDAC staff at Energy 360 and the University of Illinois at Urbana-Champaign. These interviews covered the following topics:

- Program changes and progress to date;
 - Marketing and outreach efforts;
 - Communication and coordination processes;
 - Future directions; and
-

- Program strengths and challenges.

4.1.4 Interviews with Service Providers

In-depth interviews were conducted with 10 RCx Service Providers who completed projects during EPY7/GPY4. The interviews covered the following topics:

- Program process and satisfaction with it;
- Program influence on participant projects;
- Awareness and barriers to participation; and
- Program training.

4.1.5 Program Participant Surveys

Surveys were administered to a sample of 17 program participants. In addition to questions related to the estimation of net energy savings discussed previously, program participants responded to questions on the following topics:

- Source of program awareness;
- Concerns about participating and their experience with the participation process;
- Future RCx plans; and
- Satisfaction with the program.

4.2 Summary of Findings and Recommendations

The following summarize the key findings from the evaluation of the program process:

- Gross ex post electricity savings increased from the prior program year from 6,866,644 kWh to 7,117,764 kWh. The increase occurred despite consistency in the number of projects completed between the two years and a lack of large building projects completed during the program year. Gross ex post natural gas savings decreased from 755,620 therms to 567,727 therms.
- Program staff modified program documentation during the program year to simplify and expedite completion and review of study information. Key project information in the most current version is reported in tables and the amount of narrative text has been reduced. Additionally, documentation was modified to allow for the implementation of fuel switching measures.
- All interviewed service providers attended the webinar hosted by program staff at the beginning of the year. Interview respondents stated that it addressed the project completion process. All were satisfied with the training. One service provider suggested that providing venues for service providers to share information on best practices would be helpful.

- Most service providers agree that many public sector building personnel lack the knowledge necessary to maintain higher levels of system efficiency over the long-term. Most service providers are also aware of additional training opportunities available to public sector building staff such as the Building Operator Course (BOC), however the degree to which they promote the BOC course varies. Feedback suggests that training opportunities such as the BOC course are not consistently communicated to public sector customers. Many of the service providers interviewed indicated that they do not always tell building personnel about the program but they assume they have been notified because the BOC Program is referenced in the study report.
- Most service providers were satisfied with the program and written documentation. However, one of these service providers indicated some dissatisfaction with the length of the review process. This issue may be addressed in part by streamlining of program materials recently completed by program staff. Another service provider indicated that there are too many restrictions on the service provider's role.
- Program staff updated materials with the Illinois Energy Now logo to make them consistent with Department of Commerce branding. The materials updated included promotional materials, project reporting materials, and the service provider manual.
- Key outreach methods are presentations and trainings (48 held), direct outreach by staff, newsletter, service provider promotion. Survey respondents most often reported learning of the program through a conference or workshop (24%), from a friend or colleague (12%), or from a program representative (12%). Six percent of respondents reported learning of the program from a service provider.
- Service providers believe the primary barriers to program participation are the initial investment, the timing of the program year in terms of initial delays, and public sector budget cycles that are out of synch with the program year. A few participants indicated that they initially had concerns about participating such as uncertainty about the process, the time and labor commitment, and the likely results.
- Program participants were satisfied with the program. None of the program participants indicated that they were dissatisfied with any aspect of the program and all respondents were satisfied with the program materials, interactions they had with SEDAC staff, and the service the provided by their retro-commissioning service provider. Few participants reported (18%) reported any difficulty in providing program documents and those that had additional facilities that qualified for the program reported that they were likely to have those facilities retro-commissioned through the program as well.

ADM offers the following recommendations for consideration:

- **Ensure that annual training provides information on service provider roles.** One service provider's interview responses suggested a lack of clarity on the role of the service provider in developing scopes of work.

- **Encourage service providers to discuss the building operator program with clients.** Service providers report that information on the building operator certification program is included in project reporting, however, it may not be noticed by participants.
- **Update RCx poster with Illinois Energy Now Branding and program contact information.** The RCx program poster linked on the program website has not been updated to reflect the new Illinois Energy Now branding. It also does not include contact information.

4.3 Detailed Findings

The following sections present the detailed findings of the process evaluation.

4.3.1 RCx Program Participation

Table 4-1 displays a summary of the total recommended and verified savings for full retro-commissioning projects. EPY7/GPY4 recommended electricity savings totaled 16,439,566 kWh, a 45% decrease from the prior year. The verified ex ante electricity savings counted towards the Retro-Commissioning Program totaled 7,763,423 kWh, a 10% increase from the prior year. In total, participants implemented 47% of the recommended electricity savings.³

The recommended natural gas savings totaled 1,416,182 therms, which represents a 50% percent decrease from the prior year. Verified ex ante natural gas savings counted towards the Retro-Commissioning program totaled 577,616 therms, a 21% decrease from the prior year. In total, program participants implemented 41% of the recommended savings as part of their program participation agreement.

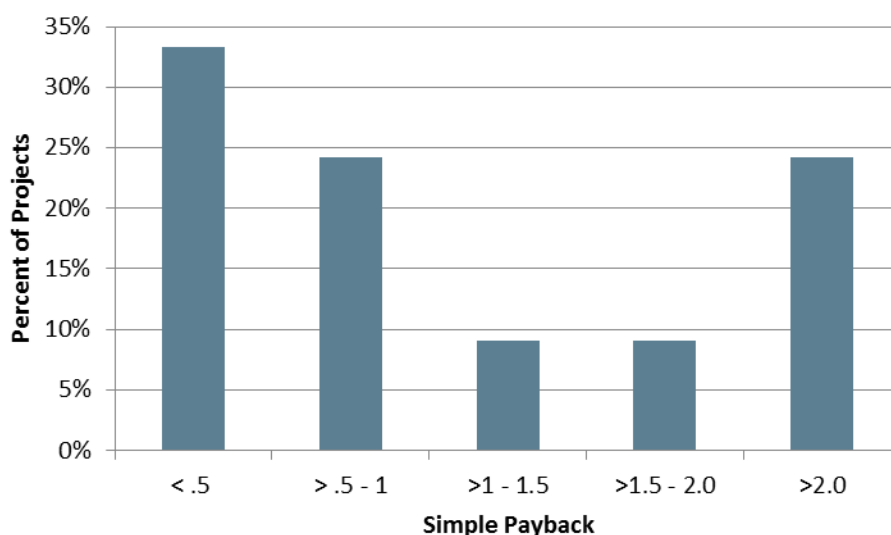
Retro-Commissioning participants are directed towards the incentives offered by the Department of Commerce in the study report and by program staff, when they are eligible for those incentives. Table 4-1 also displays verified savings associated with measures that were recommended in the retro-commissioning study but were implemented through the Department of Commerce incentive programs. As shown, these measures resulted in an additional 33,803 kWh and 3,123 therms saved.

³ Mini RCx projects added an additional 296,150 kWh and 7,096 therms.

Table 4-1 Average and Total Recommended and Verified Energy Savings by Fuel Type

<i>Fuel Type</i>	<i>Total Recommended Savings</i>	<i>Total Ex Ante Verified RCx Savings</i>	<i>RCx Savings as Percent of Recommended Savings</i>	<i>Verified Ex Ante Savings for Incentive Program Measure</i>	<i>Total Ex Ante Savings (RCx + Incentive Program Measures)</i>	<i>Total Ex Ante Savings as Percent of Recommended Savings</i>
kWh	16,439,566	7,763,423	47%	33,803	7,797,226	47%
Therms	1,416,182	577,616	41%	3,123	580,739	41%

Figure 4-1 displays payback calculated by program staff based on project expected savings and the participants investment in non-incentivized measures. As shown, two-thirds of projects resulted in a payback of less than 1.5 years.

*Figure 4-1 Distribution of Program Calculated Payback for Non-Incentivized Measures*

As shown in Table 4-2, no projects in facilities larger than 500,000 square feet were completed during the program year.

Table 4-2 Distribution of Projects and Energy Savings by Facility Size

<i>Facility Size (s.ft)</i>	<i>Count</i>	<i>Percent of Total Projects</i>	<i>Percent of Total Verified Therm Savings</i>	<i>Percent of Total Verified kWh Savings</i>
200,000 or Less	16	48%	27%	37%
200,001 - 500,000	17	52%	68%	59%

Figure 4-2 displays the financial investments in energy efficiency measures made by program participants. Investments made that count towards the Retro-Commissioning Program agreement,

for which no additional incentives were received, and investments made for measures that received Department of Commerce incentives are shown. Regarding investments made that did not receive additional incentives, a large share of participants spent close to the \$10,000 requirement (approximately 50% invested less than \$15,000), although nearly one-third invested at least twice that amount to implement recommended efficiency improvements. One organization also made an investment in measures recommended in the RCx study that received incentives through a Department of Commerce incentive program.

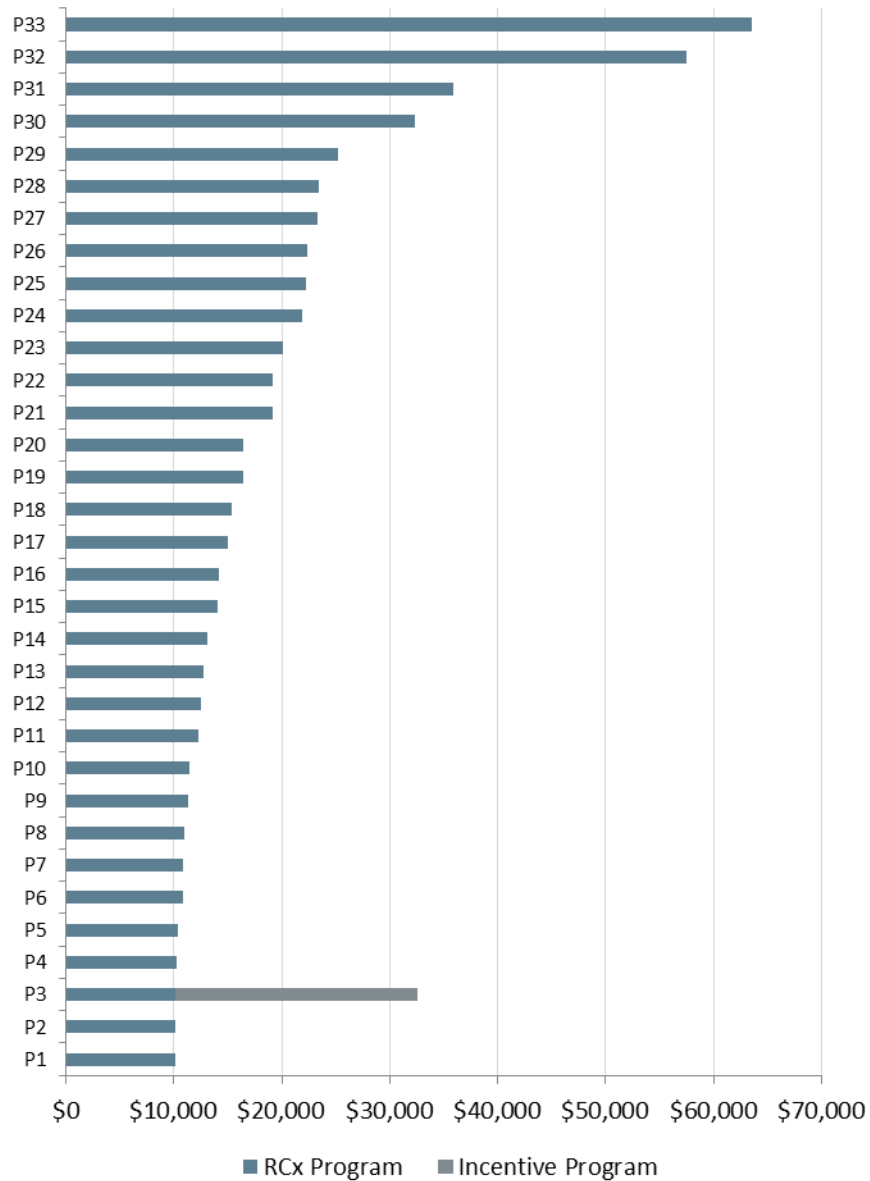


Figure 4-2 Verified Investments for Retro-Commissioning Projects

Figure 4-3 displays the relationship between the recommended energy savings and the verified energy savings (in therms). As shown, a handful of projects with large potential energy savings identified realized a relatively smaller share of expected savings through the program.

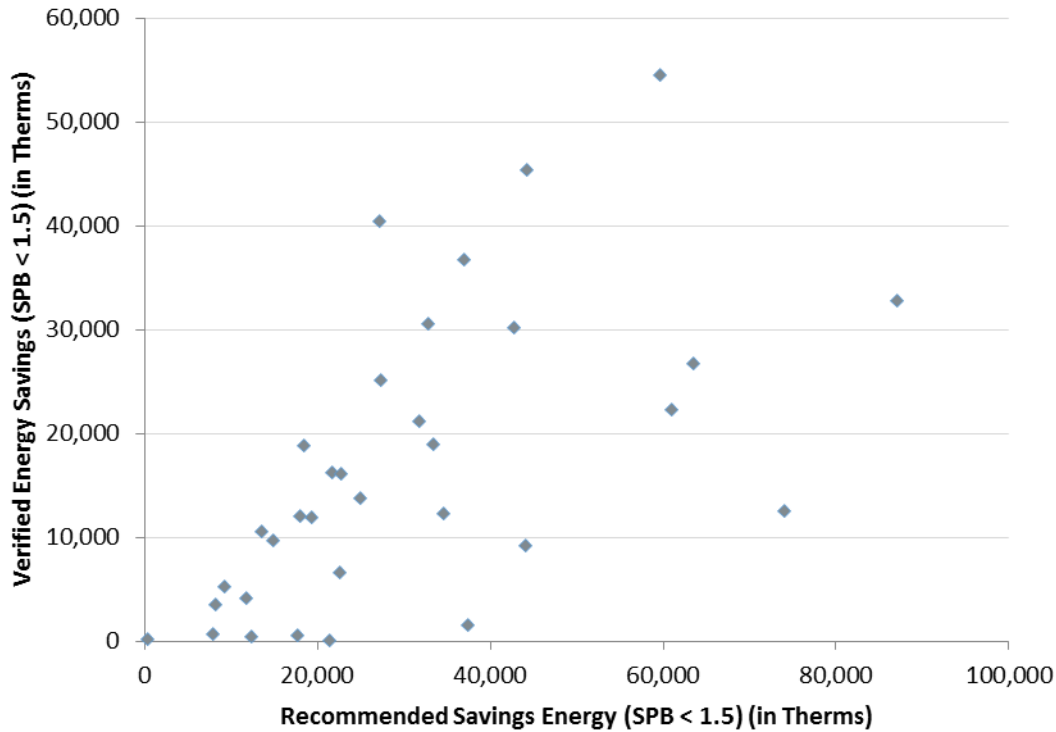


Figure 4-3 Relationship between Recommended and Verified Savings

4.3.2 Documentation Review

ADM reviewed updated program documentation including the service provider manual, the customer selection form, and verification reporting template. These materials are largely consistent with versions used in prior years in terms of substance. Some modifications identified were:

- The documents incorporate Illinois Energy Now branding rather than SEDAC branding.
- The sample verification report has been simplified. Key information is now presented in tables and overall project narrative has been reduced.
- Changes were made to the list of measures not allowed, specifically, behavioral changes and building operator training are explicitly disallowed. Fuel switching measures are removed from the disallowed measure list.
- Some deliverable deadlines were decreased by approximately four weeks.

4.3.3 Program Operations

Interviews were conducted with three program partner staff members at the University of Illinois at Urbana-Champaign and 360 Energy Group. The interviews addressed changes that occurred in EPY7/GPY4, as well program successes and challenges.

- **EPY7/GPY4 Changes:** Improvements were made to RCx service provider reporting templates, customer selection form and verification form. The forms were re-organized to improve consistency, reduce review time, and clarify program requirements to service providers. Program staff indicated that the new forms are an improvement and now service providers can spend more time conducting engineering analysis and less time struggling with administrative requirements. Additionally, the modified templates support quicker review by program staff. Figure 4-4 below provides a screenshot of reporting layout.

Customer Verification Form												
Project:	Anytown School District											
Building:	Facility Name or Address											
RSP:	Engineering Firm											
Phase:	Verification											
Edit Date:												
<u>Pre-Verification</u>												
RCxM No.	Measure Description	Measure Interaction ²	Projected Annual Savings							Implementation Cost (\$)	Available IEN Incentives (\$)	SPB Without Incentives (Years)
			Electric Savings (kWh)	Electric Demand Savings Average (kW/Mo) ¹	Electric Cost Savings (\$)	Natural Gas Savings (therms)	Natural Gas Cost Savings (\$)	Total Cost Savings (\$)	Facility Cost Savings (%)			
1	Measure Description											
2	Measure Description											
3	Measure Description											

Figure 4-4 Service Provide Reporting Template

Staff indicated all RCx program materials now reflect the new Illinois Energy Now brand. The new logo is used on all public sector program marketing materials and applications. The unified brand reduces the confusion that comes from having multiple program partners responsible for different aspects of program delivery. Staff sees the recent branding effort is a positive development. Figure 4-5 below displays the new Illinois Energy Now logo.



Figure 4-5 New Illinois Energy Now Logo

In the past, RCx program eligible energy efficiency measures include measures that reduce the baseline electrical or gas consumption of a piece of equipment. This is accomplished by

tuning-up or retro-commissioning various power generating aspects of that equipment, such as motors or drives. During EPY7/GPY fuel switching became eligible for program incentives.

Fuel switching is allowed in the cases where upgrade results in a net Btu savings at the end use. Energy savings are evaluated on a net Btu basis.

- **Mini RCx:** The program offered a new subcomponent of the program, referred to as “Mini-RCx,” for smaller buildings ranging from 20,000 to 120,000 square feet. Participants also needed to have completed a SEDAC energy assessment or be in the process of completing one. The intent is to leverage the information collected through the assessment in order to identify energy saving opportunities with minimal additional data collection costs.
- **Communication Processes:** Program staff reported that there were regular communications between parties during the program year. SEDAC and the University of Illinois management held weekly meetings. Additionally, SEDAC, University of Illinois, and the Department of Commerce staffs held meetings every other week during the program year. Additionally, staff reported there are open communications between parties as needed. In particular, more discussion occurred during the beginning of the program year.

Discussions also occur between the University of Illinois and 360 Energy program managers regarding which potential clients will be targeted, and by which party, in order to prevent duplication of efforts.

Interviewed program staff indicated that communication processes were effective and that the frequency of standing meetings was appropriate.

- **Program Marketing and Outreach:** Although the program has not had difficulty meeting its annual savings goal, staff noted that meeting that goal does require effort to promote the program. Outreach is performed by program staff through direct outreach to public entities and through presentations. During the year, program records indicate that the program was promoted or explained at 48 events or training sessions during the program year. These events and trainings targeted public sector representatives as well as service providers.

The Illinois Energy Now program also has a newsletter that is sent to participants on the program distribution list. Service providers also perform outreach on behalf of the program. The program provides service providers with materials such as pamphlets and case studies. The program brochure describes the participation process, typical clients, energy and non-energy benefits, eligibility criteria, and typical recommendations. Additionally, information about other Department of Commerce incentives is provided.

Staff noted that the RCx program is also a gateway to other Department of Commerce incentive programs. The RCx studies identify measures that may be eligible for program incentives in addition to retro-commissioning measures.

- **Service Provider Training:** A webinar is held each year for service providers. This training is not required but staff reported that it was well attended. The training covers program changes and key aspects of participation. New service providers receive one-on-one training.
- **Successes and Challenges:** Staff was asked what they believe are the greatest strengths of and challenges faced by the RCx Program. Staff indicated that the engineering support offered during the study phase is exceptional. The results allow clients to prioritize their projects, make critical decisions about materials, and focus on the most cost effective measures. As a result of the RCx study, many clients become aware the range of energy savings opportunities and incentive programs available, thus driving participation into other Illinois Energy Now Programs.

In terms of challenges, staff noted the current budget uncertainty and the impact that may have on the program.

4.3.4 Service Provider Interview Findings

In-depth interviews were conducted with 10 RCx Service Providers who completed projects during EPY7/GPY4. Interviews lasted approximately 30 minutes. The interviews covered the following topics:

- Program process and satisfaction with it;
- Program influence on participant projects;
- Awareness and barriers to participation; and
- Program training.

The following section summarizes the key findings of the interviews.

4.3.4.1. Service Provider Profile

As shown in Figure 4-6, most respondents (5) indicated they have business development staff that research incentive opportunities and contacted program representatives about becoming a program service provider. Two respondents indicated they were informed by their customers about the program, while two other service providers indicated they heard about the RCx Program through their work with the ComEd program. Only one service provider indicated they were recruited by program staff.

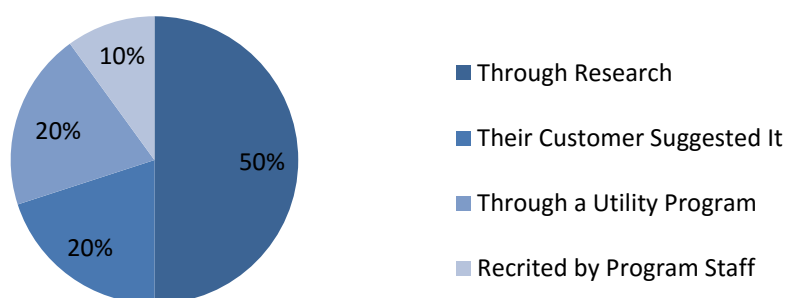


Figure 4-6 How Service Providers Learned about the Program

All of the interviewed service providers also provide services to private sector customers and the majority of respondents (7) estimated the portion of public sector work completed in Illinois is less than 30%. Three of the respondents reported the public sector makes up 50% - 85% of their business.

4.3.4.2. Satisfaction with Program Operations and Study Report Materials

Service providers were asked to discuss their satisfaction with (1) the program participation process and (2) with program materials and documents such as the service provider training manual and report template. Feedback indicates service providers are mostly satisfied with the participation process, although two interviewees stated they were somewhat unsatisfied. Specifically, the report review process and limitations placed on service provider involvement with project implementation were noted as aspects of the participation process that were unsatisfactory. Below are two specific comments:

“...There was a very long review process. The implementer provided comments, we addressed them, then they provided a whole new round of comments. That happen multiple times; it was very inefficient. The incentive paid to us for producing the study was not attractive enough to chase more work.”

“[The Department of Commerce] will not let us assist during implementation. On the private side we are encouraged to help the customer. We can't help define the scope of work, get bids, etc. We think a lot of projects don't achieve the energy savings that the study identifies. We could really help with that.”

Regarding the second comment, it should be noted that the program service provider manual explicitly states that service providers will assist with the implementation including developing the scope of work and clarifying the scope of work. The program does not, however, allow service providers to develop bids. Staff may need to provide clarification to some service providers regarding what their role is during the implementation phase.

All service providers indicated a high level of satisfaction with the program report templates. Interviewees noted that over the past few years the templates have improved and they appreciate anything the program can do to streamline data collection and reporting requirements. However, several interviewees stated that the forms were repetitive, often requiring the same information be entered multiple times. Another service provider indicated that the reports are too detailed for the average building personnel to review, indicating a 50-70 page technical document can be overwhelming to building staff and that most only read the executive summary. Overall, service providers are mostly satisfied with the program participation process and materials; the respondents indicated that the materials are improving each year.

4.3.4.3. Program Awareness and Measure Implementation

Interviewees were asked to comment of the level of awareness customers have with (1) retro-commissioning as a way to optimize building energy use and (2) the RCx Program offerings. Sixty percent of respondents indicated that all of their customers were already familiar with retro-commissioning as a way to optimize building energy use; while nine service providers interviewed indicated that 50% or more of their public sector customers are aware of the RCx Program. The feedback suggests that while awareness is high, for both retro-commissioning as a service and the Department of Commerce RCx Program, service providers still play an important role in making public sector entities aware of the program.

Several of the interviewees mentioned that while public sector personnel may have the awareness of retro-commissioning as a way to optimize building performance, many do not have the knowledge to manage the systems over the long-term. One resource available to assist operators with maintaining building efficiency over the long-term is the Building Operator Certification (BOC) course offered through the Midwest Energy Efficiency Alliance (MEEA). All of the interviewed service providers are aware of the program and approximately half of the service providers indicated that they discuss this resource with public sector customers. The remaining service providers noted that they do not highlight the training opportunity but that it can be found in the study report under “Additional Resources.” This feedback suggests there could be more emphasis on the importance of follow up training for building staff and the BOC course specifically.

To assess service providers perceptions of the impact of the program on the energy efficiency actions implemented as part of a retro-commissioning project, each service provider was asked how often they recommend each measure type, what percent of the recommendations are typically implemented and how likely the customer would have to implement the measures without the service provider’s technical recommendations provided through the DCEO funded study.

Figure 4-7 below displays a summary of how often service providers recommend the various measure types. Maintenance measures were the least recommended measure type, followed by the installation of new sensor or control systems. The most common recommendations are measures that optimize the performance of existing equipment and changes to the scheduling of equipment run times.

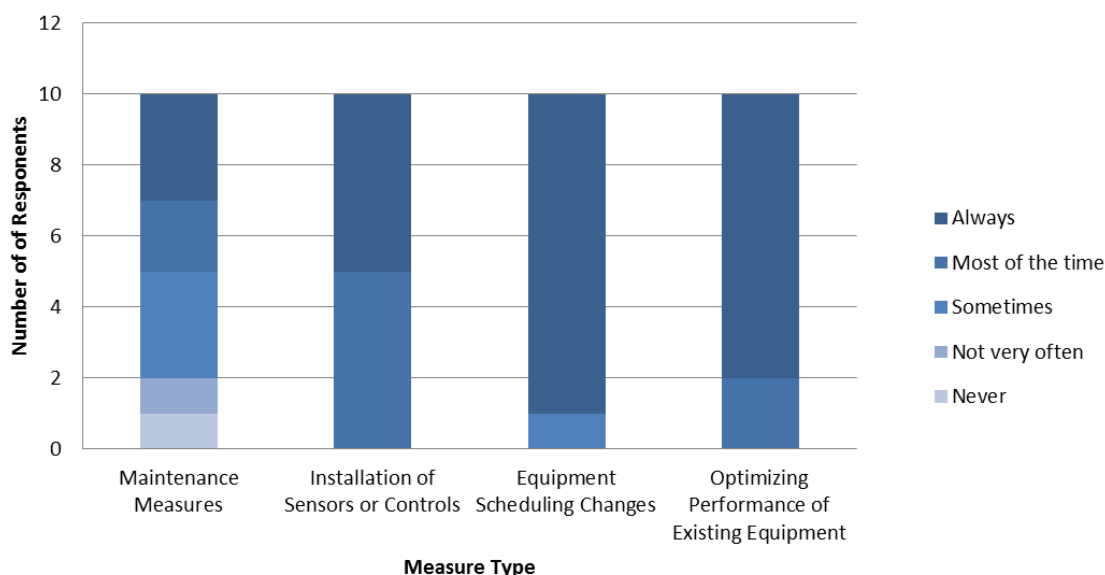


Figure 4-7 How Often Service Providers Recommend Various Measure Types

According to service providers, public sector customers are more apt to implement changes to the scheduling of equipment and perform maintenance than they are to install new controls systems or optimize the performance of existing equipment. As shown in Figure 4-8, seven interviewees indicated approximately 100 – 91% of recommendations they make regarding equipment scheduling changes are implemented. Similarly, four said that 100 – 91% of maintenance measures are implemented.

Service providers discussed reasons public sector customers give for not installing the recommended retro-commissioning measures. The most common responses were cost and familiarity with the measure. Minor maintenance and scheduling changes are more familiar and much less costly to implement than installing new control systems or optimizing existing equipment.

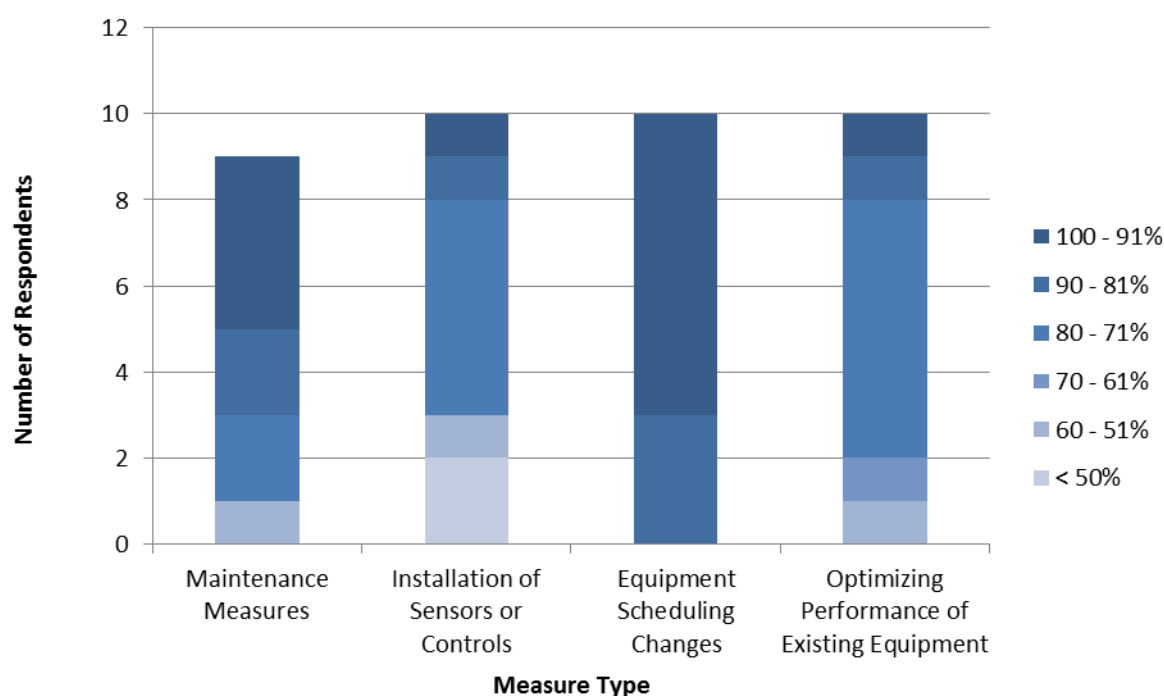


Figure 4-8 Percent of Service Provider Recommendations Implemented

4.3.4.4. Decision Making and Barriers to Participation

All service providers indicated that they believe the studies were critical to their customers' decisions to move forward with implementation and that most public sector organizations need some type of incentive to justify significant capital investments, such as those required to implement some of the recommendations identified during the RCx study. Service providers stated that incentives are now part of most public sector project financing models.

Service providers provided information on how projects completed through the Department of Commerce program might have differed had the program not been available. The majority of respondents indicated that RCx studies are performed the same whether they are part of the program or not, although two service providers indicated they would have done the study differently. One these service providers indicated they would not have develop such a highly detailed study report and the other service provider indicated that in the private sector they would focus on not only energy savings, but more on comfort measures and basic maintenance.

Service providers identified several barriers to program participation and were asked how the Department of Commerce could further reduce these barriers for the public sector. The most notable barrier to RCx Program participation was the \$10K spending commitment. Service providers said that funding is always the primary barrier for the public sector and a \$10K price tag can deter many customers.

Service providers stated that they see projects lose momentum due to delays in the start of the program year. The delayed program year not only creates uncertainty for customers who may already be reluctant to participate, but also compresses the timeline for service providers conducting the study and contractors performing the work. Service providers said there are a lot of RCx energy savings in the public sector, but that 4 to 5 months is not enough time to do more than 1 or 2 projects each year. Two of the service providers indicated that they each had a public sector customer who opted out of the RCx study because they were not able to adhere to the timeline.

Another barrier identified is getting commitment from high-level decision makers in the organization. Getting all key parties on-board and determining which budget the funds will come from is one of the hardest parts in putting the project together. One service provider indicated that during the initial site visit, he always stresses the importance of determining exactly where the funding is coming from and who the key decision makers are. The interviewee said if identifying where the funds will come from is not part of the conversation early in the process, the project will not get done in time.

Other barriers include the budget uncertainty in Illinois and complexity of retro-commissioning solutions for public sector facilities staff. Several service providers mentioned that resources are limited in the public sector and often janitorial staff is also responsible for monitoring the buildings systems. General facility and/or janitorial staff typically do not have the time or knowledge base to learn about building optimization as a way to save energy and reduce operating expenses. One service provider specifically discussed this challenge:

“In the Midwest we have extreme weather patterns and unless you have controls that are designed to handle that, your buildings system is going to be completely taxed. Most facility staff are cranking the systems way up or way down when temps change. Most don’t understand that controls are designed to compensate for that and typically they don’t need to manually override the system every few weeks. We see that a lot...”

4.3.4.5. Program Training

All service providers indicated that they took part in the webinar that was hosted at the beginning of the program year. The webinar addressed the EPY7/GPY4 RCx Program project process and incentive offerings. All were satisfied with what was presented. One service provider suggested presenting more case studies to better understand the success and challenges that other service providers are encountering. He specifically said:

“We need to be sharing more information and lesson learned. Personally, I’d like to know what’s working out there and what’s not.”

4.3.4.6. Suggestions for improvements

Service providers offered several suggestions regarding ways the Department of Commerce could further reduce the barriers to retro-commissioning and program participation among public sector organizations in Illinois. Below is a summary of those suggestions:

- The most frequent suggestion was to start the program year on time. Service providers believe they could complete more projects and better support their customers if the program year lasted a full 10-12 months. Service providers indicated that 6 months is just not enough time to get these projects through the appropriate channels.
- Secondly, service providers suggested offering incentives that further offset the capital investment required to undergo measure implementation, as well as lifting the restrictions on service providers' ability to assist more with implementation. One service provider suggested the Department of Commerce mimic ComEd's RCx Program.⁴
- Consider ways to provide low interest loans to public sector customers. Service providers indicated that if an organization needs funding their only option is and Energy Service Company (ESCO), which have high fees and interest rates.
- Consider adding measures that include applications for system monitoring. One service provider stated that software applications capable of performing data analytics are coming down in price and could provide building operators and decision makers with the metrics necessary to understand the relationships between improved operations, costs, and performance.
- One service provider indicated that many schools have digital controls systems that were installed in the 80's and 90's and they are approaching the end of their useful life. He suggested that the Department of Commerce survey schools that are looking to upgrade their controls systems and have service providers involved in the process.

4.3.4.7. Key Findings from Interviews with Service Providers

Below is a summary of key RCx Program service provider interview findings:

- Overall, service providers are mostly satisfied with the program participation process and materials and they indicated that the materials are improving each year. However, the extensive review process and the limitations placed on service provider's ability to assist with implementation were noted as challenges. The feedback also suggests that awareness could be improved in the public sector of both retro-commissioning services as a way to improve building efficiency, and of the Department of Commerce RCx Program.

⁴ ComEd offers different retro-commissioning options for buildings of different sizes. The smallest buildings (<150,000 ft²) are eligible to receive a fully funded study and fully funded measure implementation. Retrieved December 2015 from:

<https://www.comed.com/business-savings/programs-incentives/Pages/retro-commissioning.aspx>.

- Most service providers believe that many public sector building personnel lack the knowledge necessary to maintain higher levels of system efficiency over the long-term. Most service providers are also aware of additional training opportunities available to public sector building staff such as the Building Operator Course (BOC), however the degree to which they promote the BOC course varies. Feedback suggests that training opportunities such as the BOC course are not consistently communicated to public sector customers. Many of the service providers interviewed indicated that they do not always tell building personnel about the program but they assume they have been notified because the BOC Program is referenced in the study report.
- Equipment scheduling changes and general maintenance measures were most commonly recommended by service providers, were the most likely to be implemented, and also tend to be the measure types that participants are most likely to implement on their own (although most stated that participants were unlikely to implement these on their own). Reasons for not following recommendations include initial cost and lack of knowledge regarding long-term system management.
- All service providers indicated they believe the studies were critical to their customers' decisions to move forward with implementation and that most public sector organizations need some type of incentive to justify investments in energy efficiency measures. Service providers stated that incentives are now part of most public sector project financing models.
- Service providers believe the primary barriers to program participation are the initial investment, the timing of the program year in terms of initial delays, and public sector budget cycles that are out of synch with the program year. Gaining commitment from high-level decision makers as well as the time it takes for public sector organizations to determine the appropriate cost allocation method can also present barriers to completing program projects. Other barriers include the budget uncertainty in Illinois and the lack of knowledge about retro-commissioning as a way to optimize building energy use. Many facilities staff members do not have the knowledge or experience to sustain efficient operations once the weather changes.

Based on the interviews with retro-commissioning service providers, ADM offers the following recommendations:

- Consider partnering with other state funded foundations or private financial institutions to offer low interest loans to public sector organizations for investing in energy efficiency improvements.
- Utilize service providers' experiences and successes to educate the broader network of service providers.
- Clarify during annual training webinars the service providers' role in each stage of the retro-commissioning process.

- Consider requiring that service providers discuss the building operator program with clients to ensure that they are aware of it the training and its role in helping the facility maintain energy savings.
- If there is sufficient stability in program funding, consider allowing or encouraging service providers to discuss retro-commissioning projects prior to receiving a program budget to enable additional planning time.

4.3.5 Program Participant Findings

This section summarizes results from a survey of program participants. In total, 17 program participants completed the survey. Table 4-3, Table 4-4, and Table 4-5 display firmographics for survey respondents.

Table 4-3 Survey Respondent Facility Types

<i>Respondent Building Type</i>	<i>Percent of Respondents (n= 17)</i>
School--K-12	59%
School--College/University	18%
Public--other	12%
Office building--high rise	6%
Office building	6%

Table 4-4 Payment of Utilities

<i>Payment of Utilities</i>	<i>Natural Gas Service (n= 17)</i>	<i>Electricity Service (n= 17)</i>
Organization pays full cost for facility	94%	94%
Organization does not pay the full cost for facility	0%	0%
Don't know	6%	6%
Refused	0%	0%

Table 4-5 Facility Ownership

<i>Ownership of Facility</i>	<i>Percent of Respondents (n=30)</i>
Own and Occupy	100%

4.3.5.1. Project Initiation and Participation Process

The most commonly reported source of program awareness was learning of the program during a conference or workshop presentation (24%), from a friend or colleague (12%), or from a Department of Commerce Program representative (12%). Only one respondent indicated first learning of the program through a retro-commissioning service provider.

Table 4-6 Source of Awareness for Program

<i>Source of Program Awareness</i>	<i>Percent of Respondents (n= 17)</i>
A presentation at a conference or workshop	24%
From a friend or colleague	12%
From a Department of Commerce Program representative	12%
The Department of Commerce Illinois Energy Now Newsletter	6%
The program website	6%
Board meeting	6%
At a Department of Commerce Trade Ally Rally	6%
Consultant	6%
Ameren staff member	6%
Another staff member	6%
From a retro-commissioning service provider	6%
Participation in another program	6%

4.3.5.2. Project Initiation and Participation Process

Table 4-7 displays the reasons participants gave for deciding to complete the project. Most respondents stated that the reason for completing the RCx project was to save on energy costs or use. Twelve percent of respondents stated that they decided to participate because of the free study.

Table 4-7 Reasons for Deciding to Complete the Project

<i>Response</i>	<i>Percent of Respondents (n=17)</i>
To reduce energy costs	65%
To reduce energy use/power outages	53%
Because the study was provided for free	12%
Long term benefit in reduced operating costs	6%
Building was eligible	6%
Convenience of building automation system	6%
Budget concerns	6%

Forty-one percent of survey respondents reported that they had initial concerns about participating in the program.

Table 4-8 Initial Concerns about Participating in Program

<i>Did you have any initial concerns about participating?</i>	<i>Percent of Respondents (n=17)</i>
Yes	41%
No	59%
Don't Know	0%
Refused	0%

The reasons for the concerns were varied and included common concerns about retro-commissioning such as uncertainty about the process, the time and labor commitment, and the likely results:

- Concern how the program would work (n=2)
- Concern about what would be found about the building because of its age (n=1)
- Concern about affording it (n=1)
- Concern about the time commitment (n=1)
- Concern that energy saving measures would not be identified (n=1)

Most participants reported that they did not have any difficulty providing the required program documentation; only 18% noted an issue with providing documentation. The issues noted were that the paperwork was tedious, that the process could be improved if there was a central project manager to coordinate all activities, and that some building repairs were required before the process could begin.

Table 4-9 Difficulty Providing Required Documentation

<i>Did you have any difficulty providing required documentation?</i>	<i>Percent of Respondents (n=17)</i>
Yes	18%
No	82%
Don't Know	0%
Refused	0%

A little more than one-half of respondents stated that their organization had one or more additional facilities that qualify for the Department of Commerce's program. All of these respondents indicated that they were likely or very likely to retro-commission these facilities through the program in the future.

Table 4-10 Other Qualifying Facilities

<i>Does your organization have other facilities that qualify for the program?</i>	<i>Percent of Respondents (n=17)</i>
Yes	53%
No	41%
Don't Know	0%
Refused	0%

Respondents stated preferences for methods for receiving program information included e-mail (41%), Presentations (41%), through trade allies (29%), and website updates (29%).

Table 4-11 Best Way to Receive Program Information

<i>Response</i>	<i>Percent of Respondents (n = 17)</i>
E-mail	41%
Presentations at events or contractors	41%
Trade allies/Vendors/Contractors	29%
Website updates	29%
Direct mailings	12%
Telephone	6%

4.3.5.1. Participant Satisfaction

Figure 4-9 displays participant satisfaction with the program. As shown, none of the respondents were dissatisfied with any aspect of the program and all respondents were satisfied with the program materials, interactions they had with SEDAC staff, and the service the provided by their retro-commissioning service provider.

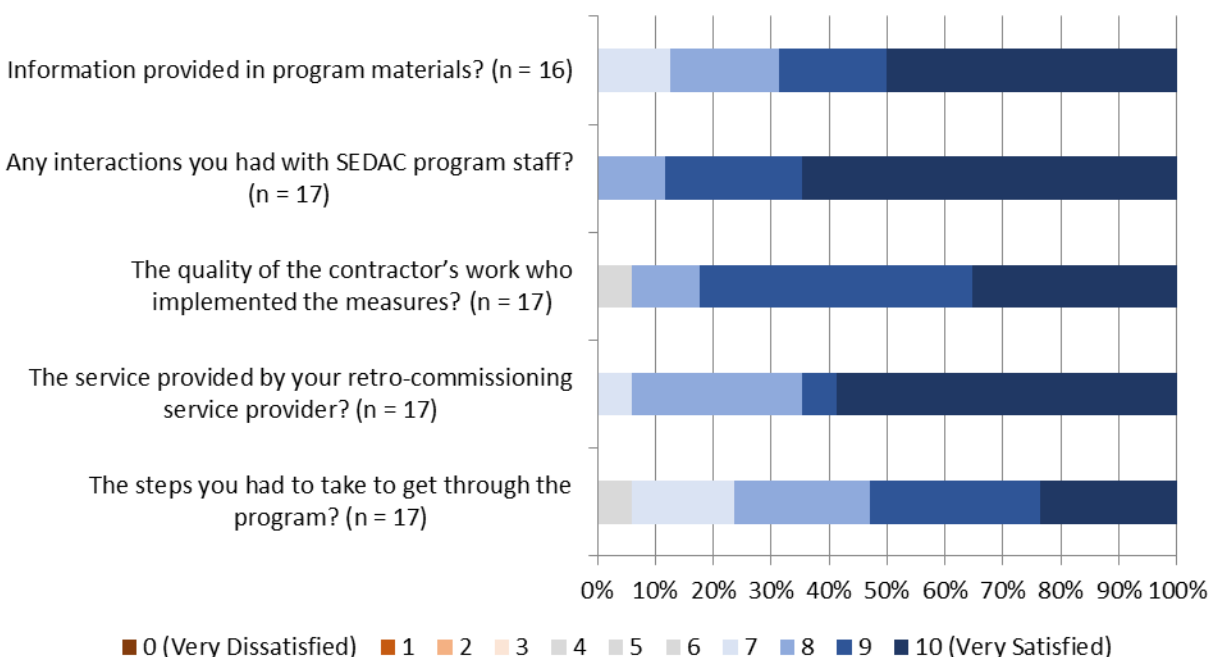


Figure 4-9 Participant Satisfaction

Eleven respondents provided comments on how the Department of Commerce could improve its programs. Three respondents stated that the programs should continue to be funded. These respondents indicated that they had additional projects they wanted to complete or that they would not have completed the project had the program not been available.

Three respondents provided suggestions for program marketing and outreach. One of these respondents stated that program staff should discuss the program with high-level facility directors who can delegate projects to their staff. The other respondent stated that the program marketing materials should make clear the how simple the process is and ensure that public sector entities are aware of it. A third respondent indicated that staff should communicate when the program is available again.

Two respondents made suggestions related to the incentives provided. One of these respondents stated that they should offer the program without a spending requirement and the other stated that funding for the full project should be made available not just incentives.

One respondent stated that for schools, it would be best to know what funding is available in the spring in order to time projects during the summer period. Lastly, one other participant suggested that a program staff member should coordinate the project on behalf of the participant.

Appendix A: Site and Measure-Specific Notes

Table A-1 Project-Level Gross Realized Savings Analysis Results

Project	Measure	Electric Energy (kWh)		Electric Demand (kW)		Natural Gas (therms)		Notes
		Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	
Project 1	AHU Daily Schedules	198,052	84%	0	-	3,149	98%	Difference could be from ex ante running TMY2 vs ex post running TMY3
	Planetarium Daily Schedule	2,954	123%	0	-	447	91%	Difference could be from ex ante running TMY2 vs ex post running TMY3
	Vacation Day Schedules	76,241	98%	0	-	2,100	93%	Difference could be from ex ante running TMY2 vs ex post running TMY3
	Seasonal Thermostat Reset	108,891	101%	0	-	2,649	98%	Difference could be from ex ante running TMY2 vs ex post running TMY3
	Valve Off CHW in Heating Season	154,586	100%	0	-	1,460	100%	After review of the calculations, the savings are deemed reasonable.
	Suspect Sensors/Dampers	1,655	100%	0	-	2,249	100%	After review of the calculations, the savings are deemed reasonable.
Project 2	HVAC Scheduling (Overnight)	573,691	92%	0	-	25,153	62%	No ex ante calculations were included, therefore no difference in calculations can be inferred. Ex post calculated hourly cooling, heating, and fan savings associated with the HVAC scheduling reduction.
	HVAC Scheduling (Vacation Days)	36,539	74%	0	-	1,445	136%	No ex ante calculations were included, therefore no difference in calculations can be inferred. Ex post calculated hourly cooling, heating, and fan savings associated with the HVAC scheduling reduction.
Project 3	Daylight Sensors for the Lobby and IMC Area	1,480	100%	0	-	0	-	After review of the calculations, the savings are deemed reasonable.

Project	Measure	Electric Energy (kWh)		Electric Demand (kW)		Natural Gas (therms)		Notes
		Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	
	AHU Runtime Optimization	28,854	100%	0	-	1,965	96%	Difference in therm savings because ex post eliminated thermal loss values for heating therms above 45 degrees because the boiler operated below 45 degrees.
	Boiler Plant Optimization	0	-	0	-	10,214	76%	Low realization rate because ex ante calculations included savings above 45F. However, the boiler plant is enabled at 45F, therefore there are only savings below 45F.
	Damper Repairs & AHU Economizer Sequence Optimization	-19,820	100%	0	-	6,754	100%	After review of the calculations, the savings are deemed reasonable.
Project 4	Adjust AHUs and UVs Time Schedules (Annex Building)	148,093	100%	0	-	8,188	100%	After review of the calculations, the savings are deemed reasonable.
	AHU-1 Discharge Air Static Pressure Reset (Annex Building)	29,079	100%	0	-	0	-	After review of the calculations, the savings are deemed reasonable.
	AHU-1 Discharge Air Temperature Reset (Annex Building)	1,541	100%	0	-	184	100%	After review of the calculations, the savings are deemed reasonable.
	AHU-2 Demand control Ventilation (Annex Building)	5,863	100%	0	-	1,180	100%	After review of the calculations, the savings are deemed reasonable.
	Adjust AHUs, FCs, and UVs Time Schedules (Main Building)	57,440	100%	0	-	12,065	100%	Difference due to chilled water temp changed from ex ante assumed 44 to ex post verified 45.
	Repair Leaking Steam Piping on MAU-1 & Update Control Sequence (Main Building)	0	-	0	-	8,286	120%	Difference due to provided ex ante calculator estimates 9,943 savings, however ex ante claimed savings are 8,286. After review of the calculator, 9,943 kwh savings seems reasonable.

Project	Measure	Electric Energy (kWh)		Electric Demand (kW)		Natural Gas (therms)		Notes
		Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	
	AHU-1 Demand Control Ventilation (Kitchen/Cafeteria)	-656	98%	0	-	563	100%	Difference due to chilled water temp changed from ex ante assumed 44 to ex post verified 45.
	Chilled Water Supply Temperature Reset (Main Building)	1,017	29%	0	-	0	-	Changed chilled water temperature schedule to verified schedule. Ex ante: OAT 55-65, CWT 50-45 and ex post: OAT 50-75, CWT 48-45.
Project 5	Schedule Make-up Air Unit (Admin)	25,731	100%	0	-	776	98%	Operated one hour before (6am instead of 7am), ex ante used the conversion 118/123 to account for reduced savings, however ex post just changed the model.
	Reduce chilled water pump flow (HS)	20,080	222%	4	242%	0	-	Secondary pump component selected all 3 pumps (CHW, HW and Secondary) when it should have only selected Secondary, also changed run based on baseline instead of previous measure.
	Activate Energy Recovery Unit (Dietary)	2,890	100%	8	56%	6,977	102%	Difference could be from ex ante running TMY2 vs ex post running TMY3.
	Enable Setback Controls (Officer)	10,987	112%	-33	-49%	3,960	95%	Difference could be from ex ante running TMY2 vs ex post running TMY3.
	Schedule Clrm Storage Unocc (Officer)	8,065	95%	31	4%	799	101%	Difference could be from ex ante running TMY2 vs ex post running TMY3.

Project	Measure	Electric Energy (kWh)		Electric Demand (kW)		Natural Gas (therms)		Notes
		Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	
Project 6	Adjust AHU schedules to match space occupancy	404,893	112%	0	-	2,512	142%	Fan kW calculated differently in ex ante and ex post. Ex ante used amp to kw equation; however, the conversion was incorrect because it used hp instead of amps. Ex post converted known hp to kW. High therm realization because the ex ante and ex post calculations used a different discharge air temperature (DAT) reset schedule. Ex ante included averaged DAT that varied significantly with the reset schedule. Ex post used the programmed reset schedule, which resulted in increased savings.
	Outside air damper repair on AHU W-S-1	6,233	100%	0	-	9,386	100%	After review of the calculations, the savings are deemed reasonable.
	Control valve tuning on new AHUs	0	-	0	-	24,739	101%	The pool area AHU (W-ASU-11) has a different reset strategy than the rest of the units. The ex ante analysis averaged the MAT difference pre and post for 5 units and used the average to calculate the savings for 11 units. Ex post used 4 units average (all but W-ASU-11) and calculated savings. The 4 units were used to calculate the savings for 10 units and the pool area savings were calculated separately.
	Optimize existing enthalpy based economizer	40,340	100%	0	-	0	-	After review of the calculations, the savings are deemed reasonable.

Project	Measure	Electric Energy (kWh)		Electric Demand (kW)		Natural Gas (therms)		Notes
		Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	
Project 7	Automated Chilled Water Reset	26,505	137%	9	269%	0	-	DEER prototypical community college model run with TMY3 O-Hare weather and savings were normalized to building square feet. High realization because the ex ante calculated savings by using the conservative assumption that the chiller is 1.25% more efficient for every degree drop in chilled water temperature.
	Automated Discharge Air Temperature Reset	2,960	5%	6	0%	0	-	DEER prototypical community college model run with TMY3 O-Hare weather and savings were normalized to building square feet. Difference in realization due to ex ante calculations not using the pre implementation discharge air reset schedule.
	Recalibrate and Restore Programming of DCV	24,058	73%	27	59%	6,616	112%	DEER prototypical community college model run with TMY3 O-Hare weather and savings were normalized to building square feet. Difference in realization due to ex ante using a generalized schedule (6-10 M-F, 6-6 Sat) with assumed CO2 ppm quantities that linearly increased until 2:00 and linearly decreased until 10:00 and was consistent for the entire year. Realistically, the schedules will have more variety following the building occupancy and account for holidays and days off.

Project	Measure	Electric Energy (kWh)		Electric Demand (kW)		Natural Gas (therms)		Notes
		Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	
	Static Pressure Reset	60,343	74%	13	260%	0	-	DEER prototypical community college model run with TMY3 O-Hare weather and savings were normalized to building square feet. Difference in realization due to ex ante basing savings on VFD and CFM data between 19F and 45F and trended for higher temperatures. However, only having low temperature data points gives limited insight on how the system will actually perform in hotter weather.
Project 8	Schedule Air-Handling Units and Roof-Top Units	177,607	94%	0	-	0	-	Difference in realization because savings for AHUs 3-6 were not included. From the ex ante verification report: Units were found to operate as intended with exception of AHUs 3-6. It is believed that devices are hard coded to run continuously and need to be reprogrammed by Trane.
	Turn off CHWP M1A & M2A in Winter and Schedule	68,577	100%	0	-	0	-	After review of the calculations, the savings are deemed reasonable.
	Repair or Relocate Thermostat for AH-3 & AH-6	0	-	0	-	4,442	100%	After review of the calculations, the savings are deemed reasonable.
	Demand Control Ventilation for AH-2, 3, 7, EAH-3, 4, 5, 9	13,986	84%	4	82%	11,706	70%	OA% from screenshots is set to 5% minimum. Changed anything below 5% to 5%.

Project	Measure	Electric Energy (kWh)		Electric Demand (kW)		Natural Gas (therms)		Notes
		Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	
Project 9	Static Pressure Reset	76,856	167%	20	138%	0	-	Difference in realization because the ex post used the trend formula to predict the entire range of values, while the ex ante uses verified data where collected and trended the missing data. The ex post and ex ante also used different weather data because the weather data used in the ex ante calculations could not be verified. The ex post used TMY3 O'Hare weather data. High realization rate mainly because ex ante calculations for Unit S3 had a cell misplaced in the equation for calculating delta BHP. 460 volts replaced 93% overall efficiency lowering the savings. If the efficiency was used instead of volts the measure savings would have been 117,556 kWh.
	Reduce Fan speed on AHUs at Night	428,013	96%	0	-	0	-	Difference in realization due to the ex post and ex ante using different weather data because the weather data used in the ex ante calculations could not be verified. The ex post used TMY3 O'Hare weather data. Ex post and ex ante calculated different hours for each bin. The ex post calculated 423 cooling hours while the ex ante calculated 652 cooling hours for this measure.
	Implement Night Setback on AHUs	0	-	0	-	2,178	127%	Difference in realization due to ex ante not accounting for boiler efficiency. The ex post and ex ante also used different weather data because the weather data used in the ex ante calculations could not be verified. The ex post used TMY3 O'Hare weather data.

Project	Measure	Electric Energy (kWh)		Electric Demand (kW)		Natural Gas (therms)		Notes
		Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	Ex Ante Savings	Realization Rate	
	Close OA Dampers for Night Operation	86,004	88%	0	-	46,160	106%	Difference in realization due to the ex post and ex ante using different weather data because the weather data used in the ex ante calculations could not be verified. The ex post used TMY3 O'Hare weather data. Ex post and ex ante calculated different hours for each bin. The ex post calculated 499 cooling hours while the ex ante calculated 652 cooling hours for this measure.
	Readjust Minimum OA Damper Position	74,666	74%	39	85%	5,967	111%	Difference in realization because the ex post and ex ante used different weather data because the weather data used in the ex ante calculations could not be verified. The ex post used TMY3 O'Hare weather data.

Appendix B: Free Ridership Analysis

This appendix presents additional analysis of the data collected on free ridership that pertains to the free ridership methodology used in the estimation of net savings for the Retro-Commissioning Program. ADM estimated free ridership for the RCx Program using the approaches outlined in the Illinois Statewide Technical Reference Manual (TRM) Version 5.0, Vol. 4, Core Non-Residential Free Ridership Protocol (p.28).. This protocol presents two approaches for calculating the Program Components Score and three algorithms for accounting for the deferment of free ridership (Timing Options).

Additionally, guided by Illinois Commerce Commission direction that, with respect to a determination regarding free ridership, the person or entity in question should have actual energy efficiency plans before they are to be considered to be free riders, ADM developed an Energy Efficiency Plans Score and incorporated it into the algorithm for calculation of participant free ridership.⁵

Accounting for the two Program Component Score options, the three Timing Options, and the inclusion/exclusion of the Energy Efficiency Plans Score, there are a total of 12 free ridership scores presented below.

Alternative Program Component Score Options

The two approaches for calculating the Program Components Score are defined as follows:

(1) Program Components Score (Option 1) is equal to:

$$1 - ([Maximum Program Factor Score]/10).$$

(2) Program Components Score (Option 2) is equal to:

$$([Maximum Program Factor Score] / ([Maximum Program Factor Score] + [Maximum Non-Program Factor Score])).$$

Alternative Timing Options

The three *timing options* that may account for the deferment of free ridership in the overall free ridership score are as follows:

(1) For Timing Option 1, a timing adjustment factor is equal to:

$$1 - (Number of Months Expedited - 6)/42$$

⁵ See docket 11-0593 Final Order: <https://www.icc.illinois.gov/downloads/public/edocket/371251.pdf>

Under Timing Option 1, the timing adjustment factor is multiplied with the No Program Score, which is then averaged with the Program Influence Score and the Program Components Score.

(2) For Timing Option 2, a timing adjustment factor is equal to:

$$1 - ((\text{Number of Months Expedited} - 6)/42) * ((10 - \text{Likelihood of Implementing within One Year})/10)$$

Under Timing Option 2, the average of the No Program Score, Program Influence Score, and the Program Components Score are multiplied by the timing adjustment factor.

(3) For Timing Option 3, a timing score is equal to:

$$\text{Likelihood of Implementing within One Year}/10$$

Under Timing Option 3, the timing score is averaged with the No Program Score to calculate a Counterfactual Score. Overall free ridership is calculated by taking the average of the Program Components Score and the Program Influence Score, and then taking the average of the result and the Counterfactual Score.

Energy Efficiency Plans Score

The construction of the Energy Efficiency Plans Score is described in Chapter 3. Table B-1 summarizes the share of respondents that met the prior plans criteria for scoring free ridership as 0. As shown, 41% of respondents met the two criteria that indicated that they did not have plans to complete the project prior to participation and another 12% met the criteria indicating they did not have funds for the project.

Table B-1 Summary of Responses to Plans Module

<i>Prior Plans Indicator</i>	<i>Percent of Respondents</i>
Did not have plans prior to completing retro-commissioning	41%
Did not have funds to complete retro-commissioning	12%
Met either plans criterion	53%

Free Ridership Scores

All scores are reported in terms of free ridership, meaning that higher scores are indicative of higher levels of free ridership.

Table B-2 through Table B-4 present the 12 free ridership scores weighed by kWh, kW, and therm savings, respectively.

Table B-2 Summary of Free Ridership Scoring Options and Free Ridership (Weighted by kWh Savings)

Program Components Score Option	Free Ridership Algorithm Timing Option	Included Component Scores						FR With Plans Score	FR Without Plans Score
		Program Influence	Adjusted No Program Score	No Program Score	Counter-factual Score	Program Components 1	Program Components 2		
1	1	Yes	Yes	No	No	Yes	No	0.05	0.08
	2	Yes	No	Yes	No	Yes	No	0.03	0.06
	3	Yes	No	No	Yes	Yes	No	0.06	0.12
2	1	Yes	Yes	No	No	No	Yes	0.10	0.23
	2	Yes	No	Yes	No	No	Yes	0.06	0.15
	3	Yes	No	No	Yes	No	Yes	0.10	0.23

Table B-3 Summary of Free Ridership Scoring Options and Free Ridership (Weighted by kW Savings)

Program Components Score Option	Free Ridership Algorithm Timing Option	Included Component Scores						FR With Plans Score	FR Without Plans Score
		Program Influence	Adjusted No Program Score	No Program Score	Counter-factual Score	Program Components 1	Program Components 2		
1	1	Yes	Yes	No	No	Yes	No	0.07	0.11
	2	Yes	No	Yes	No	Yes	No	0.04	0.05
	3	Yes	No	No	Yes	Yes	No	0.07	0.13
2	1	Yes	Yes	No	No	No	Yes	0.14	0.24
	2	Yes	No	Yes	No	No	Yes	0.08	0.10
	3	Yes	No	No	Yes	No	Yes	0.13	0.23

Table B-4 Summary of Free Ridership Scoring Options and Free Ridership (Weighted by Therm Savings)

Program Components Score Option	Free Ridership Algorithm Timing Option	Included Component Scores						FR With Plans Score	FR Without Plans Score
		Program Influence	Adjusted No Program Score	No Program Score	Counter-factual Score	Program Components 1	Program Components 2		
1	1	Yes	Yes	No	No	Yes	No	0.08	0.11
	2	Yes	No	Yes	No	Yes	No	0.04	0.06
	3	Yes	No	No	Yes	Yes	No	0.09	0.13
2	1	Yes	Yes	No	No	No	Yes	0.16	0.25
	2	Yes	No	Yes	No	No	Yes	0.07	0.12
	3	Yes	No	No	Yes	No	Yes	0.15	0.24

Choice of Program Components Score

For comparison purposes, Table B-5 presents score characteristics of the two Program Components scores and the other free ridership component scores. As shown, the inclusion of the highest rated non-program component score in the calculation in the denominator of the Program

Components Score (Option 2) score greatly increases the level of free ridership implied by the score.

ADM opted to reference Program Components Score (Option 1) in the calculation of free ridership. As shown in Table B-5, the average Program Components Score (Option 1) was more consistent with the other free ridership component scores calculated than the average Program Components Score (Option 2). More importantly, the inclusion of Program Components Score (Option 2) along with the Program Influence Score would be to incorporate two measurements of *relative* program influence, and to omit any measurement of *absolute* program influence.

Table B-5 Free Ridership Component Score Characteristics

<i>Free Ridership Component Score</i>	<i>Average</i>	<i>Min</i>	<i>Max</i>	<i>Standard Deviation</i>
Program Components Score (Option 1)	0.05	0.00	0.20	0.07
Program Components Score (Option 2)	0.46	0.33	0.53	0.05
Program Influence Score	0.18	0.00	0.50	0.15
Adjusted No Program Score	0.06	0.00	0.50	0.14
No Program Score	0.20	0.00	0.50	0.16
Counterfactual Score	0.16	0.00	0.50	0.14

Choice of Deferred Free Ridership Algorithm

As discussed above, the non-residential protocol allows for three options for accounting for the deferment of free ridership. A key difference between the options is whether or not respondent-provided information on the impact of the program on timing of implementation is used to adjust, or is averaged with, the No Program Score alone, or if it is used to adjust the average of all included free ridership scoring components.

ADM referenced the algorithm that adjusts the average of all included free ridership scoring components (Timing Option 2) for the effect of the program on timing of implementation. Responses to questions regarding program importance and the likelihood of implementing a project in the absence of the program are appropriately adjusted to account for respondent data regarding the impact of the program on expediting implementation of projects. The data presented in Table B-6 and Table B-7 suggests a weak relationship between the Program Influence Score and the No-Program Score. As shown, the respondents reported that the number of months the project was expedited appears to be largely unrelated to both the Program Influence Score the No Program Score.

Table B-6 Program Influence Score and Months Project was Expedited

<i>Program Influence Score</i>	<i>n</i>	<i>Average Number of Months Expedited</i>
0 - < 0.1	4	29
0.1 - < 0.2	4	36
0.2 - < 0.3	5	38
0.3 - < 0.4	2	36
0.4 - 0.5	2	48

Table B-7 No-Program Score and Months Project was Expedited

<i>No Program Score</i>	<i>n</i>	<i>Average Number of Months Expedited</i>
0	4	36
0.1	2	48
0.2	5	38
0.3	4	35
0.5	2	24

Appendix C: Questionnaire for Decision Maker Survey

SCREENING

Hello. May I please speak with <CONTACT>?

Hello. My name is _____ and I am calling on behalf of the Illinois Department of Commerce & Economic Opportunity.

We are conducting a study on behalf of the Department of Commerce to help them improve their programs.

According to our records, you participated in the Department of Commerce's Illinois Energy Now <PROGRAM>, through which you received a free retro-commissioning study at [FACILITY]. This project was completed around <MONTH/YEAR>.

We would like you to answer some questions about your decision making regarding your experience with the program. Do you have a few minutes to speak with me?

[IF NEEDED: INTERVIEW SHOULD TAKE APPROXIMATELY 15 MINUTES]

- 1 (Yes)
- 2 (Not available at this time: SCHEDULE CALL BACK)
- 3 (Not familiar with project [ASK TO BE REFERRED TO SOMEONE WHO IS FAMILIAR AND RECORD PERSONS INFORMATION BELOW])

Name of suggested contact:

Phone number of suggested contact:

I was told you're the person who is most knowledgeable about this project. Is this correct?

- 1 (Yes)
- 2 (No) [ASK TO BE REFERRED TO SOMEONE WHO IS THE MOST KNOWLEDGEABLE AND CONTACT THAT PERSON]

RESPONDENT BACKGROUND

- 1. To begin, can you tell me your job title or role?
 - 1 (Facilities Manager)
 - 2 (Energy Manager)
 - 3 (Other facilities management/maintenance position)
 - 4 (Chief Financial Officer)
 - 5 (Other financial/administrative position)
 - 6 (Proprietor/Owner)
 - 7 (President/CEO)
 - 8 (Manager)
 - 97 (Other) [RECORD VERBATIM]
 - 98 (Don't know)
-

99 (Refused)

2. How did you first learn about the Department of Commerce's <PROGRAM>?
- 1 (From a retro-commissioning service provider)
 - 2 (At a Department of Commerce Trade Ally Rally)
 - 3 (The program website)
 - 4 (Through an internet search)
 - 5 (From a Department of Commerce Program representative)
 - 6 (From a friend or colleague)
 - 7 (A presentation at a conference or workshop)
 - 8 (The Department of Commerce Illinois Energy Now Newsletter)
 - 9 (From a professional group or association that you are a member of)
 - 97 (Other) [RECORD VERBATIM]
 - 98 (Don't know)
 - 99 (Refused)
3. In the last year, did your budget include specific funding for improvements to energy efficiency?
- 1 Yes
 - 2 No
 - 98 (Don't know)
 - 99 (Refused)

PROJECT BACKGROUND

I'd now like to ask a few questions about the retro-commissioning project you completed through the program at the <FACILITY> facility.

4. Did you have plans to complete the retro-commissioning project before deciding to participate in the <PROGRAM>?
- 1 Yes
 - 2 No
 - 98 (Don't know)
 - 99 (Refused)

ASK Q5 IF [Q4 = 2]

5. Using a scale from 0 to 10, where 0 is "Not at all certain" and 10 is "Extremely certain," how certain are you that you DID NOT have plans to complete the retro-commissioning project?
- [RECORD 0 to 10]
- 98 (Don't know)
 - 99 (Refused)

ASK Q6 IF [Q5 < 10]

6. Is there an individual within your organization that might know more about whether or not your organization had plans to complete the retro-commissioning project before deciding to participate in the <PROGRAM>?

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

ASK Q7 IF [Q6 = 1]

7. May I have contact information for that individual? [OBTAIN CONTACT INFORMATION FOR INDIVIDUAL]
[RECORD VERBATIM]

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

ASK Q8 IF [Q4 = 1]

8. Did your organization have the funds available to complete the retro-commissioning study if it had not been provided at no cost through the program?

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

ASK Q9 IF [Q8 = 2]

9. Using a scale from 0 to 10, where 0 is "Not at all certain" and 10 is "Extremely certain," how certain are you that your organization DID NOT have the funds available to complete the retro-commissioning study before deciding to participate in the <PROGRAM>?

- [RECORD 0 to 10]
- 98 (Don't know)
- 99 (Refused)

ASK Q10 IF [Q9 < 10]

10. Is there an individual within your organization that might know more about whether or not your organization had the funds available to complete the retro-commissioning study before deciding to participate in the <PROGRAM>?

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

ASK Q11 IF [Q10 = 1]

11. May I have contact information for that individual? [OBTAIN CONTACT INFORMATION FOR INDIVIDUAL]
[RECORD VERBATIM]

98 (Don't know)

99 (Refused)

12. Using a scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely," how likely is it that your organization could have funded the retro-commissioning study without the program's financial assistance?

[RECORD 0 to 10]

98 (Don't know)

99 (Refused)

13. In deciding to do a project of this type, there are usually a number of reasons why it may be undertaken. In your own words, can you tell me why this retro-commissioning project was implemented? IF NEEDED: Were there any other reasons? MULTIPLE RESPONSE. UP TO THREE.

01 (To improve building/equipment performance)

02 (Reduce maintenance costs)

03 (Improve lifetime of equipment)

04 (Improve control over the building systems)

05 (Low cost of completing the project)

06 (To improve building comfort)

07 (To comply with organizational policies regarding regular/normal maintenance/replacement policy)

08 (Because the study was provided for free)

09 (To protect the environment)

10 (To reduce energy costs)

11 (To reduce energy use/power outages)

12 (To update to the latest technology)

00 (Other) [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

NET-TO-GROSS BATTERY

14. Were you aware of retro-commissioning as a way to optimize your facility's energy use before you learned of <PROGRAM ADMINISTRATOR>'s <PROGRAM>?

1 Yes

2 No

98 (Don't know)

99 (Refused)

ASK Q15 [IF Q14 = 1]

15. Have you completed any retro-commissioning projects at this or other facility without participating in a <PROGRAM ADMINISTRATOR> program?

1 Yes, at this facility

- 2 Yes, at another facility
- 3 Yes, both this and another facility
- 4 No
- 98 (Don't know)
- 99 (Refused)

ASK Q16 [IF Q14 = 1]

16. Did you first learn about the < PROGRAM ADMINISTRATOR >'s <PROGRAM> BEFORE or AFTER you decided to retro-commission the <FACILITY> facility?
- 1 Before
 - 2 After
 - 98 (Don't know)
 - 99 (Refused)

Now I would like you to think about the action you might have taken with regard to the retro-commissioning project if the <PROGRAM ADMINISTRATOR> program had not been available.

17. Using a scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the <PROGRAM ADMINISTRATOR>'s <PROGRAM> had not been available, what is the likelihood that you would have retro-commissioned the facility?

[RECORD 0 to 10]

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

18. Without the program, when do you think you would have completed the retro-commissioning project? Would you say...

- 1 At the same time it was actually completed
- 2 After the time it was actually completed
- 3 Never
- 98 (Don't know)
- 99 (Refused)

19. Using a scale where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not been available, what is the likelihood that you would have completed the retro-commissioning project within 12 months of when you actually completed it?

[RECORD 0 to 10]

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

ASK Q20 IF [Q18=2]

20. How much later would you have completed the retro-commissioning project without the program? Would you say that you would have done it in...

- 1 0 to 6 months
- 2 7 months to 1 year
- 3 more than 1 year up to 2 years

- 4 more than 2 years up to 3 years
- 5 more than 3 years up to 4 years
- 6 Over 4 years
- 98 (Don't know)
- 99 (Refused)

ASK Q21 IF [[Q18=2] AND [Q20 <> 98,99]]

21. Why do you think you would have completed the retro-commissioning in <Q20 RESPONSE>?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

22. Next, I'm going to ask you to rate the impact of various factors that might have affected your decision to complete the retro-commissioning project through the <PROGRAM>.

Please rate the impact each had on your decision using a scale where a score of "0" means that the factor had no impact on the decision to retro-commission the facility and a score of "10" means that the factor had a DECISIVE impact on the decision to retro-commission the facility.

[RECORD 0 to 10]

96 Not Applicable

98 (Don't know)

99 (Refused)

[If needed: Please rate the impact of [FACTOR] in your decision to complete the retro-commissioning project]

23. The recommendation of your service provider

24. The availability of the free retro-commissioning study

25. The impact of technical assistance you received from program staff

26. The impact of previous experience with retro-commissioning

27. The impact of a recommendation from <PROGRAM ADMINISTRATOR> program staff

28. The impact of information from <PROGRAM ADMINISTRATOR> marketing materials

29. The impact of an endorsement or recommendation by <ADMINSTAFF>

30. The impact of organizational policy or guidelines

31. The impact of standard practice in your organization

32. Were there any other factors we haven't discussed that that might have affected your decision to retro-commission the facility?

00 [RECORD VERBATIM]

96 Nothing else influential

98 (Don't know)

99 (Refused)

ASK Q33 IF [Q32=00]

33. Using the same 0 to 10 scale, please rate the impact of this factor in your decision to retro-commission the facility?

[RECORD 0 to 10]

98 (Don't know)

99 (Refused)

34. [READ IF ANY OF Q23, Q24, Q25, Q27, Q28, Q30, Q31, Q32 =8,9,10]

You just assigned the following factors a score of 8 or higher:

[READ ONLY ITEMS FOR WHICH RESPONDENT GAVE A RATING OF 8 OR HIGHER]

Q23 The recommendation of your service provider

Q24 The availability of the free retro-commissioning study

Q25 The impact of technical assistance you received from program staff

Q26 The impact of previous experience with retro-commissioning

Q27 The impact of a recommendation from <PROGRAM ADMINISTRATOR> program staff

Q28 The impact of information from <PROGRAM ADMINISTRATOR> marketing materials

Q29 The impact of an endorsement or recommendation by <ADMINSTAFF>

Q30 The impact of organizational policy or guidelines

Q31 The impact of standard practice in your organization

Q32 Other factor

35. If you were given a TOTAL of 100 points that reflect the importance in your decision to retro-commission the facility, and you had to divide those 100 points between: 1) the program and 2) other factors, how many points would you give to the importance of the PROGRAM?

[RECORD 0 to 100]

98 (Don't know)

99 (Refused)

[CALCULATE VARIABLE <OTHERPTS> AS 100 MINUS Q35 RESPONSE; IF Q35=98, 99, SET OTHERPTS=BLANK]

36. And how many points would you give to the other factors?

[RECORD 0 to 100]

98 (Don't know)

99 (Refused)

[Note: The response should be <OTHERPTS> because both numbers should equal 100. If response does not equal <OTHERPTS>, ask Q37]

ASK Q37 IF [Q36<><OTHERPTS>]

37. The last question asked you to divide a TOTAL of 100 points between the program and other factors. You just noted that you would give <Q35 RESPONSE> points to the program. Does that mean you would give <OTHERPTS> points to the other factors?

1 Yes

2 No

98 (Don't know)

99 (Refused)

GO BACK TO Q35 IF [Q37=2] AND READ [OK LET ME ASK YOU THE QUESTION AGAIN]

CONSISTENCY CHECK ON PROGRAM INFLUENCE/PROGRAM COMPONENTS

READ Q38 IF [Q35 >70] AND [Q23<3] AND [Q24<3] AND [Q25<3] AND [Q27<3] AND [Q28<3] AND [Q29<3]

38. You just scored the impact of the program in your decision to complete the retro-commissioning project with <Q35 RESPONSE> out of 100 possible points. You ALSO gave relatively lower scoring to the impact of individual elements of the program experience.

ASK Q39 IF [Q35 <30] AND [[Q23>7] OR [Q24>7] OR [Q25>7] OR [Q27>7] OR [Q28>7] OR [Q29>7]]

39. You just scored the impact of the program in your decision to complete the retro-commissioning project with <Q35 RESPONSE> out of 100 possible points. You ALSO gave relatively higher scoring to the impact of individual elements of the program experience.

ASK Q40 IF [[Q35 >70] AND [Q23<3] AND [Q24<3] AND [Q25<3] AND [Q27<3] AND [Q28<3] AND [Q29<3]]

OR

[Q35 <30] AND [Q23 >7]

40. You scored the impact of THE RECOMMENDATION OF YOUR SERVICE PROVIDER on your decision to complete the retro-commissioning project with <Q40 RESPONSE> out of 10 possible points, and scored the impact of the program overall with <Q35 RESPONSE> out of 100 possible points. Why is the impact of THE RECOMMENDATION OF YOUR SERVICE PROVIDER different than the impact of the program overall?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q41 IF [[Q35 >70] AND [Q23<3] AND [Q24<3] AND [Q25<3] AND [Q27<3] AND [Q28<3] AND [Q29<3]]

OR

[Q35 <30] AND [Q23>7]

41. You scored the impact of THE AVAILABILITY OF THE FREE RETRO-COMMISSIONING STUDY on your decision to complete the retro-commissioning project with <Q24 RESPONSE> out of 10 possible points, and scored the impact of the program overall with <Q35 RESPONSE> out of 100 possible points. Why is the impact of THE AVAILABILITY OF THE FREE RETRO-COMMISSIONING STUDY different than the impact of the program overall?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q42 IF [[Q35 >70] AND [Q23<3] AND [Q24<3] AND [Q25<3] AND [Q27<3] AND [Q28<3] AND [Q29<3]]

OR

[Q35 <30] AND [Q25>70]

42. You scored the impact of the program TECHNICAL ASSISTANCE on your decision to complete the retro-commissioning project with <Q25 RESPONSE> out of 10 possible points, and scored the impact of the program overall with <Q35 RESPONSE> out of 100 possible points. Why is the impact of the program TECHNICAL ASSISTANCE different than the impact of the program overall?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q43 IF [[Q35 >70] AND [Q24<3] AND [Q25<3] AND [Q27<3] AND [Q28<3] AND [Q32<3]] OR

[Q35 <30] AND [Q27>7]

43. You scored the impact of THE RECOMMENDATION FROM <PROGRAM ADMINISTRATOR> <PROGRAM> STAFF PERSON on your decision to complete the retro-commissioning project with <Q27 RESPONSE> out of 10 possible points, and scored the impact of the program overall with <Q35 RESPONSE> out of 100 possible points. Why is the impact of the THE RECOMMENDATION FROM <PROGRAM ADMINISTRATOR> STAFF PERSON different than the impact of the program overall?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q44 [IF Q35 >70] AND [Q24<3] AND [Q25<3] AND [Q27<3] AND [Q28<3] AND [Q32<3]] OR [Q35 <30] AND [Q28>7]

44. You scored the impact of the THE INFORMATION from <PROGRAM ADMINISTRATOR>'s MARKETING MATERIALS on your decision to complete the retro-commissioning project with <Q28 RESPONSE> out of 10 possible points, and scored the impact of the program overall with <Q35 > out of 100 possible points. Why is the impact of the THE INFORMATION from <PROGRAM ADMINISTRATOR>'s MARKETING MATERIALS different than the impact of the program overall?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q45 IF [[Q35 >70] AND [Q23 < 3] AND [Q24<3] AND [Q25<3] AND [Q27<3] AND [Q28<3] AND [Q32<3]] OR [Q35 <30] AND [Q29>7]

45. You scored the impact of the THE ENDORSEMENT or RECOMMENDATION by <ADMINSTAFF> on your decision to complete the retro-commissioning project with <Q27 RESPONSE> out of 10 possible points, and scored the impact of the program overall with <Q35 RESPONSE> out of 100 possible points. Why is the impact of the THE ENDORSEMENT or RECOMMENDATION by <ADMINSTAFF> different than the impact of the program overall?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

PROGRAM COMPONENTS (INCENTIVE)/NO PROGRAM CONSISTENCY CHECK

ASK Q46 IF [[Q24 =8,9,10] AND [Q17=8,9,10]] OR [[Q24 =0,1,2] AND [Q17=0,1,2]]

46. You scored the impact of the free retro-commissioning study on your decision to complete the retro-commissioning project with < Q24 RESPONSE> out of 10 possible points. You ALSO scored the likelihood of completing the same project without the program with <Q17 RESPONSE> out of 10 possible points. Can you please explain the role the free retro-commissioning study played in your decision to retro-commission the facility?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q47 IF [[Q24 =8,9,10] AND [Q17=8,9,10]] OR [[Q24 =0,1,2] AND [Q17=0,1,2]]

47. Would you like to change your score of < Q24 RESPONSE> out of 10 possible points on the impact of the free retro-commissioning study or change your score of <Q17 RESPONSE> out of 10 possible points on the likelihood of completing the retro-commissioning project without the program? You may change one score, both scores, or neither score. How would you like to proceed?

- 1 (Change impact of the free retro-commissioning study)
- 2 (Change likelihood of completing the same project without the program score)
- 3 (Change both)
- 4 (Change neither)
- 98 (Don't know)
- 99 (Refused)

ASK Q48 IF [[Q24 =8,9,10] AND [Q17=8,9,10]] OR [[Q24 =0,1,2] AND [Q17=0,1,2]] AND [Q47=1,3]

48. Please rate the impact of the free retro-commissioning study using a scale where a score of “0” means that the free study had no impact on the decision to complete the retro-commissioning project, and a score of “10” means that the PROGRAM incentive had DECISIVE impact on the decision to the implement the energy efficiency project.

[RECORD 0 to 10]

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

ASK Q49 IF [[Q24 =8,9,10] AND [Q17=8,9,10]] OR [[Q24 =0,1,2] AND [Q17=0,1,2]] AND [Q47=2,3]

49. Using a scale from 0 to 10, where 0 is “Not at all likely” and 10 is “Extremely likely”, if the <PROGRAM ADMINISTRATOR>’s <PROGRAM> had not been available, what is the likelihood that you would have retro-commissioned the facility?

[RECORD 0 to 10]

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

TIMING OF PROJECT DECISION / LEVEL OF PROGRAM ATTRIBUTION CONSISTENCY CHECK

ASK Q50 IF [[Q35 > 70 OR Q23 > 7 OR Q24 > 7 OR Q25 > 7 OR Q27 > 7 OR Q28 > 7]] AND [Q14 = 2]

50. In response to an earlier question, you noted that you learned about the program AFTER you decided to retro-commission the facility. Based on some of your other responses, it sounded like the program was important in your decision to retro-commission the facility. I want to check to see if I am misunderstanding your answers or if the questions may have been unclear. Will you explain the role the program played in your decision to complete the retro-commissioning project?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q51 IF [Q23 > 7 AND [Q14= 2]]

51. Earlier you stated that a recommendation from a retro-commissioning service provider was important to your decision to implement the <ENDUSE>. You also stated that you learned about the program after you decided to complete the project. Can you please explain the role the retro-commissioning service provider played in your decision to retro-commission the facility?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ORGANIZATIONAL/CORPORATE POLICY BATTERY

ASK Q52 IF [Q30=7,8,9,10]

52. Does your organization have an environmental policy or sustainability plan to reduce environmental emissions or energy use? Some examples would be to "buy green" or use sustainable approaches to business investments.

1 Yes

2 No

98 (Don't know)

99 (Refused)

ASK Q53 IF [Q30=7,8,9,10]

53. Prior to participating in the <PROGRAM ADMINISTRATOR> <PROGRAM>, had that policy caused you to retro-commission this or another facility without a program incentive?

1 Yes

2 No

98 (Don't know)

99 (Refused)

ASK Q54 IF [Q30=7,8,9,10]

54. Does <ORGANIZATION> have the financial ability to implement its policy?

1 Yes

2 No

98 (Don't know)

99 (Refused)

STANDARD PRACTICE BATTERY

ASK Q55 IF [Q31 = 7, 8,9,10]

55. In an earlier question, you rated the importance of STANDARD PRACTICE in your organization very highly in your decision making. Could you please rate the importance of the PROGRAM, relative to this standard practice, in affecting your decision to retro-commission the facility? Would you say the program was much more important, somewhat more important, equally important, somewhat less important, or much less important than your organization's standard practice?

- 1 Much more important
- 2 Somewhat more important
- 3 Equally important
- 4 Somewhat less important
- 5 Much less important
- 98 (Don't know)
- 99 (Refused)

ASK Q56 IF [Q31=7,8,9,10]

56. Does <ORGANIZATION> ever deviate from the standard practice?

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

MEASURE SPECIFIC QUESTIONS

57. Now I would like to ask you about the specific recommended actions that you took to save energy. Prior to completion of the retro-commissioning study, were you aware of all, some, or none of the energy saving actions that you implemented through your participation in the program?

- 1 All
- 2 Some
- 3 None
- 98 (Don't know)
- 99 (Refused)

ASK Q58 IF [Q57 = 2]

58. Which of the following energy saving actions that you implemented were you previously aware of? Were you aware of the actions related to ...

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

- a. MEASURE1
- b. MEASURE2 [ASK IF MEASURE_COUNT > 1]

- c. MEASURE3 [ASK IF MEASURE_COUNT > 2]
- d. MEASURE4 [ASK IF MEASURE_COUNT > 3]
- e. MEASURE5 [ASK IF MEASURE_COUNT > 4]
- f. MEASURE6 [ASK IF MEASURE_COUNT > 5]
- g. MEASURE7 [ASK IF MEASURE_COUNT > 6]
- h. MEASURE8 [ASK IF MEASURE_COUNT > 7]
- i. MEASURE9 [ASK IF MEASURE_COUNT > 8]
- j. MEASURE10 [ASK IF MEASURE_COUNT > 9]

ASK Q59 IF [ANY Q58 = 1]

- 59. Why did you not address those issues prior completing the project under the <PROGRAM>?
- 00 [RECORD VERBATIM]
- 98 (Don't know)
- 99 (Refused)

ASK Q60 IF [ANY Q58 = 1]

- 60. Now I would like to know the likelihood that you would have taken those actions you were aware of within 12 months of when you actually took them, had you not participated in the program. Using a scale where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not been available, how likely would you have been to take the actions related to....
- 00 [RECORD 0-10]
- 98 (Don't know)
- 99 (Refused)
- a. MEASURE1 [ASK IF Q58a = 1]
- b. MEASURE2 [ASK IF Q58b = 1]
- c. MEASURE3 [ASK IF Q58c = 1]
- d. MEASURE4 [ASK IF Q58d = 1]
- e. MEASURE5 [ASK IF Q58e = 1]
- f. MEASURE6 [ASK IF Q58f = 1]
- g. MEASURE7 [ASK IF Q58g = 1]
- h. MEASURE8 [ASK IF Q58h = 1]
- i. MEASURE9 [ASK IF Q58i = 1]
- j. MEASURE10 [ASK IF Q58j = 1]

ADDITIONAL PROJECTS

ASK Q0 IF [MSAME=1]

- 61. Our records show that <ORGANIZATION> also completed retro-commissioning projects through <PROGRAM ADMINISTRATOR>'s <PROGRAM> at <NSAME> other <FACILITY/IES>. Was it a single decision to complete the additional retro-commissioning <PROJECT/PROJECTS> through the program or did each project go through its own decision process?

- 1 Single Decision
- 2 Each project went through its own decision process
- 00 (Other) [RECORD VERBATIM]
- 98 (Don't know)
- 99 (Refused)

SPILLOVER MODULE

Thank you for discussing the retro-commissioning project that you completed through the <PROGRAM>. Next, I would like to discuss any energy efficient equipment you might have installed or other energy efficiency measures you might have undertaken OUTSIDE of the program.

62. Since your participation in the <PROGRAM>, did you implement any ADDITIONAL energy efficiency measures at this facility or at your other facilities within <UTILITIES>'s service territory that did NOT receive incentives through <PROGRAM ADMINISTRATOR>?
- 1 Yes
 - 2 No
 - 98 (Don't know)
 - 99 (Refused)

ASK Q63 IF [Q62=1]

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

ASK Q64 IF [Q63<>96,98,99] AND [Q62=1]

64. What was the second measure? IF RESPONSE IS GENERAL, E.G., “LIGHTING EQUIPMENT”, PROBE FOR SPECIFIC MEASURE. PROBE FROM LIST, IF NECESSARY.

- 1 Lighting: T8 lamps
- 2 Lighting: T5 lamps
- 3 Lighting: Highbay Fixture Replacement
- 4 Lighting: CFLs
- 5 Lighting: Controls / Occupancy sensors
- 6 Lighting: LED lamps
- 7 Cooling: Unitary/Split Air Conditioning System
- 8 Cooling: Room air conditioners
- 9 Cooling: Variable Frequency Drives VFD/VSD on HVAC Motors
- 10 Motors: Efficient motors
- 11 Refrigeration: Strip curtains
- 12 Refrigeration: Anti-sweat controls
- 13 Refrigeration: EC motor for WALK-IN cooler/freezer
- 14 Refrigeration: EC motor for REACH-IN cooler/freezer
- 00 (Other) [RECORD VERBATIM]
- 96 (Didn't implement any measures)
- 98 (Don't know)
- 99 (Refused)

ASK Q65 IF [Q64<>96,98,99] AND [Q63<>96,98,99] AND [Q62=1]

65. What was the third measure? IF RESPONSE IS GENERAL, E.G., “LIGHTING EQUIPMENT”, PROBE FOR SPECIFIC MEASURE. PROBE FROM LIST, IF NECESSARY.

- 1 Lighting: T8 lamps
- 2 Lighting: T5 lamps
- 3 Lighting: Highbay Fixture Replacement
- 4 Lighting: CFLs
- 5 Lighting: Controls / Occupancy sensors
- 6 Lighting: LED lamps
- 7 Cooling: Unitary/Split Air Conditioning System
- 8 Cooling: Room air conditioners
- 9 Cooling: Variable Frequency Drives VFD/VSD on HVAC Motors
- 10 Motors: Efficient motors
- 11 Refrigeration: Strip curtains
- 12 Refrigeration: Anti-sweat controls
- 13 Refrigeration: EC motor for WALK-IN cooler/freezer
- 14 Refrigeration: EC motor for REACH-IN cooler/freezer
- 00 (Other) [RECORD VERBATIM]
- 96 (Didn't implement any measures)
- 98 (Don't know)

99 (Refused)

ASK Q66 IF [Q63<>96,98,99] AND [Q62=1]

66. I have a few questions about the FIRST measure that you implemented. If needed, read back measure: <Q63 RESPONSE> [OPEN END]

- a. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of this measure.
- b. Please describe the EFFICIENCY of this measure.
- c. How many of this measure did you implement?

ASK Q67 IF [Q63<>96,98,99] AND [Q62=1]

67. Was this measure specifically recommended by a program related audit, report or program technical specialist?

- 1 Yes
 - 2 No
- 98 (Don't know)
- 99 (Refused)

ASK Q1) IF [Q63<>96,98,99] AND [Q62=1]

68. How important was your experience in the <PROGRAM> in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?

[RECORD 0 TO 10]

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

ASK Q69 IF [Q1)<>98, 99] AND [Q63<>96,98,99] AND [Q62=1]

69. Can you explain how your experience with the <PROGRAM> influenced your decision to install this additional high efficiency measure?

00 [RECORD VERBATIM]

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

ASK Q2) IF [Q63<>96,98,99] AND [Q62=1]

70. If you had not participated in the <PROGRAM>, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?

[RECORD 0 TO 10]

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

CONSISTENCY CHECK ON PROGRAM IMPORTANCE VS. NO PROGRAM RATING MEASURE 1

ASK Q71 IF [[Q1)=0,1,2,3] AND [Q2)=0,1,2,3] AND [Q63<>96,98,99] AND [Q62=1]]
OR [[IF [Q1)=8,9,10] AND [Q2)=8,9,10] AND [Q63<>96,98,99] AND [Q62=1]]

71. You scored the importance of your program experience to your decision to implement this measure with <Q1) RESPONSE > out of 10 possible points. You ALSO scored the likelihood of implementing this measure if your organization had not participated in the program with <Q2) RESPONSE> out of 10 possible points. Can you please explain the role the program made in your decision to implement this measure?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q72 IF [Q63<>96,98,99] AND [Q62=1]

72. Can you briefly explain why you decided to install this energy efficiency measure on your own, rather than going through the <PROGRAM>?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

ASK Q73 IF [Q64<>96,98,99] AND [Q62=1]

73. I have a few questions about the SECOND measure that you implemented. If needed, read back measure: <Q64 RESPONSE> [OPEN END]

- a. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of this measure.
- b. Please describe the EFFICIENCY of this measure.
- c. How many of this measure did you implement?

ASK Q74 IF [Q64<>96,98,99] AND [Q62=1]

74. Was this measure specifically recommended by a program related audit, report or program technical specialist?

1 Yes

2 No

98 (Don't know)

99 (Refused)

ASK Q75 IF [Q64<>96,98,99] AND [Q62=1]

75. How important was your experience in the <PROGRAM> in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?

[RECORD 0 TO 10]

98 (Don't know)
99 (Refused)

ASK Q76 IF [Q75<>98, 99] AND [Q64<>96,98,99] AND [Q62=1]

76. Can you explain how your experience with the <PROGRAM> influenced your decision to install this additional high efficiency measure?
00 [RECORD VERBATIM]
98 (Don't know)
99 (Refused)

ASK Q77 IF [Q64<>96,98,99] AND [Q62=1]

77. If you had not participated in the <PROGRAM>, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?
[RECORD 0 TO 10]
98 (Don't know)
99 (Refused)

CONSISTENCY CHECK ON PROGRAM IMPORTANCE VS. NO PORGRAM RATING MEASURE 2

ASK Q78 IF [[Q75=0,1,2,3] AND [Q77=0,1,2,3] AND [Q64<>96,98,99] AND [Q62=1]]
OR [[IF [Q75=8,9,10] AND [Q77=8,9,10] AND [Q64<>96,98,99] AND [Q62=1]]

78. You scored the importance of your program experience to your decision to implement this measure with <Q75 RESPONSE> out of 10 possible points. You ALSO scored the likelihood of implementing this measure if your organization had not participated in the program with <Q77 RESPONSE> out of 10 possible points. Can you please explain the role the program made in your decision to implement this measure?
00 [RECORD VERBATIM]
98 (Don't know)
99 (Refused)

79. Can you briefly explain why you decided to install this energy efficiency measure on your own, rather than going through the <PROGRAM>?
00 [RECORD VERBATIM]
98 (Don't know)
99 (Refused)

ASK Q80 IF [Q65<>96,98,99] AND [Q62=1]

80. I have a few questions about the THIRD measure that you implemented. If needed, read back measure: <SP3 RESPONSE> [OPEN END]

- a. Please describe the SIZE, TYPE, and OTHER ATTRIBUTES of this measure.
- b. Please describe the EFFICIENCY of this measure.
- c. How many of this measure did you implement?

ASK Q81 IF [Q65<>96,98,99] AND [Q62=1]

81. Was this measure specifically recommended by a program related audit, report or program technical specialist?

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

ASK Q82 IF [Q65<>96,98,99] AND [Q62=1]

82. How important was your experience in the <PROGRAM> in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?

[RECORD 0 TO 10]

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

ASK Q83 IF [Q82<>98, 99] AND [Q65<>96,98,99] AND [Q62=1]

83. Can you explain how your experience with the <PROGRAM> influenced your decision to install this additional high efficiency measure?

00 [RECORD VERBATIM]

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

ASK Q84 IF [Q65<>96,98,99] AND [Q62=1]

84. If you had not participated in the <PROGRAM>, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?

[RECORD 0 TO 10]

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

CONSISTENCY CHECK ON PROGRAM IMPORTANCE VS. NO PORGRAM RATING MEASURE 3

ASK Q85 IF [[Q82=0,1,2,3] AND [Q84=0,1,2,3] AND [Q65<>96,98,99] AND [Q62=1]]
OR [[IF [Q82=8,9,10] AND [Q84=8,9,10] AND [Q65<>96,98,99] AND [Q62=1]]

85. You scored the importance of your program experience to your decision to implement this measure with <Q82 RESPONSE > out of 10 possible points. You ALSO scored the likelihood of implementing this measure if your organization had not participated in the program with <Q84 RESPONSE> out of 10 possible points. Can you please explain the role the program made in your decision to implement this measure?

86. Can you briefly explain why you decided to install this energy efficiency measure on your own, rather than going through the <PROGRAM>?

00 [RECORD VERBATIM]

98 (Don't know)

99 (Refused)

PROCESS BATTERY

Now I have just a few more questions about your experience with the program participation process.

87. Thinking back to when you began the retro-commissioning project, did you have any initial concerns about participating in the program?

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

ASK Q88 IF [Q87 = 1]

88. What were your concerns?

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

89. Did you have any difficulty with the participation process such as providing any of the required building documentation, building energy use information, or adhering to program timelines or schedules?

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

ASK Q90 IF [Q89 = 1]

90. What difficulty did you have?

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

ASK Q91 [IF Q89 = 1]

91. Do you have any suggestions for the program that could help make the process easier?

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

92. Does your organization occupy any other facilities that qualify for the <PROGRAM ADMINISTRATOR>'s <PROGRAM> but have not been retro-commissioned? [IF NEEDED: Building must be at least 5 years old, 150,000 square feet of conditioned space and receive electric service from ComEd or Ameren or natural gas service from Ameren, Nicor Gas, North Shore Gas, or Peoples Gas; have a functioning building automation system]

- 1 Yes

- 2 No
- 98 (Don't know)
- 99 (Refused)

ASK Q93 [IF Q92= 1]

93. Using a scale of 0 to 10 where 0 means "not at all likely" and 10 means "extremely likely," how likely are you to complete a retro-commissioning project at one or more of those facilities through <PROGRAM ADMINISTRATOR>'s program in the future?
- [Record 0-10]
- 98 Don't know
 - 99 Refused

ASK Q94 [IF Q93 < 7]

94. Why might you not retro-commission those eligible facilities through the program in the future?
- 00 [RECORD VERBATIM]
 - 98 (Don't know)
 - 99 (Refused)

95. Using a scale of 0 to 10 where 0 means "very dissatisfied" and 10 means "very satisfied", how dissatisfied or satisfied with the following:

[RECORD 0-10]

- 98 Don't know
- 99 Refused
- a. The steps you had to take to get through the program?
- b. The service provided by your retro-commissioning service provider?
- c. The quality of the contractor's work who implemented the measures?
- d. Any interactions you had with SEDAC or Energy 360 program staff?
- e. Information provided in program materials?

ASK Q96 IF [ANY Q95a-E =0,1,2,3]

96. Please describe the ways in which you were dissatisfied with the aspects of the program you mentioned.
- 00 [RECORD VERBATIM]
 - 98 (Don't know)
 - 99 (Refused)

97. Do you have any suggestions for how DCEO could improve its Energy Efficiency programs?
- 00 [RECORD VERBATIM]
 - 98 (Don't know)
 - 99 (Refused)

98. What do you think are the best ways to communicate information about the <PROGRAM ADMINISTRATOR> programs to organizations like yours? [MULTISELECT UP TO 3 RESPONSES]

- 1 (E-mail)
- 2 (Telephone)
- 3 (Presentations at events or contractors)
- 4 (Trade allies/Vendors/Contractors)
- 5 (Direct mailings)
- 6 (Website updates)
- 7 (Other) [RECORD VERBATIM]
- 98 (Don't know)
- 99 (Refused)

FIRMOGRAPHICS

ASK Q99 [IF FIRM = 0]

99. What type facility is the facility located at [FACILITY]?

- 1 (Airport)
- 2 (Community College)
- 3 (Correctional Facility)
- 4 (K-12 School)
- 5 (Public Library)
- 6 (Medical Facility)
- 7 (Municipal Facility)
- 8 (Park District Facility)
- 9 (Police or Fire Station)
- 10 (Public Works Facility)
- 11 (State University)
- 12 (Wastewater Treatment Facility)
- 13 (Other) [RECORD VERBATIM]
- 98 (Don't know)
- 99 (Refused)

100. Does [Organization] rent, own and occupy, or own and rent to someone else the facility at this location?

- 1 Rent
- 2 Own and occupy
- 3 Own and rent to someone else
- 98 (Don't know)
- 99 (Refused)

101. Does your organization pay the full cost of the natural gas bill for [FACILITY]?

- 1 Yes
- 2 No
- 98 (Don't know)
- 99 (Refused)

102. Does your organization pay the full cost of the electric bill for [FACILITY]?

1 Yes

2 No

98 (Don't know)

99 (Refused)

Appendix D: Decision Maker Survey Responses

As part of the evaluation, ADM administered a survey to a sample of decision makers representing facilities that received incentives under the Boiler System Efficiency Program. This survey provided the information used in Chapter 3 to estimate free ridership for projects in the RCx Program. Additionally, the survey also provided more general information pertaining to the making of decisions to improve energy efficiency by program participants and participants experience it the program.

The survey questionnaire provided Appendix B was in a telephone survey of decision makers. Each participant was asked questions about (1) his or her general decision making regarding completing the retro-commissioning project, (2) his or her knowledge of and satisfaction with the RCx Program, and (3) the influence that the program had on his or her decision to make the energy efficiency improvements. The following tabulations summarize Department of Commerce 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.

To begin, can you tell me your job title or role?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	Facilities Manager	9	53%
	Energy Manager	0	0%
	Other facilities management/maintenance position	1	6%
	Chief Financial Officer	0	0%
	Other financial/administrative position	6	35%
	Proprietor/Owner	0	0%
	President/CEO	0	0%
	Manager	1	6%
	Other	0	0%
	Don't know	0	0%
	Refused	0	0%

How did you first learn about the Department of Commerce's program?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	From a retro-commissioning service provider	1	6%
	At a Department of Commerce Trade Ally Rally	1	6%
	The program website	1	6%
	Through an internet search	0	0%
	From a Department of Commerce Program representative	2	12%
	From a friend or colleague	2	12%
	A presentation at a conference or workshop	4	24%
	The Department of Commerce Illinois Energy Now Newsletter	1	6%
	From a professional group or association that you are a member of	0	0%
	Other	4	24%
	Don't know	0	0%
	Refused	0	0%

In the last year, did your budget include specific funding for improvements to energy efficiency?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	Yes	11	65%
	No	5	29%
	Don't know	1	6%
	Refused	0	0%

Did you have plans to complete the retro-commissioning project before deciding to participate in the program?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	Yes	5	29%
	No	12	71%
	Don't know	0	0%
	Refused	0	0%

Using a scale from 0 to 10, where 0 is "Not at all certain" and 10 is "Extremely certain," how certain are you that you DID NOT have plans to complete the retro-commissioning project?	<i>Response</i>	<i>(n=12)</i>	<i>Percent of Respondents</i>
	0 - Not at all certain	1	8%
	1	0	0%
	2	1	8%
	3	0	0%
	4	0	0%
	5	2	17%
	6	0	0%
	7	1	8%
	8	1	8%
	9	1	8%
	10 - Extremely certain	5	42%
	Don't know	0	0%
	Refused	0	0%

Did your organization have the funds available to complete the retro-commissioning study if it had not been provided at no cost through the program?	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
	Yes	0	0%
	No	4	80%
	Don't know	1	20%
	Refused	0	0%

Using a scale from 0 to 10, where 0 is "Not at all certain" and 10 is "Extremely certain," how certain are you that your organization DID NOT have the funds available to complete the retro-commissioning study before deciding to participate in the program?	<i>Response</i>	<i>(n=4)</i>	<i>Percent of Respondents</i>
	0 - Not at all certain	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	2	50%
	6	0	0%
	7	0	0%
	8	0	0%
	9	0	0%
	10 - Extremely certain	2	50%
	Don't know	0	0%
	Refused	0	0%

Using a scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely," how likely is it that your organization could have funded the retro-commissioning study without the program's financial assistance?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	3	18%
	1	0	0%
	2	3	18%
	3	2	12%
	4	1	6%
	5	3	18%
	6	1	6%
	7	1	6%
	8	0	0%
	9	0	0%
	10 - Extremely likely	2	12%
	Don't know	1	6%
	Refused	0	0%

In deciding to do a project of this type, there are usually a number of reasons why it may be undertaken. In your own words, can you tell me why this retro-commissioning project was implemented?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	To improve building/equipment performance	5	29%
	Reduce maintenance costs	1	6%
	Improve lifetime of equipment	0	0%
	Improve control over the building systems	1	6%
	Low cost of completing the project	0	0%
	To improve building comfort	0	0%
	To comply with organizational policies regarding regular/normal maintenance/replacement policy	0	0%
	Because the study was provided for free	2	12%
	To protect the environment	0	0%
	To reduce energy costs	11	65%
	To reduce energy use/power outages	9	53%
	To update to the latest technology	0	0%
	Other	4	24%
	Don't know	0	0%
	Refused	0	0%

Were you aware of retro-commissioning as a way to optimize your facility's energy use before you learned of the program?	Response	(n=17)	Percent of Respondents
	Yes	8	47%
	No	9	53%
	Don't know	0	0%
	Refused	0	0%

Have you completed any retro-commissioning projects at this or other facility without participating in an energy efficiency program?	Response	(n=8)	Percent of Respondents
	Yes	0	0%
	No	8	100%
	Don't know	0	0%
	Refused	0	0%

Did you first learn about the program BEFORE or AFTER you decided to retro-commission your facility?	Response	(n=8)	Percent of Respondents
	Before	6	75%
	After	2	25%
	Don't know	0	0%
	Refused	0	0%

Using a scale from 0 to 10, where 0 is "Not at all likely" and 10 is "Extremely likely", if the program had not been available, what is the likelihood that you would have retro-commissioned the facility?	Response	(n=17)	Percent of Respondents
	0 - Not at all likely	4	24%
	1	2	12%
	2	5	29%
	3	4	24%
	4	0	0%
	5	2	12%
	6	0	0%
	7	0	0%
	8	0	0%
	9	0	0%
	10 - Extremely likely	0	0%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
Without the program, when do you think you would have completed the retro-commissioning project? Would you say...	At the same time it was actually completed	3	18%
	After the time it was actually completed	9	53%
	Never	5	29%
	Don't Know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
Using a scale where 0 is “Not at all likely” and 10 is “Extremely likely”, if the program had not been available, what is the likelihood that you would have completed the retro-commissioning project within 12 months of when you actually completed it?	0 - Not at all likely	8	47%
	1	2	12%
	2	4	24%
	3	1	6%
	4	0	0%
	5	1	6%
	6	0	0%
	7	0	0%
	8	1	6%
	9	0	0%
	10 - Extremely likely	0	0%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=9)</i>	<i>Percent of Respondents</i>
How much later would you have completed the retro-commissioning project without the program? Would you say that you would have done it in...	0 to 6 months	0	0%
	7 months to 1 year	0	0%
	more than 1 year up to 2 years	1	11%
	more than 2 years up to 3 years	1	11%
	more than 3 years up to 4 years	1	11%
	Over 4 years	6	67%
	Don't know	0	0%
	Refused	0	0%

What impact did the recommendation of your service provider have on your decision to retro-commission the facility?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	0 - No Impact	4	24%
	1	0	0%
	2	0	0%
	3	1	6%
	4	0	0%
	5	1	6%
	6	0	0%
	7	1	6%
	8	6	35%
	9	2	12%
	10 - Decisive impact	2	12%
	Don't know	0	0%
	Refused	0	0%

What impact did The availability of the free retro-commissioning study have on your decision to retro-commission the facility?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	0 - No Impact	0	0%
	1	1	6%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	2	12%
	8	2	12%
	9	3	18%
	10 - Decisive impact	9	53%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
What impact did the technical assistance you received from program staff have on your decision to retro-commission the facility?	0 - No Impact	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	1	6%
	6	1	6%
	7	1	6%
	8	4	24%
	9	2	12%
	10 - Decisive impact	8	47%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
What impact did previous experience with retro-commissioning have on your decision to retro-commission the facility?	0 - No Impact	7	41%
	1	0	0%
	2	0	0%
	3	0	0%
	4	1	6%
	5	1	6%
	6	0	0%
	7	1	6%
	8	2	12%
	9	1	6%
	10 - Decisive impact	4	24%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
What impact did a recommendation from program staff have on your decision to retro-commission the facility?	0 - No Impact	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	1	6%
	5	2	12%
	6	0	0%
	7	0	0%
	8	6	35%
	9	2	12%
	10 - Decisive impact	5	29%
	Don't know	1	6%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
What impact did the impact of information from marketing materials have on your decision to retro-commission the facility?	0 - No Impact	1	6%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	2	12%
	6	2	12%
	7	3	18%
	8	4	24%
	9	1	6%
	10 - Decisive impact	2	12%
	Don't know	2	12%
	Refused	0	0%

What impact did an endorsement or recommendation by program staff have on your decision to retro-commission the facility?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	0 - No Impact	1	6%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	1	6%
	7	1	6%
	8	3	18%
	9	2	12%
	10 - Decisive impact	9	53%
	Don't know	0	0%
	Refused	0	0%

What impact did organizational policy or guidelines have on your decision to retro-commission the facility?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	0 - No Impact	1	6%
	1	0	0%
	2	0	0%
	3	2	12%
	4	0	0%
	5	2	12%
	6	1	6%
	7	2	12%
	8	4	24%
	9	2	12%
	10 - Decisive impact	3	18%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
What impact did standard practice in your organization have on your decision to retro-commission the facility?	0 - No Impact	0	0%
	1	0	0%
	2	0	0%
	3	2	12%
	4	1	6%
	5	2	12%
	6	1	6%
	7	2	12%
	8	4	24%
	9	2	12%
	10 - Decisive impact	3	18%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=9)</i>	<i>Percent of Respondents</i>
What impact did other factors have on your decision to retro-commission the facility? (Various factors participant identified)	0 - No Impact	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	1	11%
	6	2	22%
	7	0	0%
	8	3	33%
	9	1	11%
	10 - Decisive impact	2	22%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
If you were given a TOTAL of 100 points that reflect the importance in your decision to retro-commission the facility, and you had to divide those 100 points between: 1) the program and 2) other factors, how many points would you give to the importance of the PROGRAM?	Less than 20	0	0%
	20 to 40	0	0%
	40 to 60	2	12%
	60 to 80	3	18%
	more than 80	12	71%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
And how many points would you give to the other factors?	Less than 20	8	47%
	20 to 40	7	41%
	40 to 60	2	12%
	60 to 80	0	0%
	more than 80	0	0%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=11)</i>	<i>Percent of Respondents</i>
Does your organization have an environmental policy or sustainability plan to reduce environmental emissions or energy use? Some examples would be to "buy green" or use sustainable approaches to business investments.	Yes	7	64%
	No	3	27%
	Don't know	1	9%
	Refused	0	0%

	<i>Response</i>	<i>(n=11)</i>	<i>Percent of Respondents</i>
Prior to participating in the program, had that policy caused you to retro-commission this or another facility without a program incentive?	Yes	5	45%
	No	5	45%
	Don't know	1	9%
	Refused	0	0%

	<i>Response</i>	<i>(n=9)</i>	<i>Percent of Respondents</i>
Does your organization have the financial ability to implement its policy?	Yes	6	67%
	No	1	11%
	Don't know	2	22%
	Refused	0	0%

	<i>Response</i>	<i>(n=9)</i>	<i>Percent of Respondents</i>
In an earlier question, you rated the importance of STANDARD PRACTICE in your organization very highly in your decision making. Could you please rate the importance of the PROGRAM, relative to this standard practice, in affecting your decision to retro-commission the facility? Would you say the program was much more important, somewhat more important, equally important, somewhat less important, much less important, or much less important than your organization's standard practice?	Much more important	2	22%
	Somewhat more important	0	0%
	Equally important	5	56%
	Somewhat less important	1	11%
	Much less important	0	0%
	Don't know	1	11%
	Refused	0	0%

	<i>Response</i>	<i>(n=9)</i>	<i>Percent of Respondents</i>
Does your organization ever deviate from the standard practice?	Yes	4	44%
	No	4	44%
	Don't know	1	11%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
Now I would like to ask you about the specific recommended actions that you took to save energy. Prior to completion of the retro-commissioning study, were you aware of all, some, or none of the energy saving actions that you implemented through your participation in the program?	All	4	24%
	Some	10	59%
	None	3	18%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=10)</i>	<i>Percent of Respondents</i>
Were you previously aware of the actions related to measure 1?	Yes	6	60%
	No	4	40%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=10)</i>	<i>Percent of Respondents</i>
Were you previously aware of the actions related to measure 2?	Yes	6	60%
	No	4	40%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=7)</i>	<i>Percent of Respondents</i>
Were you previously aware of the actions related to measure 3?	Yes	6	86%
	No	1	14%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=4)</i>	<i>Percent of Respondents</i>
Were you previously aware of the actions related to measure 4?	Yes	4	100%
	No	0	0%
	Don't know	0	0%
	Refused	0	0%

Were you previously aware of the actions related to measure 5?	<i>Response</i>	<i>(n=2)</i>	<i>Percent of Respondents</i>
	Yes	2	100%
	No	0	0%
	Don't know	0	0%
	Refused	0	0%

Were you previously aware of the actions related to measure 6?	<i>Response</i>	<i>(n=1)</i>	<i>Percent of Respondents</i>
	Yes	1	100%
	No	0	0%
	Don't know	0	0%
	Refused	0	0%

Were you previously aware of the actions related to measure 7?	<i>Response</i>	<i>(n=1)</i>	<i>Percent of Respondents</i>
	Yes	1	100%
	No	0	0%
	Don't know	0	0%
	Refused	0	0%

Were you previously aware of the actions related to measure 8?	<i>Response</i>	<i>(n=1)</i>	<i>Percent of Respondents</i>
	Yes	1	100%
	No	0	0%
	Don't know	0	0%
	Refused	0	0%

If the program had not been available, how likely would you have been to take the actions related to measure 1?	<i>Response</i>	<i>(n=10)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	2	20%
	1	0	0%
	2	2	20%
	3	1	10%
	4	0	0%
	5	4	40%
	6	0	0%
	7	1	10%
	8	0	0%
	9	0	0%
	10 - Very likely	0	0%
	Don't know	0	0%
	Refused	0	0%

If the program had not been available, how likely would you have been to take the actions related to measure 2?	<i>Response</i>	<i>(n=9)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	2	22%
	1	0	0%
	2	1	11%
	3	0	0%
	4	0	0%
	5	1	11%
	6	0	0%
	7	0	0%
	8	2	22%
	9	0	0%
	10 - Very likely	2	22%
	Don't know	0	0%
	Refused	0	0%

If the program had not been available, how likely would you have been to take the actions related to measure 3?	<i>Response</i>	<i>(n=4)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	0	0%
	1	0	0%
	2	1	25%
	3	1	25%
	4	0	0%
	5	2	50%
	6	0	0%
	7	0	0%
	8	0	0%
	9	0	0%
	10 - Very likely	0	0%
	Don't know	0	0%
	Refused	0	0%

If the program had not been available, how likely would you have been to take the actions related to measure 4?	<i>Response</i>	<i>(n=2)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	0	0%
	1	1	50%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	1	50%
	8	0	0%
	9	0	0%
	10 - Very likely	0	0%
	Don't know	0	0%
	Refused	0	0%

If the program had not been available, how likely would you have been to take the actions related to measure 5?	<i>Response</i>	<i>(n=1)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	1	100%
	8	0	0%
	9	0	0%
	10 - Very likely	0	0%
	Don't know	0	0%
	Refused	0	0%

If the program had not been available, how likely would you have been to take the actions related to measure 6?	<i>Response</i>	<i>(n=1)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	1	100%
	6	0	0%
	7	0	0%
	8	0	0%
	9	0	0%
	10 - Very likely	0	0%
	Don't know	0	0%
	Refused	0	0%

If the program had not been available, how likely would you have been to take the actions related to measure 7?	<i>Response</i>	<i>(n=1)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	1	100%
	8	0	0%
	9	0	0%
	10 - Very likely	0	0%
	Don't know	0	0%
	Refused	0	0%

Our records show that your organization also completed retro-commissioning projects through the program at other facilities. Was it a single decision to complete the additional retro-commissioning project(s) through the program or did each project go through its own decision process?	<i>Response</i>	<i>(n=3)</i>	<i>Percent of Respondents</i>
	Single Decision	1	33%
	Each project went through its own decision process	2	67%
	Other	0	0%
	Don't know	0	0%
	Refused	0	0%

Since your participation in the program, did you implement any ADDITIONAL energy efficiency measures at this facility or at your other facilities within the same service territory that did NOT receive incentives through the program?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	Yes	8	47%
	No	7	41%
	Don't know	2	12%
	Refused	0	0%

What was the first measure that you implemented?	<i>Response</i>	<i>(n=8)</i>	<i>Percent of Respondents</i>
	Lighting: T8 lamps	0	0%
	Lighting: T5 lamps	0	0%
	Lighting: Highbay Fixture Replacement	0	0%
	Lighting: CFLs	0	0%
	Lighting: Controls / Occupancy sensors	2	25%
	Lighting: LED lamps	4	50%
	Cooling: Unitary/Split Air Conditioning System	0	0%
	Cooling: Room air conditioners	0	0%
	Cooling: Variable Frequency Drives VFD/VSD on HVAC Motors	0	0%
	Motors: Efficient motors	0	0%
	Refrigeration: Strip curtains	0	0%
	Refrigeration: Anti-sweat controls	0	0%
	Refrigeration: EC motor for WALK-IN cooler/freezer	0	0%
	Refrigeration: EC motor for REACH-IN cooler/freezer	0	0%
	Other	2	25%
	Didn't implement any measures	0	0%
	Don't know	0	0%
	Refused	0	0%

What was the second measure?	<i>Response</i>	<i>(n=8)</i>	<i>Percent of Respondents</i>
	Lighting: T8 lamps	0	0%
	Lighting: T5 lamps	0	0%
	Lighting: Highbay Fixture Replacement	0	0%
	Lighting: CFLs	0	0%
	Lighting: Controls / Occupancy sensors	1	13%
	Lighting: LED lamps	1	13%
	Cooling: Unitary/Split Air Conditioning System	0	0%
	Cooling: Room air conditioners	0	0%
	Cooling: Variable Frequency Drives VFD/VSD on HVAC Motors	0	0%
	Motors: Efficient motors	0	0%
	Refrigeration: Strip curtains	0	0%
	Refrigeration: Anti-sweat controls	0	0%
	Refrigeration: EC motor for WALK-IN cooler/freezer	0	0%
	Refrigeration: EC motor for REACH-IN cooler/freezer	0	0%
	Other	3	38%
	Didn't implement any measures	0	0%
	Don't know	3	38%
	Refused	0	0%

What was the third measure?	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
	Lighting: T8 lamps	0	0%
	Lighting: T5 lamps	0	0%
	Lighting: Highbay Fixture Replacement	0	0%
	Lighting: CFLs	0	0%
	Lighting: Controls / Occupancy sensors	0	0%
	Lighting: LED lamps	0	0%
	Cooling: Unitary/Split Air Conditioning System	0	0%
	Cooling: Room air conditioners	0	0%
	Cooling: Variable Frequency Drives VFD/VSD on HVAC Motors	0	0%
	Motors: Efficient motors	0	0%
	Refrigeration: Strip curtains	0	0%
	Refrigeration: Anti-sweat controls	0	0%
	Refrigeration: EC motor for WALK-IN cooler/freezer	0	0%
	Refrigeration: EC motor for REACH-IN cooler/freezer	0	0%
	Other	5	100%
	Didn't implement any measures	0	0%
	Don't know	0	0%
	Refused	0	0%

Was this measure specifically recommended by a program related audit, report or program technical specialist?	<i>Response</i>	<i>(n=8)</i>	<i>Percent of Respondents</i>
	Yes	1	13%
	No	7	88%
	Don't know	0	0%
	Refused	0	0%

How important was your experience in the program in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?	<i>Response</i>	<i>(n=8)</i>	<i>Percent of Respondents</i>
	0 - Not at all important	3	38%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	0	0%
	8	2	25%
	9	0	0%
	10 - Extremely important	3	38%
	Don't know	0	0%
	Refused	0	0%

If you had not participated in the program, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?	<i>Response</i>	<i>(n=8)</i>	<i>Percent of Respondents</i>
	0 - Definitely would not have implemented	1	13%
	1	0	0%
	2	1	13%
	3	0	0%
	4	0	0%
	5	1	13%
	6	1	13%
	7	1	13%
	8	0	0%
	9	0	0%
	10 - Definitely would have implemented	3	38%
	Don't know	0	0%
	Refused	0	0%

Was this measure specifically recommended by a program related audit, report or program technical specialist?	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
	Yes	1	20%
	No	4	80%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
How important was your experience in the program in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?	0 - Not at all important	2	40%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	0	0%
	8	0	0%
	9	1	20%
	10 - Extremely important	2	40%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
If you had not participated in the program, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?	0 - Definitely would not have implemented	0	0%
	1	0	0%
	2	1	20%
	3	0	0%
	4	0	0%
	5	1	20%
	6	0	0%
	7	0	0%
	8	1	20%
	9	0	0%
	10 - Definitely would have implemented	2	40%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
Was this measure specifically recommended by a program related audit, report or program technical specialist?	Yes	3	60%
	No	2	40%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
How important was your experience in the [program in your decision to implement this Measure, using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?	0 - Not at all important	1	20%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	1	20%
	6	0	0%
	7	0	0%
	8	1	20%
	9	0	0%
	10 - Extremely important	2	40%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=5)</i>	<i>Percent of Respondents</i>
If you had not participated in the program, how likely is it that your organization would still have implemented this measure, using a 0 to 10, scale where 0 means you definitely WOULD NOT have implemented this measure and 10 means you definitely WOULD have implemented this measure?	0 - Definitely would not have implemented	0	0%
	1	0	0%
	2	1	20%
	3	0	0%
	4	0	0%
	5	1	20%
	6	0	0%
	7	1	20%
	8	1	20%
	9	0	0%
	10 - Definitely would have implemented	1	20%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
Thinking back to when you began the retro-commissioning project, did you have any initial concerns about participating in the program?	Yes	7	41%
	No	10	59%
	Don't know	0	0%
	Refused	0	0%

Did you have any difficulty with the participation process such as providing any of the required building documentation, building energy use information, or adhering to program timelines or schedules?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	Yes	3	18%
	No	14	82%
	Don't know	0	0%
	Refused	0	0%

Does your organization occupy any other facilities that qualify for the program but have not been retro-commissioned?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	Yes	9	53%
	No	7	41%
	Don't know	1	6%
	Refused	0	0%

Using a scale of 0 to 10 where 0 means “not at all likely” and 10 means “extremely likely,” how likely are you to complete a retro-commissioning project at one or more of those facilities through the program in the future?	<i>Response</i>	<i>(n=9)</i>	<i>Percent of Respondents</i>
	0 - Not at all likely	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	0	0%
	8	1	11%
	9	1	11%
	10 - Extremely likely	7	78%
	Don't know	0	0%
	Refused	0	0%

How dissatisfied or satisfied are you with the steps you had to take to get through the program?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	0 - Very dissatisfied	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	1	6%
	7	3	18%
	8	4	24%
	9	5	29%
	10 - Very satisfied	4	24%
	Don't know	0	0%
	Refused	0	0%

How dissatisfied or satisfied with the service provided by your retro-commissioning service provider?	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
	0 - Not at all satisfied	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	1	6%
	8	5	29%
	9	1	6%
	10 - Very satisfied	10	59%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
How dissatisfied or satisfied are you with the quality of the contractor's work who implemented the measures?	0 - Not at all satisfied	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	1	6%
	6	0	0%
	7	0	0%
	8	2	12%
	9	8	47%
	10 - Very satisfied	6	35%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
How dissatisfied or satisfied with any interactions you had with SEDAC or Energy 360 program staff	0 - Not at all satisfied	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	0	0%
	8	2	12%
	9	4	24%
	10 - Very satisfied	11	65%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
How dissatisfied or satisfied with information provided in program materials?	0 - Not at all satisfied	0	0%
	1	0	0%
	2	0	0%
	3	0	0%
	4	0	0%
	5	0	0%
	6	0	0%
	7	2	12%
	8	3	18%
	9	3	18%
	10 - Very satisfied	8	47%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
What do you think are the best ways to communicate information about the program to organizations like yours?	E-mail	7	41%
	Telephone	1	6%
	Presentations at events or contractors	7	41%
	Trade allies/Vendors/Contractors	5	29%
	Direct mailings	2	12%
	Website updates	5	29%
	Other	10	59%
	Don't know	0	0%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
Does your organization rent, own and occupy, or own and rent to someone else the facility at this location?	Rent	0	0%
	Own and occupy	17	100%
	Own and rent to someone else	0	0%
	(Don't know)	0	0%
	(Refused)	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
Does your organization pay the full cost of the natural gas bill for this location?	Yes	16	94%
	No	0	0%
	Don't know	1	6%
	Refused	0	0%

	<i>Response</i>	<i>(n=17)</i>	<i>Percent of Respondents</i>
Does your organization pay the full cost of the electric bill for this location?	Yes	16	94%
	No	0	0%
	Don't know	1	6%
	Refused	0	0%