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Impact and Process Evaluation of the 2014 Illinois Power Agency Small Business Direct Install Program

Final

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Table of Contents

Opinion Dynamics

Table of Tables

Opinion Dynamics

Table of Figures

1. Executive Summary

This report presents results from the program year seven (PY7) Leidos Small Business Direct Install (SBDI) Program, which is one of five stand-alone Illinois Power Authority (IPA) energy efficiency programs implemented from June 2014 to May 2015. PY7 represents the second full year of the SBDI Program's operation.

The SBDI Program offers AIC business customers in the DS-2 rate code (small general delivery service) a free energy assessment, as well as the installation of energy efficient measures. The program offers include a package of free measures, a $129 premium package that focuses on retrofit fluorescents and (new to PY7) a $249 package with a focus on LED technology. Three key entities have roles in program delivery: Small Business Energy Advisors (SBEAs), Small Business Program Allies (SBPAs), and distributors. The SBEAs are program staff members who are stationed throughout AIC's service territory and who play a key role in recruiting customers to the program and providing some with energy assessments. They also work with SBPAs—program-qualified electrical contractors who perform energy assessments and install eligible measures. Participating electrical distributors support both SBEAs and SBPAs by ensuring the supply of program measures.

In the second year of full operation, the SBDI Program made several changes in order to optimize program delivery and performance, including adding LED measures, phasing-out of water conservation measures, and increasing SBPA participation in the assessment process. In PY8, the implementation contractor offering the program will change due to the IPA's annual rebidding process.

Below we present the key findings from the PY7 SBDI Program evaluation.

Program Impacts

Table 1 summarizes the net electricity and demand savings from the PY7 SBDI Program, which includes 29,082 MWh and 5.83 MW. The program achieved high gross and net realization rates as a result of the evaluation team's application of deemed per-unit savings values for most measures, as well as the application of the net-to-gross ratio (NTGR) from AIC's IPA filing from Docket 12-0544 for this program (0.90).

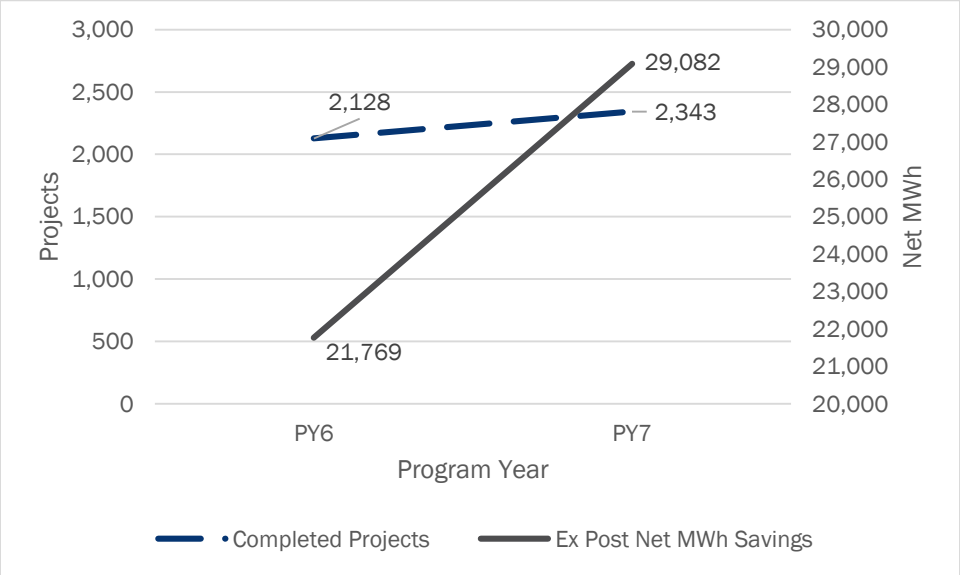
Table 1. PY7 Net SBDI Program Impacts

	Ex Ante Gross	Realization Rate	Ex Post Gross	NTGR	Ex Post Net
Energy Savings (MWh)					
Total MWh	36,216	89%	32,314	0.9	29,082
Demand Savings (MW)					
Total MW	7.40	88%	6.48	0.9	5.83

Program Participation

Over the course of PY7, eligible customers completed 2,343 projects through the SBDI Program, a slight increase over PY6. The program also saw a corresponding increase in electric savings achieved by the program as shown in Figure 1.

Figure 1. PY7 SBDI Participation Summary



Key Findings and Recommendations

Overall, the SBDI Program completed another successful year in which the number of projects completed and amount of savings achieved increased. In addition, SBPAs took on a much larger role in conducting energy assessments for the program. Based on the team's PY7 evaluation activities, we present below the key finding and recommendation for the program:

- **Key Finding #1**: The evaluation team determined that discrepancies between ex ante and ex post savings values were partially due to different assumptions around hours of use, coincidence factor, and waste heat factor parameters.
  - **Recommendation:** In order to minimize discrepancies and maximize the gross realization rate for programs implementing the PY7 program measures, the team recommends using data collected by the implementer on space type to estimate the ex ante savings as opposed to assuming the miscellaneous space type for all projects.

2. Evaluation Approach

The PY7 evaluation of the SBDI Program involved both process and impact assessments. To support the process evaluation, we conducted a review of program materials and program-tracking data, interviews with program implementation staff, and interviews with SBPAs. To evaluate gross impacts, the evaluation team reviewed the PY7 program tracking data and used deemed values or applied the Illinois Statewide Technical Reference Manual for Energy Efficiency Version 2.0 (IL-TRM). Net impacts applied AIC's IPA filing from Docket 12-0544 for this program (0.90) to the gross impacts.

2.1 Research Objectives

The evaluation team sought to answer the following research questions as part of the PY7 SBDI evaluation:

2.1.1 Impact Questions

1. What are the estimated gross energy and demand impacts from this program?
2. What are the estimated net energy and demand impacts from this program?

2.1.2 Process Questions

1. Program Design and Implementation
    a. What changes, if any, were made to the program's design and implementation between PY6 and PY7? What was the rationale for these changes?
    b. Was the program implemented according to plan? If not, what changes were made and why?
    c. What implementation challenges occurred in PY7, and what was done to address them?
    d. What program marketing and outreach strategies did the program implement in PY7? How did these strategies differ, if at all, from those implemented in PY6?
    e. Did the role of SBPAs in the assessment process change over the past program year? What effect did these changes have on program implementation and participation?
2. Program Participation
    a. How many customers participated in the program in PY7? Did participation meet expectations? If not, why not?
    b. How many SBPAs participated in the program in PY7? What proportion provided turnkey services and conducted energy assessments?
3. Program Processes
    a. How satisfied were SBPAs with their participation in the program?
    b. What effect, if any, did participation in the program have on SBPA business practices and staffing?

4. Non-Participant Awareness and Barriers[1]
    a. What is the level of program awareness and familiarity among key sectors targeted by the program?
    b. What is the level of knowledge of and attitude toward energy efficiency among non-participants?
    c. What are the barriers preventing customers from participating in the program?

2.2 Evaluation Tasks

Table 2 summarizes the PY7 evaluation activities conducted for the SBDI Program.

Table 2. SBDI PY7 Evaluation Activities

Activity	PY7 Process	PY7 Impact	Forward Looking	Details
Program Staff Interviews	✓			Provided insight into program design and processes
SBPA Interviews	✓			Provided insight into program implementation and processes
Review of Program Materials and Data		✓		Reviewed all program materials and tracking data to document the design and implementation of the PY7 program
Impact Analysis		✓		Calculated gross and net impacts for the program

We summarize each of these activities in detail below.

2.2.1 Program Staff Interviews

We conducted interviews with implementation team staff to understand the SBDI Program's design and implementation and to discuss evaluation priorities. In total, we completed three interviews with program staff from Leidos.

[1] These research questions are addressed through a C&I non-participant survey. Results are expected in October 2015 in the C&I Standard Report.

2.2.2 Small Business Program Ally Interviews

The evaluation team conducted SBPA interviews in PY7 specifically to explore their involvement in the energy assessment process. Using a stratified random sample design, we spoke to three types of SBPAs: top energy assessment performers (ranked within the top 20), those who performed fewer assessments, and those who only completed work orders and did not participate in the assessment process (referred to as work order allies).

We first attempted to contact all SBPAs within the top stratum, followed by a random selection of SBPAs in the next two strata. This resulted in 20 in-depth interviews: 15 interviews with SBPAs who chose to perform assessments and five SBPAs who opted not to do so.

Table 3. Completed SBPA In-Depth Interviews

SBPA Type	Total	Target Completed Interviews	Completed Interviews
	(N)	(n)	(n)
Assessing Allies - Top 20	20	15	13
Assessing Allies - Under Top 20	31		2
Work Order Allies	57	5	5
Total	**108**	**20**	**20**

The in-depth interviews focused on the SBPA's role in providing turnkey services, their feedback on program processes and satisfaction with the program, and any ongoing barriers to AIC customer participation in the program.

Survey Disposition and Response Rate

We interviewed SBPAs within the month of June 2015. Table 4 provides the survey dispositions.

Table 4. SBPA In-Depth Interview Dispositions

Disposition	N
Completed Interviews (I)	20
Eligible Non-Interviews	21
Refusal	4
Mid-interview Terminate (R)	0
Respondents Never Available (NC)	1
Answering Device	16
Not Eligible (e)	1
Unknown Eligibility Non-Interview (U)	0
No Eligible Respondent (completed no projects)	1

Disposition	N
Total Phone Numbers Used	42
Sample Not Used	66

Table 5 provides the response and cooperation rates. Appendix C provides information on the methodology used to calculate response rates for telephone surveys.

Table 5. SBPA In-Depth Interview Response and Cooperation Rates

AAPOR Rate	Percent
Response Rate	49%
Cooperation Rate	83%

2.2.3 Review of Program Materials and Data

We conducted a comprehensive review of all program materials and tracking data to document the program's PY7 activities and describe any key changes in program implementation. In particular, we reviewed program marketing and implementation plans, and extracts from the program-tracking database.

2.2.4 Impact Analysis

Gross Impact Analysis Approach

To estimate PY7 ex post gross savings for the SBDI Program, we conducted an engineering review of the program-tracking database and applied values from the Statewide TRM V2.0. In addition, the evaluation team applied measure-specific in-service rates (ISR) developed in PY6 based on application reviews and site visits. For new measures such as LED bulbs and fixtures, the team applied an ISR of 100% per the IL-TRM V2.0. Each of the installation rates the evaluation team applied is listed in Table 6.

Table 6. SBDI Measure Installation Rates

Equipment Description	Install Rate	Source
Aerators	100.0%	PY6 Impact Analysis
CFLs	96.5%	
Delamping	95.4%	
LED Exit Signs	100.0%	
Occupancy Sensors	100.0%	
T12 to T8 Replacements	100.5%	
LED bulbs and fixtures	100.0%	IL-TRM V2.0

Net Impact Analysis Approach

The evaluation team applied the deemed net-to-gross ratio (NTGR) estimate from AIC's IPA filing from Docket 12-0544 for this program (0.90) to the gross impacts.

2.3 Sources and Mitigation of Error

Table 7 provides a summary of possible sources of error associated with research tasks conducted for the SBDI Program. We discuss each item in detail below.

Table 7. Possible Sources of Error

Research Task	Survey Errors		Non-Survey Errors
	Sampling Errors	Non-Sampling Errors	
Small Business Program Ally Interviews	• Yes	• Non-Response	• N/A
Impact Analysis	• N/A	• N/A	• Analysis errors

The evaluation team took a number of steps to mitigate potential sources of error throughout the planning and implementation of the PY7 evaluation.

Survey Errors

- **Sampling Errors**
  - The evaluation team did not design the sampling approach for the SBPA interviews to achieve a specific level of confidence and precision. The interviews were qualitative in nature and their focus was on SBPA involvement in the assessment process. However, while we performed a census of the top 20 assessing allies, we drew a random sample of allies in the other strata.
- **Non-Sampling Errors**
  - **Non-Response:** While the response rate for the SBPA interviews is high at 49%, there is the potential for non-response bias. The team attempted to mitigate possible bias by calling on different days of the week, as well as at different times of the day.

Non-Survey Errors

- **Analysis Errors**
  - **Impact Analysis:** We applied the TRM calculations to the participant data in the tracking database to calculate gross impacts. To minimize analysis error, the evaluation team had all calculations reviewed by a separate team member to verify that calculations were performed accurately.

3. Detailed Evaluation Findings

3.1 Program Description

The SBDI Program began as a pilot in PY5 and launched as a formal program in PY6. Consistent with prior program years, SBDI is implemented by Leidos (the "implementation contractor"), and offers AIC business customers in the DS-2 rate code[2] a free energy assessment, as well as the installation of energy efficient measures. The program was designed specifically to overcome small business customer barriers; in particular, the time, effort, and sophistication required to complete a project, including the incentive application process. The program and its allies attempt to address these barriers by identifying efficiency improvements, finding a contractor, and handling the application process for the customer.

In its attempt to reach these small business customers, the program offer includes a package of free measures, a $129 premium package focusing on retrofitting fluorescents, and (new to PY7) a $249 package focusing on LED technology (Table 8).

Table 8. PY7 SBDI Program Offerings

Package	Measure Offerings	Changes
Free	• CFLs (no limit) • LED lamps (up to 80)	• Since PY6, Leidos has removed water conservation measures from the program. Reasons for this change include low uptake, saturation of the market through the ActOnEnergy® green nozzle offering, and difficulty getting electrical contractors to perform the installations. • LED screw-in lamps were added to the program in PY7.
$129 Premium	• CFLs (no limit) • LED lamps (up to 80); additional with co-pay • LED exit signs (no limit) • Occupancy sensors (no limit with co-pay) • 4'linear, 2' U-shape and 8' linear T12 lamps all eligible for retrofitting; Each 4' and 2' lamp counted as (1) towards 80 limit, each 8' lamp counted as (2) towards 80 limit • T12/T8 retrofits exceeding the 80-lamp limit with co-pay • Unlimited de-lamping of T12/T8 lamps	• LED screw-in lamps were added to the program in PY7.
$249 "Platinum"	• CFLs (no limit) • LED lamps (up to 80); additional with co-pay	• Leidos removed some LED measures - linear and fixture – during the second quarter of PY7 due to high measure

[2] These customers have under 150 kW maximum monthly demand, or if not demand metered, an average usage of less than 1,200 kWh per day.

Package	Measure Offerings	Changes
	• Occupancy sensors (no limit with co-pay) • LED exit signs (no limit) • 4'linear, 2' U-shape and 8' linear T12 lamps all eligible for retrofitting; Each 4' and 2' lamp counted as (1) towards 80 limit, each 8' lamp counted as (2) towards 80 limit • T12/T8 retrofits exceeding the 80-lamp limit with co-pay • Unlimited de-lamping of T12/T8 lamps	costs, safety concerns, and incompatibility with some local codes and standards. • LED screw-in lamps were added to the program in PY7.

Three key entities have roles in program delivery: SBEAs, SBPAs, and distributors.

- **SBEAs:** The AIC service territory is divided into seven energy advisor territories, and one SBEA is assigned to each. The SBEAs are responsible for performing energy assessments, managing the SBPAs, and ensuring that customers are satisfied with their projects. SBEAs are also involved in the program inspection process. SBEAs inspect the first five projects completed by each SBPA, and, after the first five, they inspect every 15th project. SBEAs also inspect projects if the projects have more than $5,000 of incentives or if there is an incentive change of $1,000 or more. During an inspection, the SBEA ensures that the SBPA installed all the correct measures and that the customer is satisfied with the project.

- **SBPAs:** SBPAs are electrical contractors who complete energy assessments and work orders assigned to them by SBEAs. These work orders are the result of the energy assessments conducted by the SBEAs or in some cases by the SBPAs themselves. SBPAs must be registered program allies in the ActOnEnergy Business Program before they can enroll and receive training as an SBPA in the SBDI Program. The program recruited contractors who would give them good geographical coverage of the territory, as well as those contractors that customers frequently requested through the program. Small business customers are able to select their preferred contractor from a list of the registered SBPAs in their territory. There are currently around 108 registered SBPAs in the program.

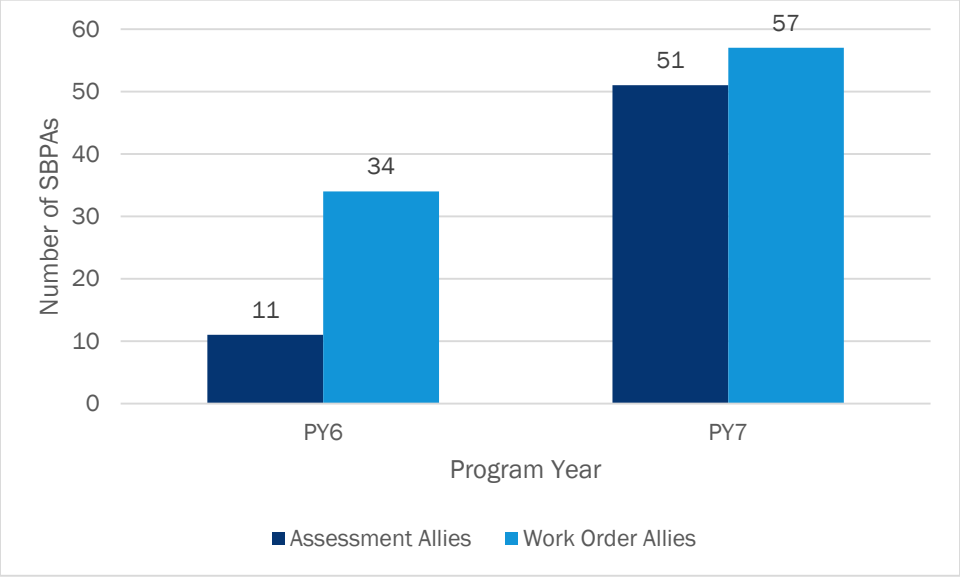
  When a SBPA completes an installation, the customer pays the contractor a co-pay amount (as well as the package fee, if applicable) and then the program pays the contractor an incentive based on the energy efficiency measures installed. Additionally, since October 2013, the program has expanded the role of the SBPAs to include performing energy assessments. More than half of the volume of projects now come from energy assessments conducted by SBPAs. To perform assessments, SBPAs use iPads with SnapShot™ assessment software, which guides them through the assessment process and automatically uploads data from the assessment to Leidos servers.

- **Distributors**: Participating distributors support both SBEAs and SBPAs by ensuring the supply of program measures. SBPAs are required to order materials for their SBDI projects from distributors enrolled in the program. Distributors, like SBPAs, must first be approved, after which they can enroll and receive training as a distributor for the SBDI Program. Initially, program staff recruited distributors primarily from the ActOnEnergy Business Program, but, as the contractor list has grown, the program has added more distributors to support the allies. Most of the distributors added were those that SBPAs said that they would like to work with.

In PY7, there were 26 enrolled distributors located throughout the territory. These distributors are a mix of national, regional, and local companies. Therefore, many of them have multiple branch offices throughout the area. The program expects distributors to have sufficient supply of program measures and to maintain their prices throughout the program year.

As noted above, Leidos expanded efforts to recruit SBPAs and incentivize them to perform assessments in PY7. As part of this strategy, Leidos implemented an assessment stipend for each completed project that included a bonus structure for rapid project completion, and a partial reimbursement for iPads which are used to run the SnapShot[tm] assessment software. As shown in Figure 2, these efforts were effective in increasing SBPA participation in assessments from approximately one quarter of SBPAs in PY6 to half of SBPAs in PY7. The total number of participating SBPAs also increased significantly, from 45 in PY6 to 108 in PY7.

Figure 2. Changes in SBPA Roles between PY6 and PY7



3.2 Program Design and Implementation

According to program staff, implementation of the SBDI Program went smoothly and generally according to plan in PY7. However, the program staff did make minor implementation changes to address various issues that arose over the course of the program year.

3.2.1 Program Design Changes

In the second year of full operation, the SBDI Program made a number of changes to program design. These changes included the following:

- **Inclusion of LED Measures:** In response to customer interest in LEDs, the program offered LEDs in both the "premium" and "platinum" packages, as described above. However, while LED screw-in lamps were a successful addition to the program, the LED tube measures met with a number of challenges in the marketplace including supply chain issues and safety concerns regarding proper installation of the technology. As a result, Leidos, in agreement with AIC, deactivated the LED tube measures early in the second quarter of the program year.

- **LED Tube Measures:** Initially, LED tube measures were included as eligible measures. However, due to cost and safety concerns (described in more detail below), these were removed from eligibility early in the program year. This did not cause problems for SBPAs; they had not been trying to sell LED tube measures because they also recognized some of these issues. They also noted that the incentive was not enough to make this measure attractive to customers or profitable for SBPAs.

- **Water Conservation Measure Phase-Out:** Experience in PY6 indicated both that many of the electrical distributors did not stock these products (i.e., faucet aerators, low-flow showerheads, and pre-rinse spray nozzles) and that many of the SBPAs were unwilling to install them. As a result, given that these measures represented very limited customer participation and savings acquisition in PY6, Leidos, with agreement from AIC, removed water measures from the list of eligible PY7 measures.

- **Engaging SBPAs in the Energy Assessment Process:** In order to increase SBPA participation in the energy assessment process, and therefore overall participation in the program, Leidos expanded the recruiting and enrollment materials to communicate program benefits for SBPAs. Leidos also implemented two financial incentives: a participation stipend and an iPad reimbursement. SBPAs received a stipend for each assessment that resulted in a completed project. The stipend also included a bonus structure for rapid project completion within 2 to 4 weeks of the work order sign off. Leidos also provided a partial reimbursement for the purchase of an iPad on which to run the SnapShot^{tm} software, the platform used to conduct energy assessments.

3.2.2 Staffing Changes in PY7

Leidos made a number of staffing changes in PY7. In particular, the addition of Community Organizations Coordinator (COC) influenced the marketing strategy employed for the PY7 SBDI Program. The primary responsibility of the COC was to develop, maintain, and expand relationships with Chambers of Commerce, Rotary Clubs, Economic Development Commissions, and other local business organizations. Strategies used by the COC included a regular, consistent presence at monthly events, as well as regular communications with members through email blasts and monthly newsletters.

In addition, the SBEA for Territory Seven took on additional responsibilities as Deputy Program Manager and SBPA Training Coordinator. The responsibilities of the SBPA Training Coordinator included training of new SBPAs who complete work orders or assessments, and providing periodic SBPA communications to ensure consistent processes and protocols.

Finally, the program's relationship with the Illinois Green Business Association, which had been serving as the energy advisor in Territory Three, expired at the end of PY6. In order to continue to provide service, a SBEA assumed responsibility for Territory Three in PY7. This not only continued service, but streamlined processes and integrated Territory Three service with the existing Leidos team.

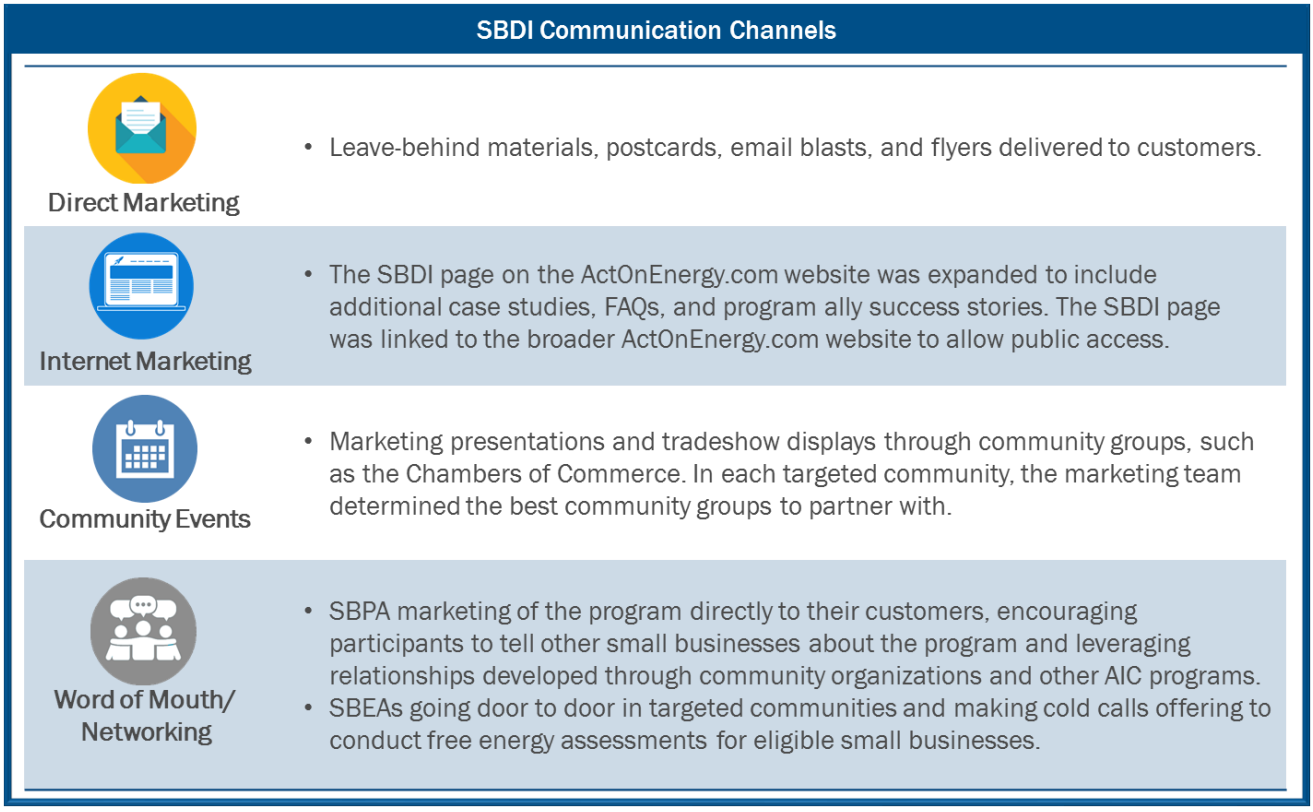
3.2.3 Program Outreach

In addition to adding new staff with a key role in promoting the program, Leidos continued to implement a marketing strategy aimed at clearly communicating with customers through a number of channels likely to reach the target audience (Figure 3). In general, the program used similar channels to those implemented in PY6.

Program implementers also focused on new marketing strategies informed by lessons learned in PY6. These included targeting sectors the program staff felt had savings potential such as religious facilities, businesses with many chain locations, and the top 500 DS-2 accounts. The implementers also updated the SBDI website

to include case studies, FAQs, and links to the general ActOnEnergy website. In order to communicate a sense of urgency and to prepare customers for upcoming SBDI community events, the marketing messages adopted a "Coming Soon" strategy.

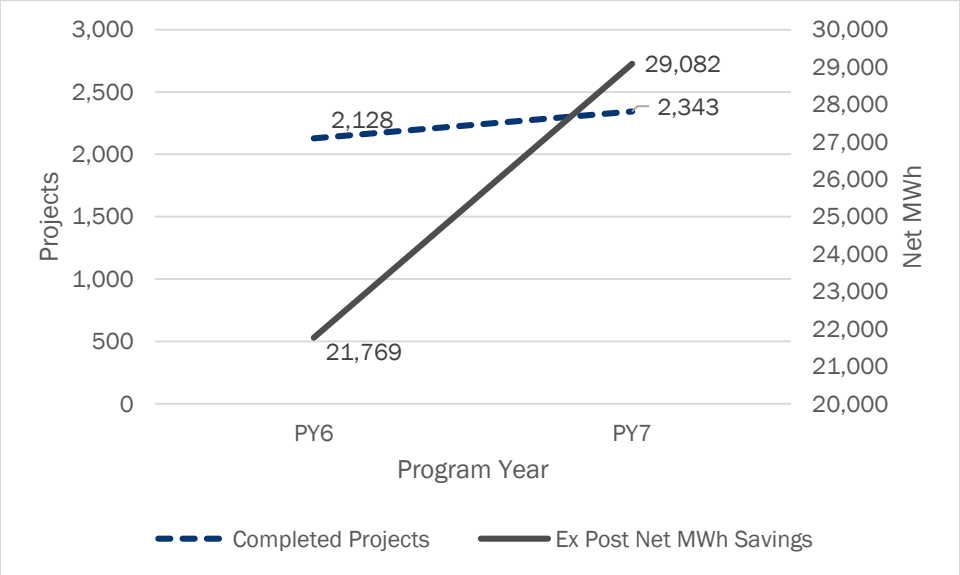
Figure 3. SBDI Communication Channels and Activities



3.3 Program Participation and Participant Characteristics

Over the course of PY7, eligible customers completed 2,343 projects through the SBDI Program, a slight increase over PY6. Likewise, the program saw a corresponding increase in electric savings achieved by the program (Figure 4).

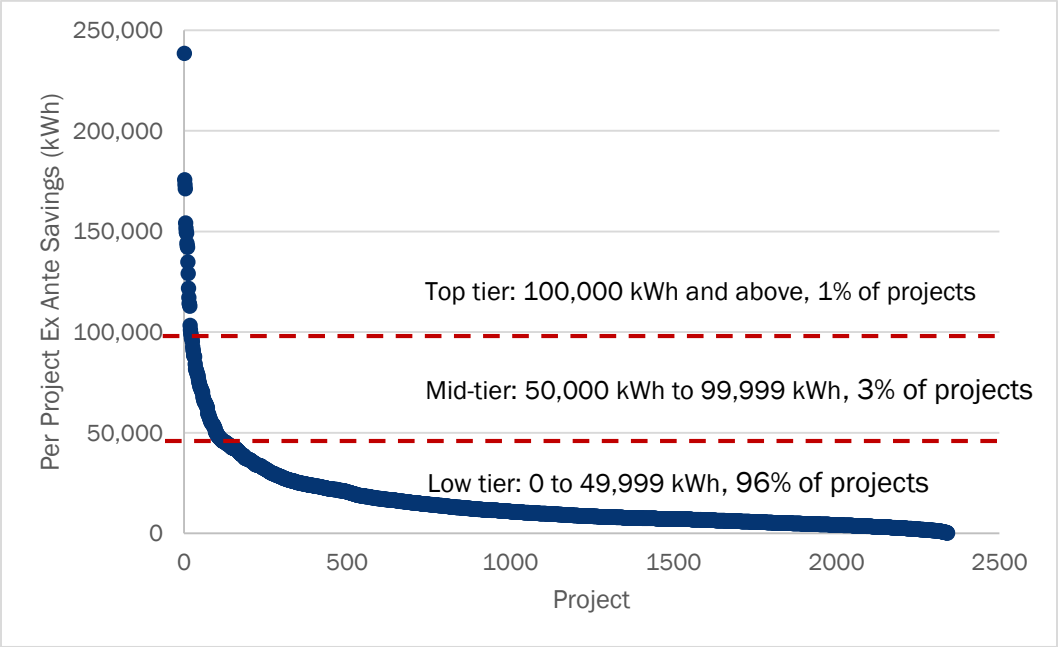
Figure 4. Completed SBDI Projects in PY6 and PY7



Below we provide an overview of SBDI participant and project characteristics.

- Almost 40% of participating facilities fall within the retail or service category. Office facilities contribute the next largest amount of facilities (22%).
- The program was able to achieve participation across the AIC service territory. In particular, the program saw the highest level of participation in the SBEA territory of Quincy and the lowest level in the East St. Louis territory.
- Savings vary widely per project, but the majority of projects are small. As shown in Figure 5, projects can be classified into three tiers. The top tier includes projects that achieved ex ante savings of 100,000 kWh and above. This tier accounts for 8%% of program savings and 1% of completed projects. The mid-tier includes projects achieving between 50,000 kWh and 99,999 kWh ex ante savings; mid-tier projects account for 15% of program savings and 3% of completed projects. Finally, the low tier projects have ex ante savings from 220 kWh to 49,999 kWh, and account for 77% of program savings and 96% of completed projects.

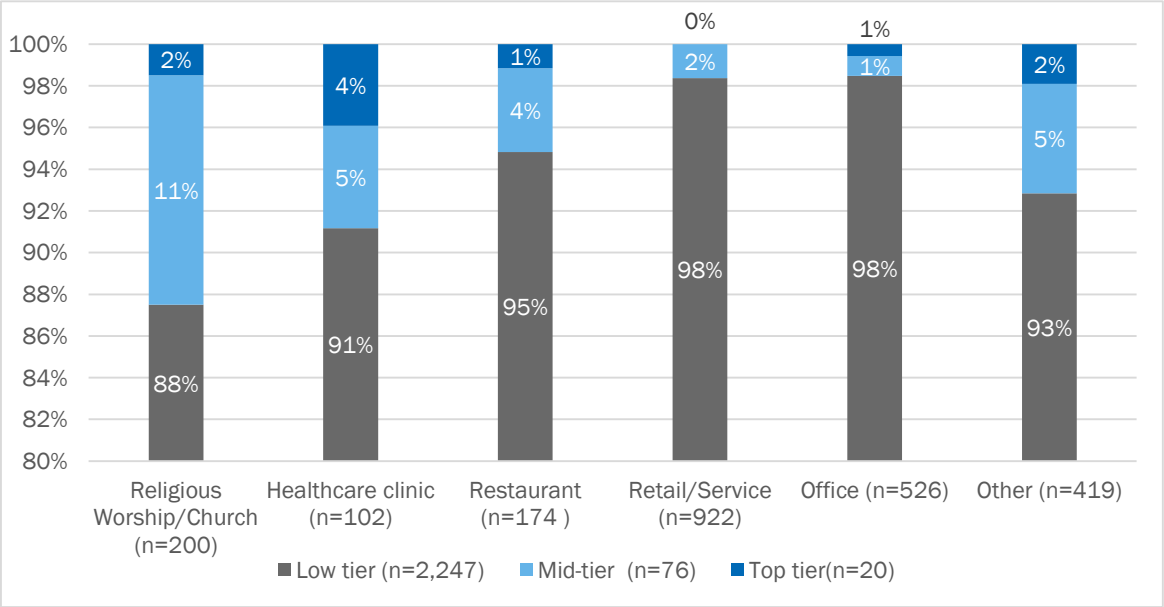
Figure 5. PY7 SBDI per Project Savings



Note: Percentages are rounded.

- There is variation in facility types within the savings tiers. For instance, the top-tier (1% of projects, n=20) is a mix of hotel/motel common areas (n=5), healthcare clinics (n=4), churches (n=3), offices (n=3), restaurants (n=2), and unspecified facilities (n=3). Religious institutions are the most common facility within the mid-tier (3% of projects, n=76) and retail/service facilities (which are completely absent from the top tier) are the most common in the bottom tier (96% of projects, n=2,247).

Figure 6. Project Facility Types within Savings Tiers



- As shown in Table 9, Fluorescent T12 lighting retrofit products were the most popular measures installed through the program, followed closely by LED lamps. Projects involving the installation of CFLs, exit/emergency signs, and de-lamping were also popular.

Table 9. Measures Installed by Participants (Multiple Categories)

Equipment Category	Number of Projects with Equipment (N=2,343)	Percent of Projects (N=2,343)
T12	2,103	90%
LED Lamp	1,545	66%
CFL	560	24%
LED Exit Sign	642	27%
Delamping	416	18%
Occupancy Sensors	32	1%
Dimmer Compatibility	15	1%
T8	4	0.2%
LED Tube [a]	2	0.1%

Note: Most projects contained multiple measure types.

[a] These projects were completed prior to these measures being suspended.

- Different project savings tiers were comprised of different types of equipment. While T12 and LED measures were popular among all tiers, Figure 7 also shows that the low savings projects tended to have higher proportion of T12 fluorescent measures, while the mid- and high-tier projects contained a higher proportion of LED measures.

Figure 7. Savings Tier by Equipment type

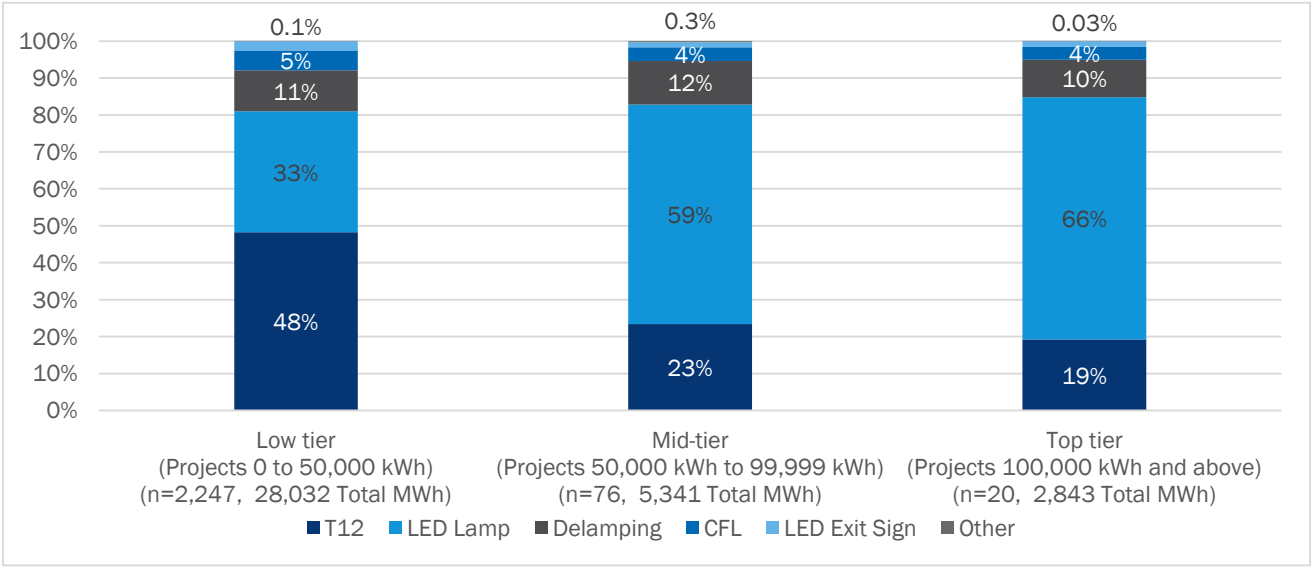
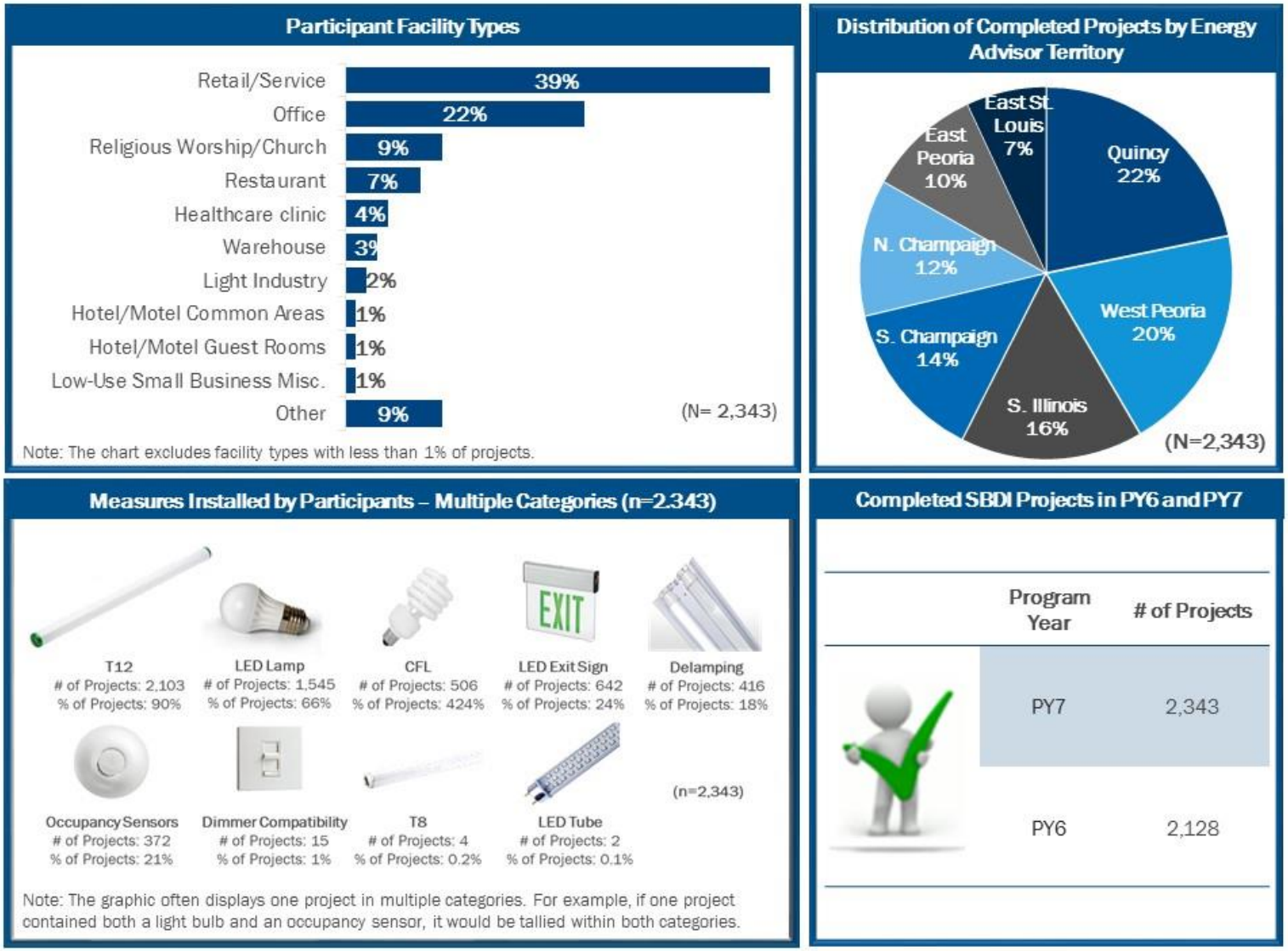


Figure 8 provides a summary of participant characteristics.

Figure 8. Participant Characterization



3.4 SBPA Participation and Experience

The following section summarizes program ally participation in the SBDI Program in PY7. This includes an assessment of level of participation, as well as the experience of SBPAs in the program.

3.4.1 Participation

As previously noted, the SBDI Program worked to increase the number of assessments performed by SBPAs in PY7 and during PY7, the percentage of SBPAs conducting assessments rose to 47% from 24%. Further, SBPAs conducted 62% of all assessments performed in PY7. Table 10 below displays the frequency of SBPAs that did or did not perform assessments, as well as the number of completed projects associated with each.

SBPAs that did not perform assessments generally cited the fact that profit margins for assessments and SBPA work are low. As a result, for SBPAs who already have a packed schedule, SBDI projects provide a lower profit margin than jobs within their normal project queue.

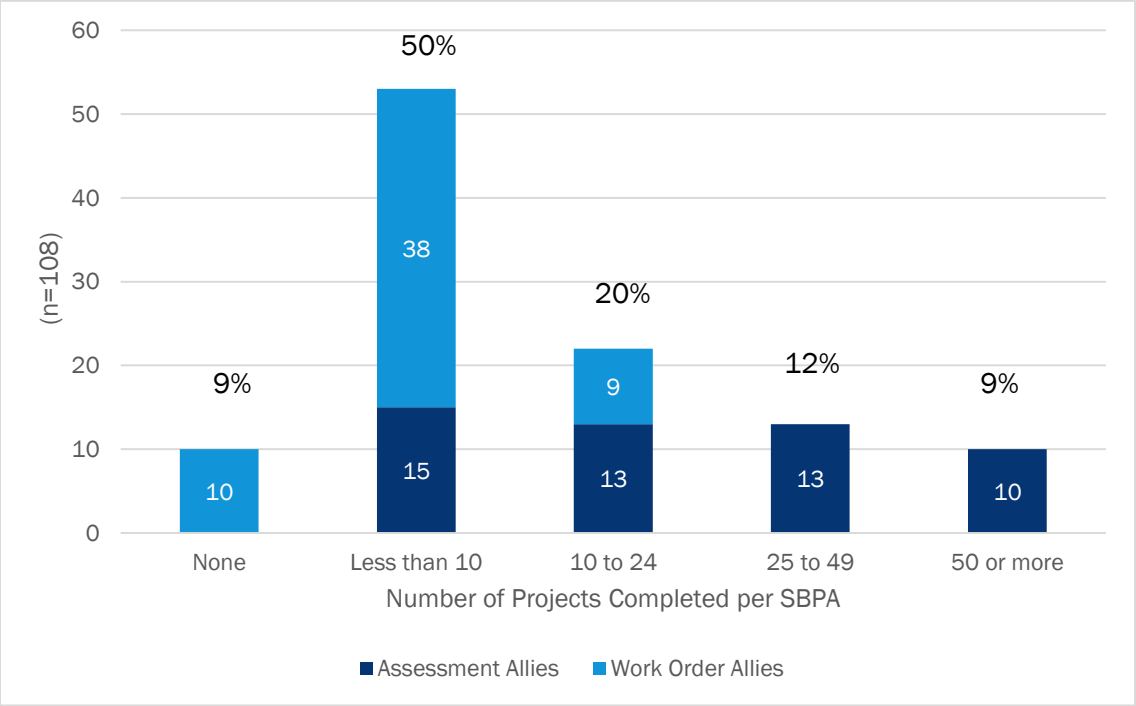
Table 10. SBPA Program Activity by Status

SBPA Assessment Status	Number of SBPAs	Percent of SBPAs	Number of Completed Projects[b]	Percent of Completed Projects[b]
Assessment Allies	51	47%	1,975	84%
Work Order Allies	57	53%	295	13%

[b] For 73 free direct installation projects, Leidos staff conducted assessments.

SBPAs completed a wide range of projects in PY7, from less than 10 projects to over 50 projects, although half of SBPAs completed between one and 10 projects (Figure 9). The 10 SBPAs that performed 50 or more projects accounted for 54% of all projects completed in PY7. The highest number of projects performed by a single SBPA was 261.

Figure 9. SBPA Profile by Type and Number of Projects Completed



While a number of SBPAs serve more than one territory, three quarters (75%) serve only one. While coverage was relatively even across the territories, slightly more SBPAs completed projects in North Champaign, while the fewest SBPAs completed projects in West Peoria. Note that the territories in which the most projects were performed (Quincy and West Peoria, see Table 11Table 11) were served by relatively few SBPAs. The few SBPAs that did services those two areas were some of the most productive.

Table 11. Number of SBPAs that have Completed Projects in each Territory (Multiple Classifications)

Territory	Number of Projects Completed by SBPA [a]					
	None	Less than 10	10 to 24	25 to 49	50 or more	Total
N. Champaign	0	9	6	5	4	24
East Peoria	0	10	3	3	5	21
East St. Louis	0	12	2	2	5	21
S. Champaign	0	8	3	4	5	20
S. Illinois	0	8	3	3	6	20
Quincy	0	4	7	1	7	19
West Peoria	0	10	3	3	3	19
None	8	0	0	0	0	8
Total SBPAs per Category [a]	**8**	**61**	**27**	**21**	**35**	**152**
Total SBPAs	**8**	**55**	**22**	**13**	**10**	**108**

[a] Values represent distinct SBPAs. Given that a single SBPA can serve more than one territory, column values total more than the number of unique SBPAs per production category.

3.4.2 Experience with the Program

Program staff consider SBPAs central to the success of the program and to the increased number of completed projects in PY7. From the SBPA perspective, the program provides an opportunity to supplement uneven project schedules and broaden their customer base. SBPAs also feel that they can effectively market the program because they know their territories and the needs of specific customers better than the SBEAs.

Benefits and Challenges to Participation

Participation in the SBDI Program brought both benefits and challenges for SBPAs. Table 12 summarizes the primary topics discussed through in-depth interviews with participating SBPAs.

Table 12. Key Aspects of the SBPA Experience in the SBDI Program

Program Topic	Key Findings
Assessments	• Those conducting assessments felt that they (and use of the SnapShot™ tool) went smoothly and were easy to complete. • When SBPAs perform assessments, they can see the work site and note any obstacles or special needs required for the job (i.e. high ceilings, inaccessible areas, etc.).This allows them to have a more accurate idea of costs and job requirements than if the SBEA performs and assessment. • SBPAs with fewer employees and a small customer base prefer to perform assessments themselves, as they can expand their customer base and receive more work than they were getting through work orders from the SBEAs. • The stipend and iPad reimbursement aided smaller SPBAs who did not have a backlog of larger, more profitable projects waiting for completion. Even though the assessments often remained a loss leader, the stipend allowed them to perform more assessments and turn a profit through increasing their work orders. *"It is better for us to do it. There was only one Ameren rep taking care of a large area. This allows more assessments. The $50 cost was helpful to pay for an employee to go do an assessment, It was probably cheaper giving us the stipend than sending the Ameren Rep."* *"The Stipends definitely affected the bottom line of the project. These projects have very small margins, lower than most of our projects, so even a percentage or two made a difference."* • SBPAs with many employees and SBPAs with a deep customer base often did not have time to perform assessments, due to a backlog of larger and more profitable projects. • SBPAs who perform the most projects often said that they preferred to have the SBEAs perform assessments and instead concentrate on work orders, since this allows them to spend more labor-hours on higher paying projects rather than low-margin or loss leader assessments. • Some SBPAs with many employees still often perform their own assessments. Though assessments take time away from more lucrative projects, they also allow the SBPA to identify likely new customers and perform assessments within their active territories faster than the SBEAs were able to do.
Acquisition of Additional Business	• For most SBPAs, SBDI projects provided "fill-in" work during slow times. • Three SBPAs reported hiring a staff member specifically to market the SBDI Program and perform assessments. Each of these SBPAs is a small company that spent a significant portion of their workload on SBDI projects in PY7. • The program also provided "foot-in-the-door" projects to build the SBPAs' customer base. SBPAs consistently reported an increase in the number of small business customers they were able to reach due to the program. *"Ten to fifteen percent of our customer base wouldn't be our customers without this. Small businesses do a lot of repair on their own, but this program lets us get in the door."*

Program Topic	Key Findings
	"It has let me have more customers. Savings are a good sell."
Program Measures	• SBPAs (and their customers) like the measures available through the program, including the new LED measures. • The change away from LED tubes did not cause problems, as SBPAs had not marketed these measures due to insufficient incentives. *"[LEDs were] a great option. A lot of people requested them, and I pushed them. It was better light than the CFLs. A better product."*
Payment Processing & Notification	• SBPAs felt that Leidos communicated about and made payments to SBPAs in a timely manner.
Program Promotion	• Many SBPAs note that they receive calls from customers who have learned of the SBDI program through word-of-mouth or the SBDI portion of the ActOnEnergy website. However, most customers they approach do not know that the program existed. *"Every customer we did a job for couldn't believe it was such a great program, and they didn't know about it. [The implementer] could do more marketing."*
Cross-Program Promotion & Channeling	• Seven of the twenty respondents reported proactively discussing other AIC programs with their customers (primarily C&I Standard). Among these seven respondents, three reported referring customers to other programs, but did not perform the work themselves. Another three respondents reported occasionally completing a job through the C&I Standard Program if an SBDI project revealed customer needs beyond what that program offered. • The rest of the respondents (n=10) reported either that they were unaware of other program options, or did not believe any other AIC programs would be appropriate for their customers. Reasons included that SBDI incentives are so much better than other programs that their customers have already gotten everything they need through SBDI, or that small customers simply do not need anything offered by other programs. • None of the SBPAs with whom we spoke mentioned discussing residential programs with their customers.
Overall	
While the SBDI Program did not serve as a primary source of business for most SBPAs, it was useful to supplement existing work, and to broaden relationships with their customer base. The program functioned smoothly in terms of performing the assessment process, completing work orders, and processing payments. SBPAs have the sense that customers are also satisfied with the service and the measures offered.	

SBPA Recommendations for Program Improvement

SBPA recommendations focused on efforts to raise awareness of the program and expand the measures offered.

- **Measures:** Three SBPAs recommended offering more measures through the program. All three suggested high-bay T5 lighting, which program staff had considered. They reported that high-bay lighting T5 bulbs are more efficient and almost the same price as the T8 bulbs that the PY7 program offered.[3] One SBPA also recommended recessed "can" style LEDs.

- **Program Marketing and Outreach:** While not feasible given the program's performance in PY7, some SBPAs recommended increased marketing of the program.[4] While many said that word-of-mouth has been very effective at generating leads and interest in the program, they also note that most customers to whom they offer participation have not heard of the program before contact with the SBPA. Suggested channels include mailers, TV ads, radio spots, and bill inserts.

- **Marketing Material:** While marketing materials were available, and SBPAs could co-brand, some of the SBPAs that the evaluation team spoke with were not aware of this. A few SBPAs noted that customers are sometimes skeptical of the legitimacy of the program, assuming there is a catch. These SBPAs felt that simple handouts, or a mobile friendly summary page, would allow SBPAs to quickly explain the program and show that the program is legitimate. One SBPA notes, *"If I could pull up something on my iPad about this, I wouldn't necessarily have to create our own marketing material. If they had created the marketing material, we wouldn't have to create our own."*

- **Creating Efficiencies in Program Delivery:** One suggestion meant to address low profit margins for both assessments and project installations was to batch work within geographic areas. According to the SBPA, this would cut down on travel time and reduce overhead without raising incentives. However, the respondent also acknowledged that this would require more planning and flexibility on the part of the customer and as a result, may not be feasible.

3.5 Impact Evaluation

3.5.1 Ex Post Gross Impact Results

Overall, total gross energy and demand impacts for the PY7 SBDI Program were 32,314 MWh and 6.48 MW. For the PY7 gross impact analysis, the evaluation team applied measure-specific in-service rates (ISR) developed in PY6 based on application reviews and site visits. For new measures such as LED bulbs and fixtures, the team applied an ISR of 100% per IL-TRM V2.0.[5] Table 13 provides the total quantity of measures in the database and applies the assumed ISR from PY6 to obtain adjusted PY7 quantities.

[3] Program staff note that by the time the program was ready to introduce these measures, there was no longer a need in terms of savings targets and available budget.

[4] The SBDI Program exhausted its funding and reached its savings goal within eight months.

[5] Based on Illinois Technical Reference Manual for Energy Efficiency Version 2.0. Effective June 1, 2013, Measure 4.5.4.

Table 13. PY7 SBDI Measure Quantities and In-Service Rates

Measure Category	Ex Ante Measure Quantity [a]	In-Service Rate [b]	Verified Measure Quantity
CFLs	8,578	96.5%	8,275
Delamping	17,399	95.4%	16,591
HPT8 replacing T12	59,421	100.5%	59,715
LED Bulbs	73,739	100.0%	73,739
LED Exit Sign	2,269	100.0%	2,269
LED Fixture	47	100.0%	47
Occupancy Sensors	115	100.0%	115
Total	**161,568**	**N/A**	**160,751**

a Source: Evaluation team analysis of final AIC tracking data (07-16-2015)
[b] In-service rates are from PY6 application reviews and site visits. PY6 program did not offer LED bulbs and LED fixtures so in-service rates assumed to be 100% for PY7 for these measures based on IL TRM.

Table 14 summarizes PY7 ex post gross impacts associated with the SBDI Program based on TRM algorithms. Measure categories are sorted from largest to smallest ex post energy savings. We explain potential reasons for differences between ex ante and ex post gross impacts following the table, and provide specific inputs for all ex post savings estimates in Appendix B.

Table 14. SBDI PY7 Ex Post Gross Impacts

Measure Category	Verified Measure Quantity	Ex Ante Gross			Ex Post Gross			Realization Rate	
		MW	MWh	Percent of Ex Ante MWh	MW	MWh	Percent of Ex Post MWh	kW	MWh
HPT8 replacing T12	59,715	2.8	15,321	42.3%	2.7	14,512	44.9%	96%	95%
LED Bulbs	73,739	3.4	14,210	39.2%	2.8	12,686	39.3%	84%	89%
Delamping	16,591	0.7	4,029	11.1%	0.5	2,933	9.1%	74%	73%
CFL	8,275	0.4	1,806	5.0%	0.4	1,624	5.0%	86%	90%
LED Exit Sign	2,269	0.1	814	2.2%	0.07	523	1.6%	64%	64%
Occupancy Sensors	115	0.001	20	0.1%	0.009	29	0.1%	912%	143%
LED fixture replacing T12	47	0.003	15	0.04%	0.001	5	0.02%	33%	34%
Grand Total	**160,751**	**7.4**	**36,216**	**100%**	**6.5**	**32,314**	**100%**	**88%**	**89%**

The evaluation team received ex ante savings assumptions for the SBDI Program and reviewed the assumptions extensively for comparisons to the ex post methodology. There are several potential reasons for discrepancies between ex ante and ex post gross savings. These reasons include (in order of importance):

- **The hours of use, coincidence factor, and waste heat factor assumptions vary between the ex ante and ex post calculations**. Ex post savings use the space type provided in the program database (e.g., office, grocery, retail, etc.) to lookup hours of use, waste heat factors, and coincidence factors to estimate savings using the TRM. Substituting the 'Miscellaneous' space type hours of use, waste heat

factors, and coincidence factors into all ex post calculations brings overall realization rates to near 100% for both energy and demand, but minor differences still exist at the measure category level, as described below. This leads us to believe ex ante savings may not be using the space type for each individual project and may be applying different assumptions for these parameters. We recommend the ex ante calculations use the space type collected by the program for hours of use, coincidence factor, and waste heat factor assumptions to more consistently estimate savings moving forward.

- **The ex post calculations chose a mid-point of bulb wattage ranges for CFL and LED bulbs**. The equipment descriptions provided in the program database for lighting projects often include ranges of efficient and baseline wattages (e.g., "CFL Globe (8-12W) replacing 30-49W Incandescent"). However, the program database does not provide the exact wattage of the efficient and the baseline bulb for all measures, so we assume midpoints of these ranges when calculating ex post savings.[6] Overall, the differences in the assumed wattages for the baseline and efficient bulbs account for a small portion of the difference in realization rate for these measures. We provide the assumed ex post efficient and baseline bulb wattage for all light fixture types in Appendix B.

- **Unknown differences between ex ante and ex post assumptions for delamping measures resulted in measure realization rates of less than 75% for energy and demand**. Accounting for differences in space types as described above only brings the delamping realization rates up to approximately 80% for both energy and demand. We cannot identify the specific differences causing the remaining discrepancy. Ex post savings follow the methodology from the IL-TRM based on the type of delamped bulb. The ex ante savings assumptions provided to the evaluation team assume two lamps per fixture and do not indicate an IL-TRM reference for the input assumptions. Therefore, we suspect there may be differences in the assumed wattages of the delamped fixtures between ex ante and ex post calculations.

- **Ex ante and ex post calculations for LED exit signs used different baseline wattages**. Ex post savings for LED exit signs follow the IL-TRM methodology and assume an unknown baseline type as the database does not indicate whether the baseline sign was incandescent or fluorescent. The delta watts per exit sign using this approach is 21 watts. The ex ante savings in the database appear to assume an incandescent baseline exit sign.[7] The delta watts per exit sign using an incandescent baseline is 33 watts. As such, the ex post calculations apply lower delta watts per sign.

- **Ex post savings assume the midpoint of controlled wattage ranges for occupancy sensors**. Occupancy sensors accounted for less than 0.1% of the ex post energy savings so the large realization rates seen in Table 14 for occupancy sensors do not play a significant role in the overall realization rates for the PY7 SBDI Program.[8] In PY7, program database descriptions for occupancy sensors provided three separate ranges of controlled wattages for occupancy sensors: 1 to 100 watts, 101 to 200 watts, and 201 to 500 watts. Ex post savings assume the midpoint of these ranges for the occupancy sensors

[6] It is not clear what assumption the ex ante calculations use for the efficient and baseline bulb.

[7] To determine the ex ante methodology used in the database, we back calculated the per-sign savings by dividing the project level ex ante savings by the quantity.

[8] PY7 was similar to PY6 in that occupancy sensors resulted in very high realization rates (PY6 produced realization rates of 1,924% and 525% for demand and energy, respectively).

rather than using the default value from the IL-TRM for wall mounted occupancy sensors (i.e., 350 watts). For comparison, we back-calculated ex ante assumed controlled wattage for each occupancy sensor and found a range of 5 to 31 watts with an average of 12 watts.[9] This range is drastically lower than the ex post values and assumptions from the IL-TRM.[10] We believe these low ex ante assumptions are the cause of the large discrepancy for occupancy measures in PY7.

3.5.2 Ex Post Net Impact Results

In determining the overall net savings associated with the SBDI Program, the team applied the NTGR stipulated in the IPA filing (0.90). As a result, the program achieved net realization rates of 88% for demand and 89% for electric energy.

Table 15. SBDI Program Net Impacts

Program	Ex Ante Net Impacts		Ex Ante NTGR	Ex Post NTGR	Ex Post Net Impacts	
	MW	MWh			MW	MWh
SBDI	6.66	32,594	0.90	0.90	5.83	29,082
				Net Realization Rate*	**88%**	**89%**

* Net realization rate = ex post net value ÷ ex ante net value.

4. Conclusions and Recommendations

The Leidos-administered SBDI Program completed a successful year in terms of participation and goal attainment. One of the most notable outcomes of program activities was the dramatic increase in SBPAs, more than doubling the number of registered allies. The program also dramatically increased the proportion of SBPAs conducting assessments for the program. The program took steps to overcome barriers to SBPA participation, such as reducing assessment costs by providing a stipend for SBPAs to procure iPads. However, as the current program ends and another small business program begins in the territory, the role of SBPAs and their involvement in administering this type of program is likely to change. In fact, given the program's status as a non-continuing program, the evaluation team provides only a one key finding and recommendation that may be of use to the incoming implementation team and AIC staff moving forward.

- **Key Finding #1**: The evaluation team determined that discrepancies between ex ante and ex post savings values were partially due to different assumptions around hours of use, coincidence factor, and waste heat factor parameters.
  - **Recommendation:** In order to minimize discrepancies and maximize the gross realization rate for programs implementing the PY7 program measures, the team recommends the use of data collected by the implementer on space type to lookup project-specific assumptions in the TRM for hours of use, waste heat factors, and coincidence factors.

[9] To back-calculate ex ante assumed controlled wattage for each sensor, we started with the ex ante demand savings from the database, divided by the quantity in the database, the waste heat demand factor for 'Misc' (1.46), and coincidence factor of 0.51 (CF for 'Misc' (0.66) minus occupancy sensor coincidence factor (0.15) = 0.51).

[10] IL TRM v2.0 assumes 350 watts for wall mounted sensors, 587 watts for remote mounted, and 73 watts for fixture mounted.

A. Appendix – Data Collection Instruments

The following file contains the SBPA interview guide.

SBPA Interview Guide

FINAL – June 4, 2015

Reviewer Note: The evaluation team will field this interview guide with 20 Small Business Program Allies active in the SBDI Program in PY7. Within that group, we will speak with 15, who completed assessments for the program, and 5, who completed work orders only. The focus of the interviews is on the how the changing role of SBPAs in PY7 has affected the participation process, satisfaction, and barriers to participation among eligible AIC business customers.

INTRODUCTION

Hello, this is _____ from Opinion Dynamics, an independent research firm, calling on behalf of Ameren Illinois. This is not a sales call. We are conducting interviews with program allies who participated in the ActOnEnergy Small Business Direct Install Program in 2014 and 2015 to learn about their experience with the program.

May I please speak with <PROGRAM CONTACT> or someone who is familiar with your company's involvement in the Small Business Direct Install Program?

My questions will take no longer than 20 minutes of your time and your responses will remain confidential. Is now a good time or is there a more convenient time that I can call back?

FIRMOGRAPHICS

To start with, I have a few general questions about your company.

F1. Can you briefly describe your company and the type of business it conducts?

F1A. Approximately, how many employees does your company have? (Fewer than 5, 5-10, 10-50, over 50)

F1B. What are the key business sectors your company serves? (Probe for: retail, office, restaurant, large/industrial customers, new construction, etc.)

F2. What are your roles and responsibilities within the company? How long have you carried these out?

F3. How long has your company been involved in the Small Business Direct Install Program? Has your company been involved in any of Ameren Illinois other ActOnEnergy Business Programs (If needed: As you know, there are a number of programs under the ActOnEnergy umbrella such as Custom, Standard, SBDI, and RCx)? If so, which one(s)?

PROGRAM PROCESS AND IMPLEMENTATION

Now I would like to ask you about your participation in the Small Business Direct Install Program.

[FOR ASSESSMENT ALLIES]

P1. When did you begin performing assessments as part of the program? [Probe for PY6 or PY7]

P2. As you know, this year the program began to offer reimbursement for iPads and stipends for completed assessments. What do you think of these changes? How did they affect your participation in the program?

P3. Are you satisfied with how the assessment process worked over the course of this program year? What changes, if any, do you think are needed?

P4. In your opinion, what are the benefits of having program allies conduct the assessments? What are the drawbacks?

P5. What challenges, if any, did you encounter as part of the assessment process?

[FOR WORK ORDER ONLY ALLIES]

P6. As you may know, some small business program allies perform assessments with customers through the program. Why has your company decided not to perform assessments? *[PROBE: iPad and Assessment reimbursement process]*

P7. Are you satisfied with the process by which the program assigns your company installations? Why or why not?

[FOR ALL ALLIES]

P8. Is the program's processing of jobs (and their payment) done in a timely manner? What information do you receive from the program about the status of the jobs you have submitted? Is this sufficient? Is there additional information that would be helpful to you?

P9. This year the program offered a project package with LED measures. How do customers view the advanced package? What feedback have you gotten form customers about this package, and how has this addition affected your business?

P10. The program changed the $249 advanced package by removing linear LED measures and only offering LED screw-in measures. How did this affect your business? Do you still see a demand for the linear LED measures offered in the original package?

MARKETING

Next, I have a few questions about how the Small Business Direct Install Program was promoted.

M1. Did you promote the Small Business Direct Install Program to your customers at all? If so, how? [Probe for: onsite visits, cold calls]. How often? [Probe for: never, rarely, sometimes, often, and always]

M2. [ASSESSING ALLIES] Has your marketing of this program changed at all since you began performing assessments? How?

M3. Have you referred any of your small business customers to any other Ameren Illinois ActOnEnergy Programs? If so, which ones? [Probe for residential and business] How often did you make these types of referrals?

M4. Overall, do you think the level of marketing for this program has been appropriate to date? Why or why not?

M5. What changes, if any, should be made to marketing efforts aimed at encouraging energy efficiency program participation among small business customers going forward?

PROGRAM SATISFACTION

S1. How satisfied are you with the Small Business Direct Install Program overall? Has it met your expectations? Why or why not?

S2. From your perspective, are your customers satisfied with the program? Why or why not?

BENEFITS AND BARRIERS TO PARTICIPATION

B1. What are the main benefits to your company's participation in this program? What are the biggest drawbacks to participating in the program?

B2. What barriers, if any, have you encountered to participating in the program? What could be done to overcome them?

B3. What recommendations, if any, do you have for how to make program offerings for small business customers better? [Probe for: does it include the right measures? Are the incentive levels right?]

BUSINESS PRACTICES

A1. **[FOR NEW SBPAs]** Before your participation in the Small Business Direct Install Program, what percentage of your jobs were completed with small business customers? (If needed: By small businesses we're referring to those customers in the DS-2 rate class)

A2. Since your participation in the Small Business Direct Install Program, are you completing more jobs with small business customers than you did before participating? If so, why? (Probe for any changes in business as a result of economic conditions) What percentage of your jobs are now completed with small business customers?

A3. Are you completing jobs for customers you were not able to reach before? [Probe for smaller customers, customers in different business segments.] Please explain. *[If Needed: Are you serving a different market?]*

A4. In the absence of the SBDI program, how do you think your business with small customers would have been different? [Probe for differences in recommended measures, staffing levels]

FUTURE OF THE PROGRAM

F1. As you may know, a new Small Business Direct Install Program is being offered in PY8. Do you plan to, or are you participating in the program again? Why or why not?

This completes our interview. Thank you very much for agreeing to participate. Ameren Illinois values your time and feedback.

B. Appendix – SBDI Program Assumptions and Algorithms

B.1 Light Fixture/Bulb Savings

The evaluation team used the following equations from the IL TRM version 2.0 to estimate energy and demand savings for lighting upgrades.

$$\Delta kWh = \left(\frac{WattsBASE - WattsEE}{1000}\right) * ISR * Hours * WHFe$$

$$\Delta kW = \left(\frac{WattsBASE - WattsEE}{1000}\right) * ISR * CF * WHFd$$

Assumptions for hours, waste heat factors (WHFe and WHFd), and coincidence factors (CF) come from the IL TRM version 2.0 and depend on the facility type provided in the program tracking database for each project. Table 16 provides assumed baseline wattage (WattsBASE) and efficient wattage (WattsEE) for each measure type.

Table 16. Light Fixture and Light Bulb Wattage Ex Post Assumptions

Measure Description	Watts BASE	Watts EE	Notes/Reference
CFL 23 Watt Spiral	72	23	Assume CFL is 1,600 lumens. Using IL TRM v2.0, equivalent incandescent is 72 watts.
CFL A-Lamp (13-17W) replacing 50-69W Incad.	59.5	15	Assume midpoint of ranges in description.
CFL Globe (8W) replacing 30W Incad.	30	8	Assume wattages from description.
CFL Globe (13-17W) replacing 50-69W Incad.	59.5	15	Assume midpoint of ranges in description.
CFL Globe (8-12W) replacing 30-49W Incad.	39.5	10	Assume midpoint of ranges in description.
CFL Reflector (13-17W) replacing 50-69W Incad.	59.5	15	Assume midpoint of ranges in description.
CFL Reflector (18-21W) replacing 70-89W Incad.	79.5	19.5	Assume midpoint of ranges in description.
CFL Reflector (18-33W) replacing 70W Incad.	70	25.5	Assume midpoint of CFL range in description and actual baseline wattage from description.
CFL Reflector (22-33W) replacing 90W Incad.	90	27.5	Assume midpoint of CFL range in description and actual baseline wattage from description.
CFL Reflector (8-12W) replacing 50W Incad.	50	10	Assume midpoint of CFL range in description and actual baseline wattage from description.
CFL Reflector (8W) replacing 30W Incad.	30	8	Assume wattages from description.
CFL Reflector Dim. (13-17W) replacing 50-69W Incad.	59.5	15	Assume midpoint of ranges in description.

Measure Description	Watts BASE	Watts EE	Notes/Reference
CFL Spiral (8W) replacing 30W Incad.	30	8	Assume wattages from description.
CFL Spiral (13-17W) replacing 50-69W Incad.	59.5	15	Assume midpoint of ranges in description.
CFL Spiral (18-21W) replacing 70-89W Incad.	79.5	19.5	Assume midpoint of ranges in description.
CFL Spiral (22-33W) replacing 90W Incad.	90	27.5	Assume midpoint of CFL range in description and actual baseline wattage from description.
CFL Spiral (33W) replacing 125W Incad.	125	33	Assume wattages from description.
CFL Spiral (8-12W) replacing 30-49W Incad.	39.5	10	Assume midpoint of ranges in description.
CFL Spiral Dim. (22-33W) replacing 90W Incad.	90	27.5	Assume midpoint of CFL range in description and actual baseline wattage from description.
CFL Torpedo (8-12W) replacing 30-49W Incad.	39.5	10	Assume midpoint of ranges in description.
CFL Torpedo (8W) replacing 30W Incad.	30	8	Assume wattages from description.
Delamping - F96T8-8 Foot	38.6	0	IL TRM v2. Measure 4.5.2.
Delamping - T12 Standard	33.7	0	IL TRM v2. Measure 4.5.2.
Delamping - T8 (32W)	32	0	Assume wattage from description.
LED 2Ft 2L Replacing 2L T12 U-Tube	61	44.9	IL TRM v2. Measure 4.5.4. Table for "LED New and Baseline Assumptions".
LED 4Ft Replacing 1L T12	57	32.2	Baseline: IL TRM v2. Measure 4.5.3. Table A-2. 1-lamp F40T12 w/ Mag ballast is 57 watts. Efficient: IL TRM v2. Measure 4.5.3. Table for "LED New and Baseline Assumptions".
LED Exit Sign	23	2	IL TRM v2. Measure 4.5.5. Assume unknown baseline.
LED Lamp A-Lamp (8W) replacing 30 Watt Incand.	30	8	Assume wattages from description.
LED Lamp A-Lamp (10W) replacing 30-49 Watt Incand.	39.5	10	Assume LED wattage from description and midpoint of baseline wattage in description.
LED Lamp A-Lamp (12W) replacing 50-69 Watt Incand.	59.5	12	Assume LED wattage from description and midpoint of baseline wattage in description.
LED Lamp A-Lamp (14W) replacing 70-89 Watt Incand.	79.5	14	Assume LED wattage from description and midpoint of baseline wattage in description.
LED Lamp A-Lamp (20W) replacing 125 Watt Incand.	125	20	Assume wattages from description.
LED Lamp A-Lamp (20W) replacing 90 Watt Incand.	90	20	Assume wattages from description.
LED Lamp Globe (8W) replacing 30 Watt Incand.	30	8	Assume wattages from description.
LED Lamp Globe (10W) replacing 30-49 Watt Incand.	39.5	10	Assume LED wattage from description and midpoint of baseline wattage in description.

Measure Description	Watts BASE	Watts EE	Notes/Reference
LED Lamp MR-16 (8W) replacing 30 Watt Incand.	30	8	Assume wattages from description.
LED Lamp MR-16 (10W) replacing 30-49 Watt Incand.	39.5	10	Assume LED wattage from description and midpoint of baseline wattage in description.
LED Lamp MR-16 (12W) replacing 50-69 Watt Incand.	59.5	12	Assume LED wattage from description and midpoint of baseline wattage in description.
LED Lamp Reflector (8W) replacing 30 Watt Incand.	30	8	Assume wattages from description.
LED Lamp Reflector (10W) replacing 30-49 Watt Incand.	39.5	10	Assume LED wattage from description and midpoint of baseline wattage in description.
LED Lamp Reflector (12W) replacing 50-69 Watt Incand.	59.5	12	Assume LED wattage from description and midpoint of baseline wattage in description.
LED Lamp Reflector (14W) replacing 70-89 Watt Incand.	79.5	14	Assume LED wattage from description and midpoint of baseline wattage in description.
LED Lamp Reflector (20W) replacing 125 Watts	125	20	Assume wattages from description.
LED Lamp Reflector (20W) replacing 90W Watt Incand.	90	20	Assume wattages from description.
LED Lamp Torpedo (8W) replacing 30 Watt Incand.	30	8	Assume wattages from description.
T12 1-Lamp relamp/reballast to RWT8	48	25	IL TRM v2. Measure 4.5.3. Table A-2.
T12 2-Lamp relamp/reballast to RWT8	82	49	IL TRM v2. Measure 4.5.3. Table A-2.
T12 3-Lamp relamp/reballast to RWT8	122	72	IL TRM v2. Measure 4.5.3. Table A-2.
T12 4-Lamp relamp/reballast to RWT8	164	94	IL TRM v2. Measure 4.5.3. Table A-2.
T12 8-Ft 1L Relamp/reballast to (2) HPT8 Lamps	62	49	IL TRM v2. Measure 4.5.3. Baseline from Table A-3 (F96T8 Standard lamp). Efficient from Table A-2.
T12 8-Ft 2L Relamp/reballast to (4) HPT8 Lamps	124	94	IL TRM v2. Measure 4.5.3. Baseline from Table A-3 (F96T8 Standard lamp). Efficient from Table A-2.
T12 U-Tube 1L Relamp/reballast to 2L 2FT F17T8	62	28	IL TRM v2. Measure 4.5.3. Baseline from Table A-3 (F96 Standard Utube lamp). Efficient from Table A-3 (F17T8 - 2 foot).
T12 U-Tube 2L Relamp/reballast to 2L w/ reflector 2FT F17T8	124	28	IL TRM v2. Measure 4.5.3. Baseline from Table A-3 (F96 Standard Utube lamp). Efficient from Table A-3 (F17T8 - 2 foot).
T12 U-Tube 2L Relamp/reballast to 3L w/ reflector 2FT F17T8	124	42	IL TRM v2. Measure 4.5.3. Baseline from Table A-3 (F96 Standard Utube lamp). Efficient from Table A-3 (F17T8 - 2 foot).

Occupancy Sensor Savings

The evaluation team used the following equations from the IL TRM version 2.0 to estimate energy and demand savings for occupancy sensors.

$$\Delta kWh = (kWcontrolled) * Hours * ESF * WHFe$$

$$\Delta kW = (kWcontrolled) * WHFd * (CFbaseline - CFos)$$

Assumptions for hours, waste heat factors (WHFe and WHFd), and coincidence factors (CFbaseline) come from the IL TRM version 2.0 and depend on the facility type provided in the program tracking database for each project. Table 17 provides other assumptions used to estimate ex post savings for occupancy sensors.

Table 17. Occupancy Sensor Savings Assumptions

Parameter	Value	Units	Notes/Reference
Occupancy Sensors (1-100 Watts Controlled)	50	Watts Controlled	Assumed to be midpoint of range in measure description.
Occupancy Sensors (101-200)	150	Watts Controlled	Assumed to be midpoint of range in measure description.
Occupancy Sensors (201-500)	350	Watts Controlled	Assumed to be midpoint of range in measure description.
Energy Savings Factor (ESF)	41%	N/A	IL TRM v2.0. Measure 4.5.10. Assume sensors are wall or ceiling-mounted.
Occupancy sensor coincidence factor (CFos)	0.15	N/A	IL TRM v2.0.

C. Appendix – Survey Response Rate Methodology

The survey response rate is the number of completed interviews divided by the total number of potentially eligible respondents in the sample. We calculated the response rate using the standards and formulas set forth by the American Association for Public Opinion Research (AAPOR).[11] We chose to use AAPOR Response Rate 3 (RR3) for all AIC program evaluations given that we are often unable to determine the eligibility of all sample units through the survey process. RR3 includes an estimate of eligibility for these unknown sample units. The formulas used to calculate RR3 are presented below. The definitions of the letters used in the formulas are displayed in the Survey Disposition tables in Section 2.2.2.

$$E = (I + R + NC) / (I + R + NC + e)$$

$$RR3 = I / ((I + R + NC) + (E * U))$$

We also calculated a cooperation rate, which is the number of completed interviews divided by the total number of eligible sample units actually contacted. In essence, the cooperation rate gives the percentage of participants who completed an interview out of all of the participants with whom we actually spoke. We used AAPOR Cooperation Rate 1 (COOP1), which is calculated as:

$$COOP1 = I / (I + R)$$

[11] *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*, AAPOR, 2011. http://www.aapor.org/AM/Template.cfm?Section=Standard_Definitions2&Template=/CM/ContentDisplay.cfm&ContentID=3156.

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