BizSavers Program Evaluation Report

Volume I of II

March 2016 - February 2017

Prepared For:

Ameren Missouri

Prepared by:

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Research Into Action

research into action

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1. Executive Summary

This report presents the results of the impact, process, and cost effectiveness evaluations of the Custom Program including the Energy Management System (EMS) Pilot, Standard Program, New Construction Program, Retro-Commissioning Program, and the Small Business Direct Install (SBDI) Program implemented during program year 2016 (PY2016), which occurred from the start of March 2016 to the end of February 2017. The evaluation, measurement and verification (EM&V) team was led by ADM Associates, Inc. ADM was joined by Research into Action, Inc., which performed the process evaluation of the programs. These DSM (demand side management) programs are implemented by Lockheed Martin Energy Solutions. The electric distribution and transmission utility is Ameren Missouri. The primary evaluation activities are listed in the following paragraphs.

The evaluation team collected data for the evaluation through review of program materials, on-site inspections, end use metering, and interviews with Ameren Missouri staff members, Lockheed Martin staff members, and participating customers and contractors.

The evaluation team developed sampling for the five BizSavers programs with completed projects to perform on site verification and estimation of the energy savings. The sampling plan for each program was intended to facilitate estimation of energy savings with 10% statistical precision at the 90% confidence level. The actual statistical precision of energy savings estimates are 7.2% for the Custom Program, 4.2% for the Standard Program, 9.9% for New Construction, and 6.0% for the SBDI Program. A census approach was performed for the Retro-Commissioning Program. No EMS pilot program projects were completed during PY2016.

Analysts performed ex post gross kWh energy savings calculations for each sampled project. Additionally, measures identified as High Impact Measures (HIM) were sampled within the projects. The evaluation team used the project-level and HIM realization rates to estimate the energy savings associated with non-sampled measures.

Program participant surveys provided insight into the participants' decision-making processes, levels of satisfaction, and tendencies to invest in energy efficiency in the future. The results informed the net-to-gross analysis, spillover data collection, as well as the process evaluation.

Trade ally surveys provided insight into the quantitative non-participant spillover impacts.

Program staff interviews provided insight into the continuous improvement of the program to meet the customer's needs.

The evaluation team administered surveys to participants at the Ameren Missouri trade ally training event to assess how well these events deliver program information.

The evaluation team provided data required to perform cost effectiveness analyses to determine portfolio-level and program-level cost benefit ratios with datasets for net energy savings, effective useful life (EUL) and the corresponding end use classification along with measure installation costs.

Table 1-1 provides a summary of the EM&V data collection efforts. The table lists data sources used for the evaluation, the data collection method, the dates during which data collection and/or analysis was performed, the research objectives, and the type of analysis performed (qualitative vs. quantitative).

Table 1-1 Summary of BizSavers EM&V Data Collection Efforts

*Data Source**	*Method*	*Dates*	*Key Research Topics*	*Analysis Type*
Pre-install site visit (8)	On-site M&V	March 2016 to February 2017	Verify baseline operating conditions	Qualitative
Post-install sample visits (613)	On-site M&V	March 2016 to February 2017	Verify measure installation and collect end use metering data	Qualitative
Program staff (8): Ameren Missouri (2) Lockheed Martin (6)	Telephone in-depth interview	December 2016	Program management; communication; current and new offerings; goals and progress; trade all relations; marketing and outreach; tracking and reporting; quality assurance	Qualitative
Program documentation	Document review	March 2016 to March 2017	Program function; tracking and reporting; quality control	Qualitative
Database analysis	Database review	January to April 2017	Number of projects; project type and details; data quality	Quantitative
Participants, Standard and Custom Programs (240)	Online survey	October 2016 to March 2017	Program awareness, decision-making, equipment preferences; experience and satisfaction	Quantitative
Participants, new construction program (6)	Telephone interview	February 2017	Program experiences; installed equipment; satisfaction with program	Qualitative
Participants, SBDI Program (10)	Telephone interview	February 2017	Reasons for participating; energy-related decision making and practices; program experience and satisfaction	Quantitative and Qualitative
Near-participants, Standard and Custom Programs (10)	Telephone interview	February to March 2017	Program awareness; reason for program withdrawal; other energy efficiency activities; satisfaction with program	Qualitative
Trade allies, all programs (20)	Telephone interview	February 2017	Program changes; awareness of and interest in new programs; effect of the suspension of the BizSavers program; and reasons for participation	Quantitative and Qualitative
Service providers, Small Business Direct Install Program (10)	Telephone interview	February 2017	Program awareness and reasons for enrolling; program rules and processes; and effect of the suspension of the BizSavers program	Qualitative
Nonparticipant customers (93)	Telephone survey	January to February 2017	Program awareness, interest, and barriers to participating; equipment decisions	Quantitative and Qualitative

*Data Source**	*Method*	*Dates*	*Key Research Topics*	*Analysis Type*
Event attendees (47)	Online survey	July and September 2016	Event satisfaction; experience with training; Intention to work with *BizSavers*; firmographics	Quantitative and Qualitative
DSMore CE Inputs	Cost Effectiveness Analysis	March 2017	Develop inputs for economic models for cost testing	Quantitative

Table 1-2 provides a summary of the PY2016 evaluated energy savings of the portfolio of BizSavers Programs. The table presents the ex ante kWh, ex post gross kWh, and ex post net kWh energy savings as compared with the PY2016 energy savings goals.

Table 1-2 Summary of kWh Savings for BizSavers Programs

Program Component	*2016 Savings Targets kWh*	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*	*Ex Post Net kWh Savings*	*Estimated Net-to-Gross Ratio*	*Percent of Goal Achieved*
Custom	59,269,000	41,567,874	41,411,911	100%	39,410,096	95%	67%
Standard	28,652,000	29,680,758	31,144,093	105%	31,712,056	102%	111%
New Construction	4,980,000	1,837,715	1,572,530	86%	1,415,155	90%	28%
RCx	6,742,000	113,004	23,727	21%	23,727	100%	<1%
SBDI	6,000,000	2,365,541	2,761,850	117%	2,667,056	97%	45%
EMS Pilot		-	-	-	-	-	
Total	105,643,000	75,564,892	76,914,112	102%	75,228,089	98%	71%

During this period, the Custom Program ex post gross energy savings totaled 41,411,911 kWh with a 99.6% realization rate, while the Standard Program ex post gross energy savings totaled 31,144,093 kWh with a 104.9% realization rate. The New Construction Program ex post gross energy savings totaled 1,572,530 kWh with an 85.6% realization rate, while the Retro-Commissioning Program ex post gross savings totaled 23,727 kWh with a 21% realization rate. There was just one RCx project completed during PY2016—M&V was performed for this project. The Small Business Direct Install Program ex post gross savings totaled 2,761,850 kWh with a realization rate of 116.8%.

By definition, net savings are equal to gross savings, minus free ridership, plus participant spillovers and non-participant spillovers. ADM completed a net program impact analysis to determine what portion of gross energy savings and kWh reductions achieved by participants in the program are attributable to the effects of the program.

$$Net\ Savings = Gross\ Savings - (Free\text{-}ridership + (SO_{part} + SO_{non\text{-}part}))$$

During PY2016, the Custom Program achieved 66% of its energy savings goal with ex post net energy savings of 39,410,096 kWh, while the Standard Program achieved 111% of its energy savings goal with ex post net energy savings of 31,7112,056 kWh. The estimated net-to-gross ratio for the Custom Program is 95% and the estimated net-to-gross ratio for the Standard Program is 102%. The New Construction Program achieved 28% of its energy savings goal with ex post net energy savings of 1,415,155 kWh, while the Retro-Commissioning Program achieved 0.4% of its energy savings goal with ex post net energy savings of 23,727 kWh. The estimated net-to-gross ratios of these programs are 100% and 97%, respectively. The Small Business Direct Install Program achieved 44% of its energy savings goal with ex post net energy savings of 2,667,056 kWh with an estimated net-to-gross ratio of this program at 97%.

The evaluation team collected data from trade allies to gain an understanding of how the BizSavers Program is influencing the un-incented lighting equipment being sold in the Ameren Missouri service territory. The report refers to program-influenced, un-incented lighting sales as program non-participant spillover. Volume II of this report presents the detailed non-participant spillover evaluation methodology and findings.

Table 1-3 summarizes the PY2016 ex post peak kW reductions. The ex post gross peak demand savings total 12,292 kW for the Custom Program and 5,865 kW for the Standard Program. The ex post gross peak kW savings total 297 kW for the New Construction Program, and 3 kW for the Retro-Commissioning Program. The ex post gross peak kW savings total 522 kW for the Small Business Direct Install Program. The ex post net peak demand savings for the Custom Program are 11,486 kW, while the ex post net peak demand savings for the Standard Program are 5,971 kW. The ex post net peak demand savings for the New Construction and Retro-Commissioning Programs total 264 kW and 3 kW, respectively. The ex post net peak demand savings for the Small Business Direct Install Program are 504 kW. The Custom Program was much closer to their peak demand kW goal compared to their kWh goal, as approximately 21% of the program kWh savings was from end uses of cooling and HVAC, which have a larger impact on the peak demand than lighting measures, and produced 51% of the program kW savings.

Table 1-3 Summary of Peak kW Savings for BizSavers Programs

Program Component	*PY2016 Peak kW Savings Targets*	*Ex Ante Peak kW Savings*	*Ex Post Gross Peak kW Savings*	*Gross kW Savings Realization Rate*	*Ex Post Net Peak kW Savings*	*Percent of Goal Achieved*
Custom	13,294	12,185	12,292	101%	11,486	86%
Standard	5,544	5,596	5,865	105%	5,971	108%
New Construction	1,643	347	297	86%	264	16%
RCx	1,528	16	3	19%	3	<1%
SBDI	1,136	449	522	116%	504	44%
EMS		-	-	-	-	
Total	23,145	18,593	18,979	102%	18,228	79%

1.1. Impact Conclusions

Below is a summary of conclusions from the impact evaluation.

- The first year offering of the SBDI Program achieved 326 completed projects, even though the program start date was not until August 1, 2016. Although the SBDI Program had the highest gross realization rate of the BizSavers Portfolio, it also had the highest variability in project-level realization rates. A primary reason for the lower project-level realization rates is the applicant's pre-existing screw-in lamp designation differing from the data collected during SBDI site visits. During site visits, the field engineer asked the small business owners' representative a few questions regarding their knowledge of the existing lamps, reviewed the non-retrofitted fixtures, and completed a walkthrough of the storage location for spare lighting. From these activities, the evaluator determined that a significant portion of the newly-installed lamps associated with projects with low realization rates replaced compact fluorescent lamps rather than incandescent lamps, as documented in the project materials. A second issue identified was that lighting hours of use reported for some projects were greater than the facility operating hours listed on program application materials. Both issues were discussed with program staff during the program year and corrective training was provided to the trade ally associated with the errors.
- The Custom Program was much closer to achieving its peak demand kW goal than its kWh savings goal. The program performed better at meeting the kW goal as compared to the kWh goal because a large share of Custom Program kWh savings resulted from cooling and HVAC projects. The coincident factor for these end uses is larger than other end uses such as lighting. Consequently, the HVAC and cooling projects accounted for 21% of the program kWh savings and 51% of the kW savings.

- The 86% realization rate for the New Construction Program was largely associated with a single project with an error in the ex ante savings estimate. Specifically, the savings estimate was incorrectly based on the full square footage of the facility, rather than the square footage of the newly-constructed addition that qualified for the new construction incentives.
- Hours of use and application of HCIFs were the primary factor that accounted for differences between ex ante and ex post savings for high impact measures. Regarding hours of use, the analysis of high impact measures found that for most measures, the difference between ex ante and ex post savings were primarily due to differences in applicant-reported hours of operation and monitored lighting of hours of operation. Ex ante hours of use are estimated using a well-structured protocol and the evaluator does not have a recommendation for improving that approach. Regarding the application of HCIFs in the estimation of lighting savings, the program applied a factor of 1.0 for most of the program year, but is currently applying HCIFs for lighting projects implemented in conditioned spaces.
- A small proportion of sampled measures associated with the interior lighting end use in program tracking data were installed in an outdoor area and operated on a dusk to dawn schedule. These measures account for approximately 2.4% of M&V sample ex post gross kW savings. In the ex post analysis, these misclassified measures were reclassified from the lighting end use category to the exterior lighting end use category, with the incremental impact of the reclassification extrapolated to account for the non-sampled measures.
- Review of program applications found that several applicants selected “not applicable” for space conditioning type in completed applications. Without information on space heating type, lighting ex ante savings cannot appropriately account for heating and cooling interactive effects.
- Hours of use were over-estimated for some lighting installed in guest rooms. During PY2016, the evaluator found that the ex ante savings estimates did not distinguish between hours of operation for guest room and common area lighting projects. This resulted in an overestimate of energy savings for guest room lighting.
- EISA adjustments for baseline wattage were incorrectly applied to some lamp types. The evaluation found that the baseline adjustment factor of 0.7 was applied to some EISA-exempt lamps (BR30/40 65W).
- There is a negative correlation between the number of application rows of measure data and the variability in the realization rate of measures within projects. Applicant provision of more rows of data for a single project measure is associated with lower variability in measure-level, project-level gross realization rates. Applicant provision of multiple rows of application data for a single measure typically is

associated with differences in the application data fields for one or more of the energy savings calculation algorithm input variables. The most significant variables impacting variation in gross realization rates of lighting measures are the existing lighting wattage and the annual lighting hours of operation.

1.2. Impact Recommendations

Based on the above conclusions, the evaluation team offers the following impact recommendations for consideration in planning future program cycles.

- To allow for more accurate estimation of energy savings of lighting implemented in lodging facilities, ADM recommends that the program application allow applicants to distinguish between guest rooms and lodging common areas.
- ADM recommends that the program implementer review the use of the EISA adjustment factor and ensure that the adjustment factor is not erroneously applied to EISA-exempt incandescent reflector lamps. These lamps are both EISA 2007 exempt and also DOE 2009 exempt: (ER/BR 30/40 50W or less; BR 30/40 65W and R20 45W or less).
- ADM recommends that ex ante savings estimation for projects with multiple HVAC measures rely upon calibrated energy simulation. Calibrated energy simulation accounts for actual building conditions and HVAC interactive effects. For such projects, uncalibrated energy simulation and bin analyses that do not rely upon actual metered/trended data will tend to generate relatively inaccurate energy savings estimates.
- For small projects with a single HVAC measure and/or one or more non-HVAC, non-lighting measure, ADM recommends that ex ante energy savings estimation rely upon algorithms in secondary literature (e.g. Missouri Statewide TRM), with energy savings equation variable values determined by facility-specific and equipment-specific information, where appropriate. The utilization of such algorithms may provide more accurate energy savings estimates compared with those provided by deemed estimates such as those found in the Ameren Missouri TRM or those provided by building energy simulation premised upon assumed values rather than facility-specific and project-specific data.
- The Custom and Standard Incentive Application form should be revised to further direct applicants to provide unique lighting operating hours, where applicable. Currently, the application form prompts entry of annual lighting hours of operation, and provides a tool referred to as the "Facility Operating Hours Calculator," which presents narrative stating: "Each measure could have unique operating hours depending on the technology and use. Use this calculator to record the specific operating hours for each measure as required." In fact, a single measure may be

installed in multiple areas with unique lighting hours of operation. ADM recommends that the application form prompt applicants to disaggregate single measures, where appropriate, such that quantities of measures are associated with the applicable annual hours of operation.

- Additionally, during the program year, ADM recommended the removal of the space conditioning type option of "N/A" from the program application. A number of applicants were selecting the "N/A" option, rather than identifying the space conditioning type or absence of space conditioning, resulting in unavailability of data with which lighting heating and cooling interactive effects could be estimated. Prior to the conclusion of the program year, the program application was revised to remove the "N/A" option.

Information regarding the disposition of previous year recommendations is presented in section 7.4 on page 7-8.

1.3. Regulator Research Questions – Process Conclusions and Recommendations

The results of the process evaluation research are largely positive. Program participant satisfaction was high across all program facets, and the introduction of the new SBDI Program appears to be serving a market segment that has been underserved in the past. However, the evaluation also identified some threats to program success in the current cycle. This report provides not only the verified PY2016 energy savings associated with the BizSavers Program, but also an overview of program operations and suggests recommendations to be considered as the program evolves.

Below, conclusions and recommendations are organized according to the five regulatory research questions specified in 4 CSR 240-22.070(8). The conclusions address the first four questions; the fifth question speaks to recommendations.

Research Question 1: What are the primary market imperfections common to target market segment?

Findings from previous evaluations pointed to three types of "market imperfections" or structural factors that may affect the ability of Ameren Missouri customers to undertake energy efficiency upgrades on their own or through the BizSavers programs: cost, lack of program awareness, business size, and geography. The current evaluation suggest that low program awareness may constitute the primary market imperfection, or barrier, while business size and geography do not appear to be major barriers.

Awareness. The level of program awareness among nonparticipants is less than half the level identified three years ago, a finding that cannot be attributed to differences in the make-up of the surveyed nonparticipants. One possible factor is that awareness previously was assessed in the middle of the program cycle while the current evaluation

assessed it nine months after the program started up again following a three-month suspension. Another possible factor is that fewer customers are learning about the program from contractors and vendors, which conceivably could be related to a reduction in the size of the trade ally network and the program's movement away from distribution of printed collateral to trade allies and toward downloadable online material.

Awareness of the new EMS pilot program was low among interviewed trade allies who reported doing relevant work and among surveyed program-eligible nonparticipants.

Cost. Even though energy efficient equipment pays for itself in the long term, the first cost must compete with other priorities and so the higher upfront cost of energy efficient equipment may be a barrier. The high NTG ratios for the BizSavers Program, together with feedback from participants about the value of the incentives, emphasized the importance of incentives in driving the efficiency upgrades.

Business size. While businesses in the small rate class comprise a lower percentage of program participants and projects than of Ameren Missouri business customers as a whole, their share of energy savings is slightly higher than their share of annual kWh usage.

Geography. Similarly, the St. Louis metro area and outer suburban areas comprise a higher percentage of BizSavers participants and projects than of business customers, but the share of energy savings across parts of the Ameren Missouri service territory is consistent with the distribution of total energy consumption across those areas. This reflects a greater concentration of larger businesses in the St. Louis metro areas and suburban areas compared to the rest of the service territory.

Research Question 2: Is the target market segment appropriately defined, or does it need further subdivision or merging with other segments?

For most building end uses, the distribution of program participants matches relatively well with the distribution of businesses in the population. The offices and healthcare segments appear to be somewhat underrepresented in the program population, while the retail, food & beverage service, and lodging segments appear to be overrepresented, but this may in part be a function of the method used to estimate the population proportions.

Evaluation findings support the establishment of the SBDI Program to serve small businesses. Feedback from program participants indicated that they would do relatively few energy efficiency upgrades without the program, and just more than half of nonparticipants indicated they likely would participate in the program if approached by an SBDI contractor.

So far, the evaluation findings do not strongly support the need for special EMS incentives targeting tax-exempt entities. Even after being told about the Ameren EMS incentives, fewer than one in six program-eligible nonparticipants said they were likely to apply for

the incentives. However, this pilot program is still young and awareness is still low. Two-third of interviewed trade allies who do pertinent work said they would likely do program-incented EMS projects in the coming year, generally five or fewer such projects.

Research Question 3: Do program measures reflect the diversity of end-use needs and available technologies for target segment?

Participant surveys and interviews showed satisfaction with the range of program-eligible equipment, delivery time for ordered equipment, and the quality of the equipment and the installation. The standard incentive application covered the equipment needs of most participants who used that option, although a notable minority of interviewed trade allies suggested the program did not provide a wide enough range of standard incentive options.

The primary concern with measures related to the elimination of incentives for exterior lighting, which reportedly had a largely adverse impact on trade allies. The adverse effects came not just from the loss of the exterior lighting sales themselves, but because inability to include exterior lighting in projects affected overall project cost-effectiveness, resulting in the loss of entire projects. The evaluation team understands that Ameren Missouri and the program implementer have decided to re-introduce exterior lighting to the list of incented measures for the new program year.

Research Question 4: Are communication and delivery channels/mechanisms appropriate for the target market segment?

The program implementer reported using a wide range of marketing outreach channels and methods to reach end-use customers and service providers (e.g., contractors, vendors, and distributors). The implementer continued to conduct targeted outreach to decision makers representing customer account aggregates or “towers.” This appears to be an effective approach, as one-third of projects were completed by customer accounts identified as “towers,” who completed twice as many projects per customer, on average, as those not in towers.

As indicated above, there is evidence of decreased awareness of BizSavers incentives in general. There is a low level of awareness of the EMS incentives among program-eligible non-participants. Moreover, there continues to be poor awareness of the new construction program requirement to apply for incentives before incorporating equipment into a project’s plan.

While surveyed program participants were largely satisfied with program processes, a large minority of interviewed trade allies suggested the application process was overly burdensome, requiring information that sometimes was hard to obtain, and more than one-quarter of surveyed participants with custom projects either had to provide supporting documentation, such as invoices, for their applications, or resubmit them for other

reasons, largely to correct errors in calculating incentives. In addition, nearly half of the low-activity trade allies seemed to be unaware of the availability of standard incentives.

One potential program delivery concern is the fact that the new SBDI Program has relied so far on a single contractor to deliver three-quarters of the projects. This may be particularly a concern given a significant decline in the number of project starts from December to February, although program staff have reported that project starts have since increased again, partly as a result of increased program incentives.

Research Question 5: Are there better ways to address market imperfections to increase adoption of each program measure?

The program implementer should work to increase awareness of the new construction program rules among contractors and vendors. In particular, increasing the awareness of the importance of involving the program staff early in the design phase is important for maximizing savings. One thing to consider may be to include providing some form of recognition to contractors who attend specific training on, and demonstrate knowledge of, new construction program rules and processes—for example, identifying such contractors as “new construction program specialists” on the trade ally website and providing special new construction program co-branding.

The program implementer should more strongly emphasize the requirement to provide supporting documentation, including invoices, with applications. The evaluation team recommends placing a statement about that requirement on the “Welcome” tab of the standard/custom incentive application, together with a reference to the section of the application that spells out the details of the requirement. This may also help draw attention to the availability of standard incentives.

If it does not already do so, the program implementer should track applications that have errors in calculating incentive amounts and record the errors made in the initial application. Then the implementer, or perhaps the evaluation team, can review the calculation errors to identify patterns, allowing the implementer to provide more detailed instructions to prevent such errors.

The program implementer should consider increasing the size of the trade ally network and re-introduce distribution of printed collateral to trade allies for use in marketing the program to customers. As part of that effort, the implementer should emphasize the availability of both standard and custom incentives.

The program implementer should continue to monitor the project delivery of all SBDI service providers and, if necessary, attempt to recruit more SBDI service providers capable of delivering reasonably large numbers of projects and/or work with existing service providers to increase the number of projects they deliver to decrease the risk of relying on a single provider to deliver most program savings.

Ameren Missouri should consider adding customer type information to its customer database to make it easier for programs to identify any under-served segments and improve reach into those segments and improve assessments of program reach to various business and building types.

2. Introduction

This report presents the results of the impact, process, and cost effectiveness evaluations of the BizSavers Custom, Standard, Energy Management System (EMS) Pilot, New Construction, Retro-Commissioning, and Small Business Direct Install programs. These programs are available to Ameren Missouri's business sector customers. This report presents results for activity during program year 2016 (PY2016), which occurred during March 2016 - February 2017.

2.1. Program Descriptions

The design of the BizSavers Program is to help businesses identify and implement energy saving projects. The programs evaluated in this report are as follows:

Standard Program: prescriptive incentives for purchasing and installing efficient equipment.

Custom Program: incentives determined by a custom savings calculation comparing the base case to the efficient case, paid at a rate by technology:

Table 2-1 Custom Incentive with End -Use Category

End Use	*$/kWh Incentive Rate*
Cooling	$0.150
Building Shell	$0.080
HVAC (Ventilation)	$0.080
Cooking	$0.080
Lighting (Interior)	$0.075
Water Heating	$0.075
Air Comp	$0.070
Motors	$0.070
Process	$0.070
Miscellaneous	$0.060
Refrigeration	$0.060

New Construction Program incents building with increased energy efficient design and equipment.

Table 2-2 New Construction Whole Building Incentive

From Baseline	*Whole Building (Design)*
0-19% energy savings	$0.02/kWh
20-29% energy savings	$0.03/kWh
30% energy savings and above	$0.04/kWh

Interior lighting incentives are based on $0.40 per watt below the wattage required under the ASHRAE standard multiplied by the building area measured in square feet.

Standard non-lighting and Custom incentives within New Construction are approved following the Design Team meeting and follow the rules and current incentive rates.

Retro-Commissioning Program: Incentives are based on estimated energy savings. The study incentive is up to 100% of the program approved study cost, based on the table below and is payable when the recommended measures have been installed and verified.

Table 2-3 Retro-Commissioning Incentive

Total Verified Annual kWh Saved	*RCx Study Incentive Tracks & Rates*			*Verification Type*
	Compressed Air	*Refrigeration*	*Buildings*	
≤ 500,000kWh	$0.01/kWh	$0.01/kWh	$0.02/kWh	Installation
> 500,000KWh	$0.02,kWh	$0.02/kWh	$0.03/kWh	Operational

Small Business Direct Install Program (SBDI) Program: To qualify for this program, participants must be classified under the Ameren Missouri 2M Small General Service electric rate category and use an approved Small Business Direct Install Service Provider. SBDI incentives are capped at $2,500 per electric account. The service provider will purchase and install the lighting equipment as well as handle the application process.

Energy Management System Pilot Program: The EMS Pilot provides incentives for the installation of EMS equipment and software designed to control, monitor, and log real-time energy consumption. Incentives to eligible public and private schools and tax-exempt organizations can cover 50% of the total EMS project cost.

Table 2-4 shows the PY2016 ex ante kWh savings by program. There were 503 custom projects with ex ante energy savings of 41,567,874 kWh. During the same period, there were 1,024 standard projects with ex ante savings of 29,680,758 kWh. There were 12 new construction projects completed with ex ante savings of 1,837,715 kWh, and 1 retro-commissioning project with ex ante savings of 113,004 kWh. The small business direct install had 326 projects completed with ex ante savings of 2,365,541 kWh. The EMS Pilot did not have any completed projects during the program year. Note that the number of projects (1,866) totaled by program total greater than the number of projects in the Lockheed Martin tracking database (1,742), as an applicant may submit a single application with Standard and Custom measures together.

Table 2-4 Ex Ante kWh and Peak kW Savings of BizSavers Programs

Program	*Number of Projects*	*Ex Ante kWh Savings*	*Ex Ante Peak kW Savings*
Custom	503	41,567,874	12,185
Standard	1,024	29,680,758	5,596
New Construction	12	1,837,715	347
RCx	1	113,004	16
SBDI	326	2,365,541	449
EMS Pilot	-	-	-
Total	1,866	75,564,892	18,593

2.2. Program Trends in PY2016

The program year started in March with the offering of the Custom, New Construction and Retro Commissioning programs. On April 11, 2016 an email was sent out to trade allies and interested participants to announce the start of the Standard Program. The SBDI Program launched on August 1, 2016.

Figure 2-1 plots the Custom Program ex ante savings by project completion month. Applicants from the start of the program in March were able to get project approval, lighting purchased and installation complete starting in June 2016.

Figure 2-1 Custom Program Ex Ante kWh Savings by Project Completion Month

Although starting later in April, Standard applicants were also able to get project approval, lighting purchased and installed starting in June 2016 (Figure 2-2).

Figure 2-2 Standard Program Ex Ante kWh Savings by Project Completion Month

New Construction Program and Retro-Commissioning Program projects typically have a longer project life cycle than Standard projects.

Figure *2-3* and Figure 2-4 below display the ex ante program savings by month as well as cumulatively.

Figure 2-3 New Construction Ex Ante kWh Savings by Project Completion Month

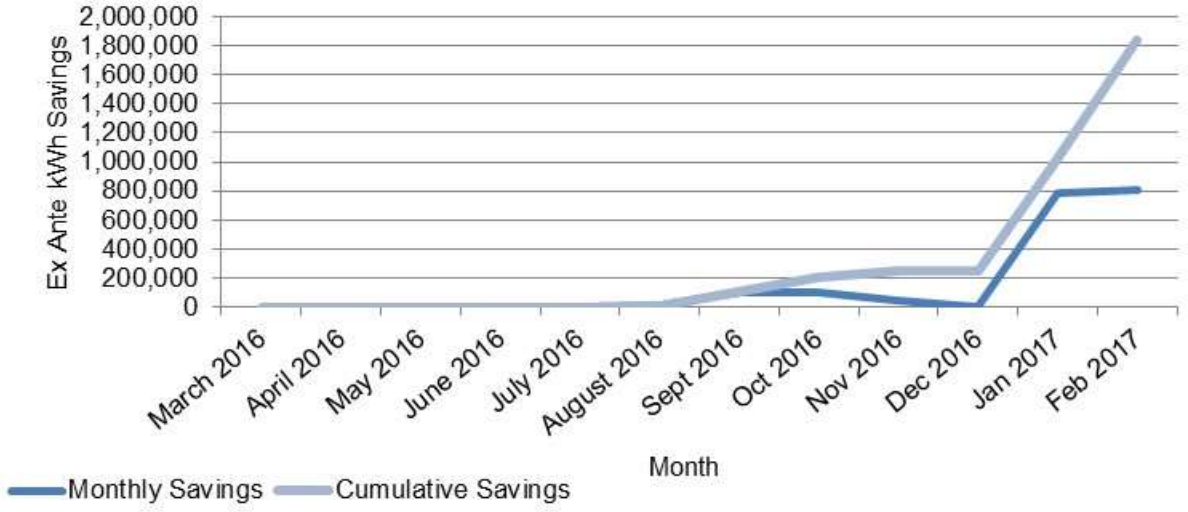
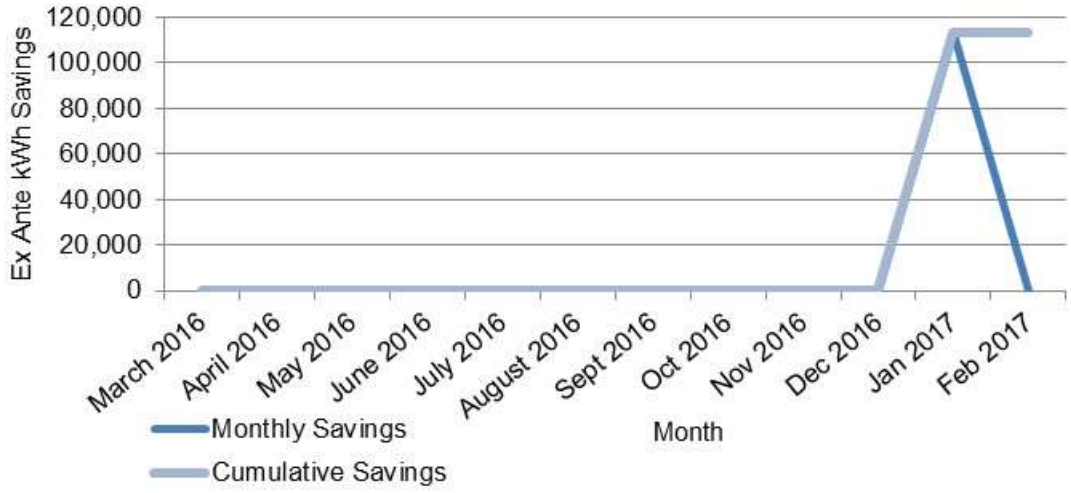
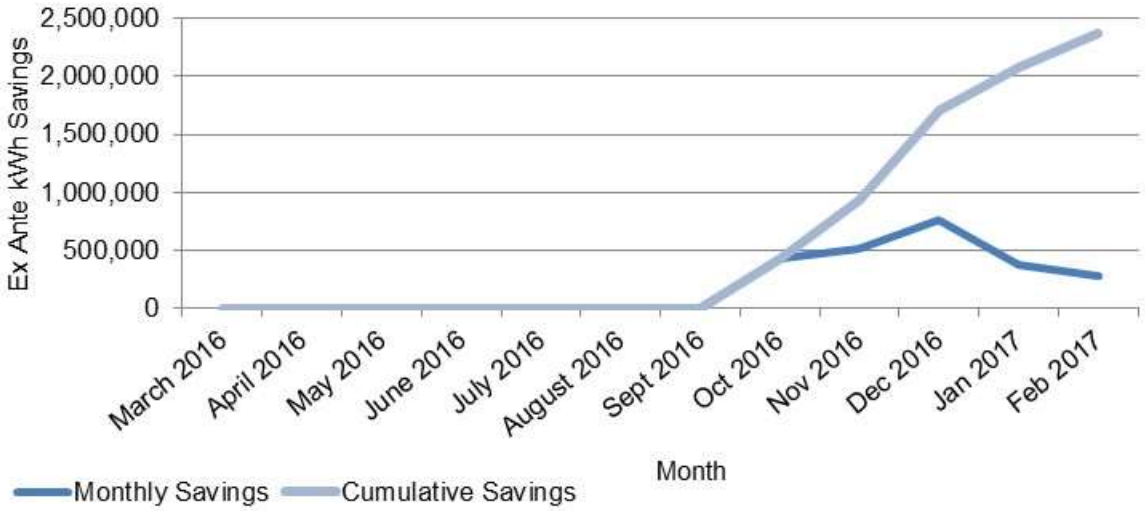


Figure 2-4 Retro-commissioning Ex Ante kWh Savings by Project Completion Month



The SBDI Program launched in August 2016, with the first projects completed in October 2016.

Figure 2-5 Small Business Direct Install Ex Ante kWh Savings by Project Completion Month



Two projects were initiated under the Energy Management System (EMS) Pilot, a component of the Custom Program, during the program year. Neither project was completed by the end of the program year. In December 2016, the first applicant received an offer for $35,000 in incentives for heating and cooling measures to be implemented at a retirement center building. This EMS project is associated with ex ante energy savings of 182,165 kWh. Four lighting BizSavers projects were previously implemented at the project location. In January 2017, the second applicant received an offer of $32,000 in incentives for heating and cooling measures to be implemented at an elementary school.

This EMS project is associated with ex ante energy savings of 73,937 kWh. During 2013, the applicant completed one Custom and Standard BizSavers Project.

2.3. Organization of Report

This report is divided into two volumes providing information on the impact, process, and cost effectiveness evaluation of the BizSavers portfolio of programs for the period March 2016 through February 2017. Volume I is organized as follows:

- Chapter 3 presents and discusses the methods used for and the results obtained from estimating ex post gross savings.
- Chapter 4 contains the net ex post savings methodology and results.
- Chapter 5 presents and discusses the methods used for and results obtained from the process evaluation.
- Chapter 6 presents and discusses the methods used for and results obtained from the cost effectiveness evaluation.
- Chapter 7 presents evaluation conclusions and recommendations.

See report Volume II for appendices presenting detailed information regarding evaluation methodologies, data collection instruments, and evaluation results.

3. Estimation of Ex Post Gross Savings

This chapter explains the estimation of ex post gross kWh savings and ex post gross peak kW savings associated with BizSavers measures installed during program year 2016 (PY2016), which occurred during March 2016 - February 2017. ADM performed impact analyses in accordance with evaluation requirement in Missouri 4 CSR 240-20.093 Demand-Side Programs Investment Mechanism and 4 CSR 240-20.094 Demand-Side Programs. Section 3.1 describes the methodology used for estimating ex post gross kWh savings. Section 3.2 presents the results of the effort to estimate savings for BizSavers program M&V samples. Volume II of this report presents the specific, applied methodologies used to estimate ex post gross savings and the savings estimation results for each sampled measure.

3.1. Methodology for Estimating Gross Savings

The methodology used for estimating ex post gross kWh savings is described in this section.

3.1.1. Sampling Plan

Program tracking data indicated that during PY2016, there were 503 projects with custom measures having ex ante savings of 41,567,874 kWh annually and 1,024 projects with standard measures having ex ante savings of 29,680,758 kWh annually. There were 12 new construction projects with ex ante annual savings of 1,837,715 kWh, and there was 1 retro-commissioning project with ex ante annual savings of 113,004 kWh. Small business direct install had 326 projects with ex ante annual savings of 2,365,541 kWh. Two Energy Management System Pilot Program applications were submitted this year, with neither project being completed prior to the end of the program year. The evaluation team used stratified statistical sampling for the Custom, Standard, New Construction, Small Business Direct Install programs. A census was completed for the only Retro-Commissioning project completed, and no samples were available for the Energy Management program.

The basis for the estimation of savings for the five programs with completed projects is on a ratio estimation procedure that allows the measured and verified (M&V) sample to have statistical precision requirements to accurately explain the annual ex post gross savings for all completed projects. ADM selected a sample with a sufficient number of projects to estimate the population ex post gross kWh savings with 10% relative precision at the 90% confidence level. The actual relative precision of each program is shown in Table 3-1. The Custom Program sample facilitated estimation of energy savings with statistical precision of 7.2%, while the relative precision of the Standard Program sample is 4.2%. The relative precision of the New Construction Program sample is 9.9%, and the relatively precision of

the Small Business Direct Install Program sample is 6.0%. There was an M&V census performed for the Retro-Commissioning Program.

Table 3-1 Statistical Precision by Program

Program	*Statistical Precision*
Custom	7.2 %
Standard	4.2 %
New Construction	9.9 %
Retro-commissioning	Census
SBDI	6.0 %

The sample selection is from the population of projects with completion dates from March 1, 2016 to February 28, 2017, the period of PY2016. The evaluation team developed quarterly samples from each program so ADM engineers could analyze those projects mid-year and provide feedback to the implementation contractor regarding red flags with measure types or specific trade allies. Partitioning the measurement and verification (M&V) fieldwork in this way allowed for both program staff and the evaluation team to mitigate the evaluation risks associated with sampling the projects just once at the end of the year.

Table 3-2 shows the Custom project population from which the sample was drawn. These samples fell into five energy saving strata and their ex ante kWh savings boundaries. Note that in this table, as well as in succeeding table presenting population statistics used for sample design, the values presenting, including coefficients of variation, are calculated based on final program data.

Table 3-2 Population Statistics Used for Sample Design for Custom Program

	Stratum 1	*Stratum 2*	*Stratum 3*	*Stratum 4*	*Stratum 5*	*Totals*
Strata boundaries (kWh)	4,847,631–2,423,816	2,423,816-1,454,289	1,454,289-290,858	290,858-87,257	87,257 - 1	
Population Size	2	2	19	70	410	503
Total kWh savings	7,414,446	3,120,521	9,896,812	10,919,696	10,216,399	41,567,874
Average kWh Savings	3,707,223	1,560,261	520,885	155,996	24,918	
Standard deviation of kWh savings	1,612,779	100,495	271,016	59,597	22,300	
Coefficient of variation	0.44	0.06	0.52	0.38	0.89	
Final design sample	2	1	10	16	59	88

Table 3-3 shows the Standard Non-HIM population from which the sample was drawn. These samples fell into five energy saving strata and their ex ante kWh savings boundaries.

Table 3-3 Population Statistics Used for Sample Design for Standard Non-HIM

	Stratum 1	*Stratum 2*	*Stratum 3*	*Stratum 4*	*Stratum 5*	*Totals*
Strata boundaries (kWh)	1,136,801-170,520	170,520-27,283	27,283-13,642	13,642-9,549	9,549 -1	
Population Size	2	85	78	53	378	596
Total kWh savings	402,973	4,900,720	1,472,439	602,764	1,480,236	8,859,132
Average kWh Savings	201,487	57,656	18,877	11,373	3,916	
Standard deviation of kWh savings	6,465	26,688	3,813	1,037	2,458	
Coefficient of variation	0.03	0.46	0.20	0.09	0.63	
Final design sample	1	24	19	16	75	135

Table 3-4 shows the Standard high impact measure 305401 (Lighting linear ft. LED ≤5.5 watts/foot replacing T12 ≤40 watt linear feet) population from which the sample was drawn. These samples fell into four energy saving strata and their ex ante kWh savings boundaries.

Table 3-4 Statistics Used for Sample Design for Standard HIM 305401

	Stratum 1	*Stratum 2*	*Stratum 3*	*Stratum 4*	*Totals*
Strata boundaries (kWh)	186,150-67,014	67,014-20,774	20,774-6,856	6,856 -1	
Population Size	5	18	44	74	141
Total kWh savings	546,164	577,846	526,174	192,635	1,842,819
Average kWh Savings	109,233	32,103	11,959	2,603	
Standard deviation of kWh savings	47,487	13,208	4,260	1,969	
Coefficient of variation	0.43	0.41	0.36	0.76	
Final design sample	4	7	10	10	31

Table 3-5 shows the Standard high impact measure 201111 (Lighting LED ≤11 watt lamp replacing halogen A 28-52 watt lamp) population from which the sample was drawn. These samples fell into three energy saving strata and their ex ante kWh savings boundaries.

Table 3-5 Popuation Statistics Used for Sample Design for Standard HIM 201111

	Stratum 1	*Stratum 2*	*Stratum 3*	*Totals*
Strata boundaries (kWh)	156,103-74,929	74,929-21,730	21,730 -1	
Population Size	3	31	189	223
Total kWh savings	427,873	1,199,730	1,112,202	2,739,805
Average kWh Savings	142,624	38,701	5,885	
Standard deviation of kWh savings	23,034	14,458	5,564	
Coefficient of variation	0.16	0.37	0.95	
Final design sample	1	10	65	76

Table 3-6 shows the Standard high impact measure 200102(Lighting linear LED lamp ≤22 watt lamp replacing T8 32 watt lamp) population from which the sample was drawn. These samples fell into three energy saving strata and their ex ante kWh savings boundaries.

Table 3-6 Population Statistics Used for Sample Design for Standard HIM 200102

	Stratum 1	*Stratum 2*	*Stratum 3*	*Totals*
Strata boundaries (kWh)	1,136,800-217,360	227,360-56,840	56,840 -1	
Population Size	2	9	40	51
Total kWh savings	1,626,602	975,016	484,652	3,086,270
Average kWh Savings	813,301	108,333	12,116	
Standard deviation of kWh savings	457,497	18,279	13,514	
Coefficient of variation	0.56	0.17	1.12	
Final design sample	2	6	12	20

Table 3-7 shows the Standard high impact measure 305233 (Lighting 85-225 watt lamp or fixture replacing interior HID 301-500 watt lamp or fixture) population from which the

sample was drawn. These samples fell into three energy saving strata and their ex ante kWh savings boundaries.

Table 3-7 Population Statistics Used for Sample Design for Standard HIM 305233

	Stratum 1	*Stratum 2*	*Stratum 3*	*Totals*
Strata boundaries (kWh)	500,640-115,147	115,147-25,332	25,332 -1	
Population Size	7	28	67	102
Total kWh savings	2,242,614	1,185,567	724,382	4,152,563
Average kWh Savings	320,373	42,342	10,812	
Standard deviation of kWh savings	151,822	17,182	6,723	
Coefficient of variation	0.47	0.41	0.62	
Final design sample	7	5	8	20

Table 3-8 shows the Standard high impact measure 305402 (Lighting linear foot LED ≤5.5 watts/foot replacing T8 32 watt linear foot) population from which the sample was drawn. These samples fell into three energy saving strata and their ex ante kWh savings boundaries.

Table 3-8 Population Statistics Used for Sample Design for Standard HIM 305402

	Stratum 1	*Stratum 2*	*Stratum 3*	*Totals*
Strata boundaries (kWh)	843,860-312,228	312,228-78,057	78,057 -1	
Population Size	8	11	259	278
Total kWh savings	4,039,672	1,149,299	3,811,198	9,000,169
Average kWh Savings	504,959	104,482	14,715	
Standard deviation of kWh savings	181,299	26,291	14,752	
Coefficient of variation	0.36	0.25	1.00	
Final design sample	6	3	60	69

Table 3-9 shows the New Construction project population from which the sample was drawn. These samples fell into three energy saving strata and their ex ante kWh savings boundaries.

Table 3-9 Population Statistics Used for Sample Design for New Construction Program

	Stratum 1	*Stratum 2*	*Stratum 3*	*Totals*
Strata boundaries (kWh)	807,812-226,187	226,187-92,777	92,777 -1	
Population Size	2	3	7	12
Total kWh savings	1,044,441	548,248	245,026	1,837,715
Average kWh Savings	522,221	182,749	35,004	
Standard deviation of kWh savings	403,886	43,334	32,209	
Coefficient of variation	0.77	0.24	0.92	
Final design sample	2	2	3	7

Table 3-10 shows the Retro-Commissioning project, the energy saving census and the ex ante kWh savings.

Table 3-10 Population Statistics for the Retro-Commissioning Program

	Census	*Totals*
Population Size	1	1
Total kWh savings	113,004	113,004
Average kWh Savings	113,004	
Final design sample	1	1

Table 3-11 shows the Small Business Direct Install Non-HIM population which the sample was drawn. These samples fell into three energy saving strata and their ex ante kWh savings boundaries.

Table 3-11 Population Statistics Used for Sample Design for Small Business Direct Install Non-HIM Program

	Stratum 1	*Stratum 2*	*Stratum 3*	*Totals*
Strata boundaries (kWh)	31,835-12,734	12,734-7,640	7,640 - 1	
Population Size	13	23	208	244
Total kWh savings	219,225	224,924	438,583	882,732
Average kWh Savings	16,863	9,779	2,109	
Standard deviation of kWh savings	4,341	1,618	1,754	
Coefficient of variation	0.26	0.17	0.83	
Final design sample	6	8	58	72

Table 3-12 shows the Small Business Direct Install high impact measure 301132 (Lighting LED 7-20 watt lamp replacing halogen A 53-70 watt lamp) population from which the sample was drawn. These samples fell into three energy saving strata and their ex ante kWh savings boundaries.

Table 3-12 Population Statistics Used for Sample Design for SBDI HIM 301132

	Stratum 1	*Stratum 2*	*Stratum 3*	*Totals*
Strata boundaries (kWh)	28,929-8,679	8,679 - 3,038	3,038 -1	
Population Size	14	52	116	182
Total kWh savings	194,634	263,505	138,970	597,109
Average kWh Savings	13,902	5,067	1,198	
Standard deviation of kWh savings	5,263	1,447	808	
Coefficient of variation	0.38	0.29	0.67	
Final design sample	2	11	21	34

Table 3-13 shows the Small Business Direct Install high impact measure 200909 (Lighting LED ≤14 watt lamp replacing halogen BR/R 45-66 watt lamp) population from which the sample was drawn. These samples fell into three energy saving strata and their ex ante kWh savings boundaries.

Table 3-13 Population Statistics Used for Sample Design for SBDI HIM 305402

	Stratum 1	*Stratum 2*	*Stratum 3*	*Totals*
Strata boundaries (kWh)	31,834-9,550	9,550– 1,910	1,910 -1	
Population Size	17	120	102	239
Total kWh savings	235,121	546,876	103,703	885,700
Average kWh Savings	13,831	4,557	1,017	
Standard deviation of kWh savings	5,393	2,100	538	
Coefficient of variation	0.39	0.46	0.53	
Final design sample	7	29	24	60

The Custom Program stratified sample shown in Table 3-14 resulted in samples that total 43% of the ex ante kWh savings.

Table 3-14 Ex Ante kWh Savings for Custom Program Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	7,414,446	7,414,446	100%
2	1,631,498	3,120,521	52%
3	4,601,243	9,896,812	46%
4	2,709,142	10,919,696	25%
5	1,353,423	10,216,399	13%
Total	17,709,752	41,567,874	43%

The standard non-HIM projects stratified sample shown in Table 3-15 resulted in samples that total 28% of the ex ante kWh savings.

Table 3-15 Ex Ante kWh Savings for Standard Non-HIM Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	196,915	402,973	49%
2	1,432,542	4,900,720	29%
3	381,061	1,472,439	26%
4	181,306	602,764	30%
5	276,810	1,480,236	19%
Total	2,468,634	8,859,132	28%

The standard HIM 305401 projects stratified sample shown in Table 3-16 resulted in samples that total 42% of the ex ante kWh savings.

Table 3-16 Ex Ante kWh Savings for Standard HIM 35401 Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	Percentage of Ex Ante Savings in Sample
1	429,526	546,164	79%
2	203,175	577,846	35%
3	110,149	526,174	21%
4	23,800	192,635	12%
Total	766,650	1,842,819	42%

The standard HIM 201111 projects stratified sample shown in Table 3-17 resulted in samples that total 33% of the ex ante kWh savings.

Table 3-17 Ex Ante kWh Savings for Standard HIM 201111 Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	155,742	427,873	36%
2	398,267	1,199,730	33%
3	362,323	1,112,202	33%
Total	916,332	2,739,805	33%

The standard HIM 200102 projects stratified sample shown in Table 3-18 resulted in samples that total 78% of the ex ante kWh savings.

Table 3-18 Ex Ante kWh Savings for Standard HIM 200102 Program Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	1,626,602	1,626,602	100%
2	659,947	975,016	68%
3	135,194	484,652	28%
Total	2,421,743	3,086,270	78%

The standard HIM 305233 projects stratified sample shown in Table 3-19 resulted in samples that total 62% of the ante kWh savings.

Table 3-19 Ex Ante kWh Savings for Standard HIM 305233 Program Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	2,242,614	2,242,614	100%
2	213,095	1,185,567	18%
3	106,782	724,382	15%
Total	2,562,491	4,152,563	62%

The standard HIM 305402 projects stratified sample shown in Table 3-20 resulted in samples that total 47% of the ex ante kWh savings.

Table 3-20 Ex Ante kWh Savings for Standard HIM 200102 Program Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	2,944,701	4,039,672	73%
2	358,792	1,149,299	31%
3	910,837	3,811,198	24%
Total	4,214,330	9,000,169	47%

The new construction projects stratified sample shown in Table 3-21 resulted in samples that total 79% of the ex ante kWh savings.

Table 3-21 Ex Ante kWh Savings for New Construction Program Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	1,044,441	1,044,441	100%
2	341,453	548,248	62%
3	68,953	245,026	28%
Total	1,454,847	1,837,715	79%

The retro-commissioning project census shown in *Table 3-22* resulted in a 100% total of ex ante kWh savings.

Table 3-22 Ex Ante kWh Savings for Retro-Commissioning Program Census

Census	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	113,004	113,004	100%
Total	113,004	113,004	100%

The small business direct install non-HIM projects stratified sample shown in Table 3-23 resulted in samples that total 47% of the ex ante kWh savings.

Table 3-23 Ex Ante kWh Savings for Small Business Direct Install Non-HIM Program Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	96,407	219,225	44%
2	75,673	224,924	34%
3	115,438	438,583	26%
Total	287,518	882,732	33%

The small business direct install HIM 301132 projects stratified sample shown in Table 3-24 resulted in samples that total 18% of th4 ex ante kWh savings.

Table 3-24 Ex Ante kWh Savings for SBDI HIM 301132 Program Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	21,513	194,634	11%
2	55,227	263,505	21%
3	28,008	138,970	20%
Total	104,748	597,109	18%

The small business direct install HIM 200909 projects stratified sample shown in Table 3-25 resulted in samples that total 27% of the ex ante kWh savings.

Table 3-25 Ex Ante kWh Savings for SBDI HIM 200909 Program Sampled Projects by Stratum

Stratum	*Sample Ex Ante kWh Savings*	*Total Ex Ante kWh Savings*	*Percentage of Ex Ante Savings in Sample*
1	84,117	235,121	36%
2	128,071	546,876	23%
3	23,928	103,703	23%
Total	236,116	885,700	27%

3.1.2. Review of Documentation

After the sample selection, ADM obtained project documentation from the tracking database maintained by Ameren Missouri's program implementation contractor. ADM analysts then reviewed this documentation and other program materials that were relevant to the evaluation effort.

The available documentation (e.g., audit reports, savings calculation work papers, etc.) for each incentivized measure was reviewed, with particular attention given to the calculation procedures and documentation for ex ante energy saving estimates. The reviewed documentation for all selected projects included program forms, databases, reports, billing system data, weather data, and any other potentially useful data. Examination of each application to determine whether the following types of information is included:

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

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

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

3.1.3. On-Site Data Collection Procedures

Field technicians made on-site visits to collect data used in calculating accurate energy savings effects of the implemented measures. During the site visits of the sampled projects, field technicians collected primary data on the participants' facilities and implemented energy efficiency measures.

ADM provided Ameren Missouri energy efficiency staff with a list of projects for which ADM planned to schedule M&V activities. This list included the company name, the project ID, the site address or other premise identification, and the customer representatives' contact information with whom ADM intended to schedule an appointment.

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

- First, they verified the implementation status of all measures for which customers received incentives. They verified the installation of energy efficiency measures, that the installation was correct, and that they still functioned properly.
- Second, they collected the data needed to analyze the ex post energy savings associated with the measures that were implemented. Data were collected in accordance with site-specific M&V plans.
- Third, they interviewed the facilities' representatives to obtain additional information that may support the calculation of ex post energy savings.

Volume II of this report presents information regarding site-specific M&V data collection activities.

3.1.4. Procedures for Estimating kWh Savings from Measures Installed through the Program

The method ADM employs to determine gross savings impacts depends on the types of measures for analysis. Categories of measures include the following:

- Lighting;
- HVAC;

- VFDs;
- Refrigeration; and
- Compressed Air.

ADM uses a specific set of methods to determine ex post gross savings for projects that depend on the type of measure analyzed. Table 3-26 summarizes the general methods used by ADM to determine gross savings for the BizSavers measures. Volume II of this report presents the specific, applied methodologies used to estimate ex post gross savings for each sampled measure.

Table 3-26 Typical Methods to Determine Savings for Custom Measures

Type of Measure	*Method to Determine Savings*
Lighting	Reference to data on wattages of newly-installed measures, hours-of-use data obtained from field monitoring, with baseline data informed by applicable standards or pre-existing equipment characteristics.
HVAC (including packaged units, chillers, cooling towers, controls/EMS)	eQUEST model using DOE-2 as its analytical engine for estimating HVAC loads and calibrated with site-level billing data to establish a benchmark.
VFDs	eQUEST model using DOE-2 as its analytical engine for estimating HVAC loads and calibrated with site-level billing data to establish a benchmark.
Refrigeration	Engineering analysis referencing Energy Star equations and variables.
Compressed Air Systems	Engineering analysis, with monitored data of power and schedule of operation.

The activities specified in Table 3-26 produced two estimates of gross savings for each sample unit: an ex ante kWh savings estimate (as reported in the project documentation and program tracking system) and the ex post gross savings estimate developed through the M&V procedures. Estimates of program-level gross savings were determined by applying a ratio estimation procedure in which achieved savings levels estimated for the sample units were statistically projected to the program-level ex ante savings.

Energy savings realization rates were calculated for each site for which on-site data collection and engineering analysis/building simulations were conducted. ADM conducted an analysis of sites with relatively high or low realization rates to determine the reasons for the discrepancy between ex ante and ex post energy savings. Volume II of this report presents information on the results of this analysis at the site-level, and the program- and portfolio-level analysis results are presented in section 3.2 of this document.

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

3.1.4.1. Method for Analyzing Savings from Lighting Measures

Lighting measures examined include retrofits of existing fixtures, lamps and/or ballasts with energy efficient fixtures, lamps or LED lamps/drivers. These types of measures reduce demand, while not affecting operating hours. Participants often complete retrofit projects in combination with the installation of lighting control measures, such as motion sensors or daylight controls. Controls reduce the operating hours and/or current passing thorough the connected fixture or group of fixtures.

Analyzing the savings from such lighting measures requires data for retrofitted fixtures on (1) baseline wattages and post-retrofit wattages and (2) hours of operation before and after the retrofit. Hours of operation are typically determined based on metered data collected after measure installation for a sample of fixtures.

Data collected determines the average operating hours for retrofitted fixtures by using light intensity loggers where lighting efficiency measures have been installed. Usage areas are areas within a facility with comparable average operating hours. For industrial customers, expected usage areas include production, warehouse, and office areas. Usage areas are assigned to lighting logger data for analysis.

Annual energy savings for each sampled fixture/lamp is determined by the following formula:

$$Annual\ Energy\ Savings = kWh_{baseline} - kWh_{after}$$

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

- Results from the monitored sample calculate the average operating hours of the metered lights in each period for every unique building type/usage area.
- Applying this average operating hours to the baseline and post-installation average demand for each usage area to calculate the respective energy usage and peak period demand for each usage area.
- The annual baseline energy usage is the sum of the baseline kWh for each costing period for all of the usage areas. Similarly, the post-retrofit energy usage is calculated. The calculated energy savings are the difference between baseline and post-installation energy usage.
- For conditioned spaces, region-specific, building type-specific heating interaction factors (HIF) and cooling interaction factors (CIF) account for the energy impacts of implemented lighting measures on HVAC operation. The applied factors, presented in report Volume II, were developed based on energy simulation of DEER eQUEST prototypical buildings, referencing Ameren Missouri service territory weather data. The kWh heating and cooling interaction factor (HCIF) is calculated as 1 + *HIF* + *CIF*.

- Energy savings for lighting are determined by one of two methods. With sufficient monitoring data, applying an algorithm to time series monitoring data to estimate the lighting operating hours prior to implementation of lighting controls. For each monitored hour during which there was any lighting use, survey data is applied to determine the behavior with the absence of lighting controls. This survey asks questions by usage area for the manual lighting control behavior both within the workday, and also at the end of the workday.

3.1.4.2. Method for Analyzing Savings from HVAC Measures

Savings estimates of HVAC measures were determined using DOE-2 energy simulations and/or engineering calculations. Each approach is supplemented with data collected through on-site visits. Typical HVAC measures which were evaluated using the following methods are:

- Installation of VFDs on pump and fan motors;
- Retrofit/upgrade of distribution system controls (i.e. supply air reset, economizers, etc.);
- Retrofit/upgrade of central plant controls (i.e. chiller sequencing, chilled and condensing water reset, etc.) ; and
- Replacement of HVAC or central plant (i.e. chillers) equipment with more efficient models.

When tractable, building simulation software is our preferred approach, as it allows calculation of secondary energy impacts which quantify a measure's impacts on other building systems. Building simulation software also enables us to more accurately account for the interactive effects that multiple measures have on one another when installed in the same facility. Each simulation produces estimates of HVAC energy and demand usage under different assumptions about equipment and/or construction conditions.

In cases in which DOE-2 simulation was inappropriate because data were not available to properly calibrate a simulation model and engineering analysis provided more accurate M&V results, engineering spreadsheet models were developed referencing a secondary literature source (i.e. Missouri Statewide TRM) and primary data collected on-site. A measure for which engineering spreadsheet modeling was developed included retrofit/upgrade of a single chiller.

3.1.4.3. Method for Analyzing Savings for VFDs

Estimates of energy savings for VFDs were determined using DOE-2 energy simulations as described in section 3.1.4.2.

3.1.4.4. Method for Analyzing Savings from Refrigeration Measures

Energy savings were determined by referencing data collected on-site and using engineering equations from a secondary literature source (i.e. Energy Star).

3.1.4.1. Method for Analyzing Savings from Compressed Air Measures

Energy savings of compressed air leak repairs were calculated through engineering analysis of compressor performance curves, supported by data collected through short-term baseline metering. Current data was used to calculate power, using the following algorithm:

$$P = \frac{\sqrt{3} \times V \times A \times pf}{1{,}000}$$

Where:

P = *Power (kW)*

V = *Voltage (460)*

A = *Amperage*

pf = *Power factor (0.9 assumed)*

The load (cfm) at each monitoring point was determined using the performance curve (%Power vs %Flow) for the applicable control type (inlet modulation without blowdown) from the Uniform Methods Project.

The effect of the measure was then imposed on the established load profile by subtracting the total leaks repaired from each data point. This “new” load profile represented the decreased demand as a result of repaired leaks. The compressor performance curve was then once again used to determine power requirements at each data point.

Energy savings were calculated by taking the difference in energy requirements of baseline and post-RCx compressed air systems, at each monitoring point, summing over the monitoring period, and scaling to an annual basis.

3.1.5. Procedures for Estimating Peak kW Savings from Measures Installed through the Program

The system peak net demand (kW) savings for PY2016 measures is determined by factoring the first year annual energy savings by end use-specific energy-to-demand ratios. Table 3-27 shows the applicable business energy to peak demand factors, which are presented in Appendix E to the *Non-Unanimous Stipulation and Agreement* in File No.

EO-2015-0055[1]. The *Non-Unanimous Stipulation and Agreement* in File No. EO-2015-0055 states: "Only measures that are expected to deliver energy savings in 2023 and beyond are counted towards the demand goal in the EO included in Appendix A." ADM referenced the Ameren Missouri TRM for secondary data on measure EUL in order to assess whether or not measures are sufficiently long-lived to apply the stipulated energy-to-demand ratio to determine 2023-persistent kW savings.

Table 3-27 End-Use Category Energy to Peak Demand Factors

End Use	*Factor*
Air Comp	0.0001379439
Building Shell	0.0004439830
Cooking	0.0001998949
Cooling	0.0000056160
Exterior Lighting	0.0000056160
Heating	0.0000000000
HVAC	0.0004439830
Lighting	0.0001899635
Miscellaneous	0.0001379439
Motors	0.0001379439
Process	0.0001379439
Refrigeration	0.0001357383
Water Heating	0.0001811545

3.2. Results of Ex Post Gross Savings Estimation

To estimate ex post gross kWh savings and ex post gross peak kW reductions for the BizSavers programs, data were collected and analyzed for the samples identified in section 3.1.1. ADM analyzed the sample measure data using the methods described in section 3.1 to estimate project energy savings, peak kW reductions, and determine gross realization rates. In this section are the results of that analysis results. Note that detailed, site-level analysis methods and results are presented in Volume II of this report, along with summary information regarding measure-level and site-level energy savings of sampled measures.

3.2.1. Ex Post Gross kWh Savings

3.2.1.1. Custom Program Ex Post Gross kWh Savings

The ex ante and ex post gross kWh savings of the Custom Program during PY2016 are summarized by sampling stratum in Table 3-28. Overall, ex post gross energy savings of 18,064,561 kWh are equal to 102% of the ex ante savings.

[1] https://www.efis.psc.mo.gov/mpsc/commoncomponents/viewdocument.asp?DocId=935982981

Table 3-28 Ex Ante and Ex Post Annual kWh Savings for Custom Program by Sample Stratum

Stratum	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
1	7,414,446	7,710,794	104%
2	3,120,521	3,120,523	100%
3	9,896,812	10,491,035	106%
4	10,919,696	9,963,591	91%
5	10,216,399	10,125,968	99%
Total	41,567,874	41,411,911	100%

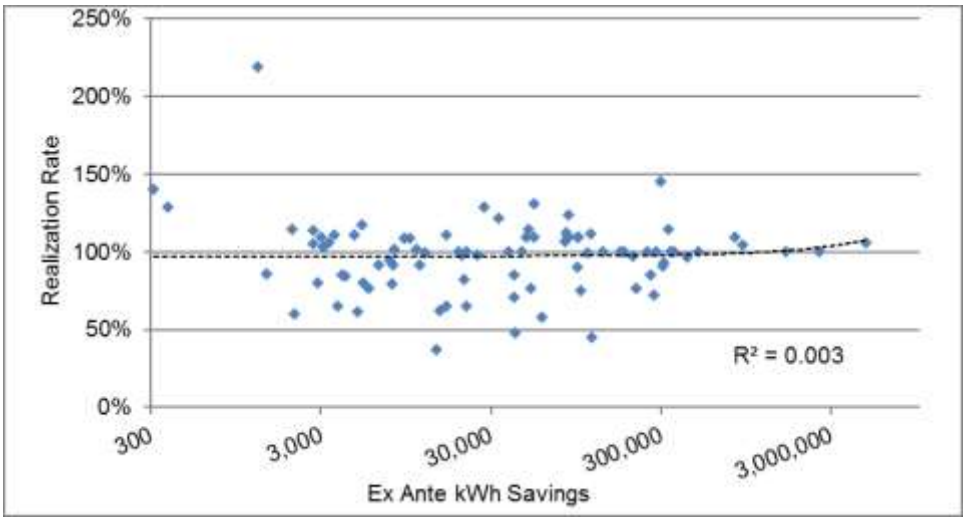
Table 3-29 presents information on ex ante and ex post kWh energy savings of sampled Custom Program measures by end use.

Table 3-29 Ex Ante and Ex Post Annual kWh Savings for Custom Program Sample Measures by End Use

End Use	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
Cooling	4,000,958	4,358,571	109%
Ext Lighting	52,665	47,117	89%
HVAC	845,882	736,437	87%
Lighting	8,884,385	9,080,112	102%
Miscellaneous	3,757,177	3,667,697	98%
Motors	125,381	101,134	81%
Process	43,304	73,494	170%
Total	17,709,752	18,064,561	102%

Custom Program gross kWh savings realization rates and gross ex ante kWh savings are plotted in Figure 3-1 for sample projects. The horizontal axis is presented with a logarithmic scale in order to better display the full range of project ex ante kWh savings.

Figure 3-1 Custom Program Sample Project Gross kWh Savings Realization Rate Versus Gross Ex Ante kWh Savings



Custom Program ex ante energy savings and ex post energy savings are plotted in Figure 3-2 for each sampled project with savings up to 1,000,000 kWh. The three largest projects with realized savings of 100%,100% and 106% were omitted in order to better graphically present the sample projects accounting for the large majority of the overall sample.

Figure 3-2 Custom Program Sample Project Gross Ex Post kWh Savings versus Gross Ex Ante kWh Savings

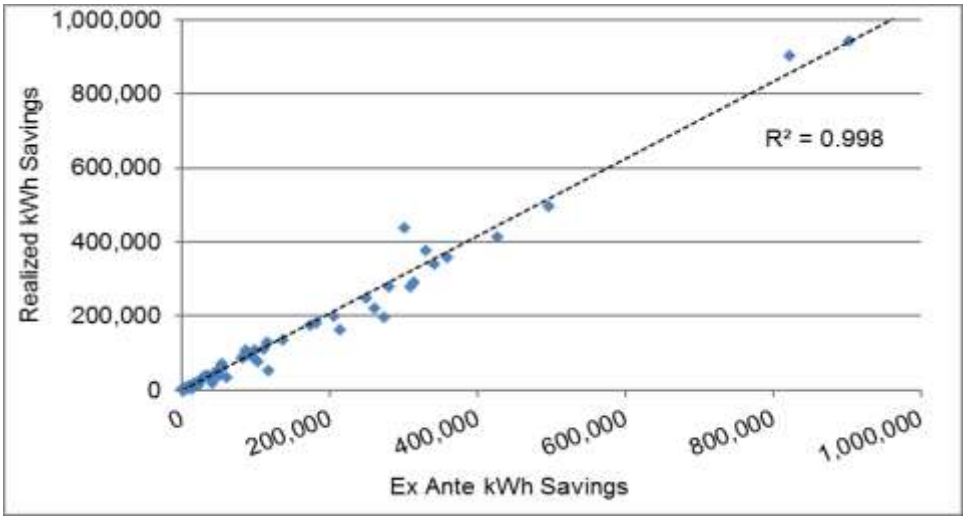
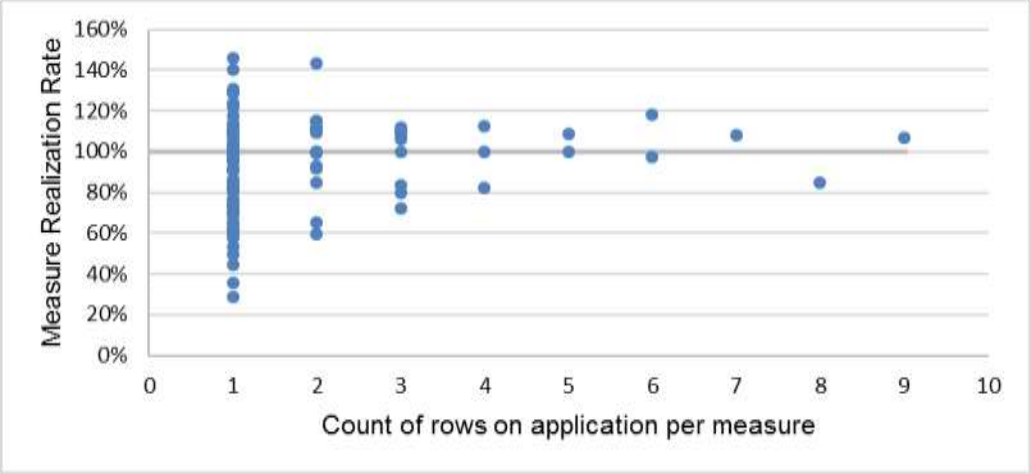


Figure 3-3 graphically plots gross realization rates of individual measures within individual Custom Program projects against the corresponding number of rows of application data associated with the individual project measure.

Figure 3-3 Custom Program Sample Project Realization Rate versus Application Measure Detail



There is a negative correlation between the number of application rows of measure data and the variability in the realization rate of measures within projects. Applicant provision of more rows of data for a single project measure is associated with lower variability in measure-level, project-level gross realization rates. Applicant provision of multiple rows of application data for a single measure typically is associated with differences in the application data fields for one or more of the energy savings calculation algorithm input variables. The most significant variables impacting variation in gross realization rates of lighting measures are the existing lighting wattage and the annual lighting hours of operation.

The Custom and Standard Incentive Application form should be revised to further direct applicants to provide unique lighting operating hours, where applicable. Currently, the application form prompts entry of annual lighting hours of operation, and provides a tool referred to as the "Facility Operating Hours Calculator," which presents narrative stating: "Each measure could have unique operating hours depending on the technology and use. Use this calculator to record the specific operating hours for each measure as required." In fact, a single measure may be installed in multiple areas with unique lighting hours of operation. ADM recommends that the application form prompt applicants to disaggregate single measures, where appropriate, such that quantities of measures are associated with the applicable annual hours of operation.

3.2.1.2. Standard Program Ex Post Gross kWh Savings

The gross kWh savings of the Standard Program during PY2016 are summarized by sampling stratum in Table 3-30. Overall, ex post gross kWh savings for the Standard

Program non-HIM sample of 2,816,316 kWh are equal to 114% of the ex ante kWh savings. For Standard Program HIMs:

- The gross kWh savings of Standard HIM 305401 (Lighting Linear foot LED ≤5.5 watts/foot replacing T12 ≤40 watt linear foot) of 2,816,316 kWh are equal to 114% of the ex ante kWh savings.
- Standard HIM 2011111 (Lighting LED ≤11 watt lamp replacing Halogen A 28-52 watt lamp) had ex post gross kWh savings of 892,129 kWh are equal to 97% of the ex ante kWh savings.
- The gross kWh savings of Standard HIM 200102 (Lighting linear LED lamp ≤22 wall lamp replacing T8 32 watt lamp) of 2,249,269 kWh are equal to 93% of the ex ante kWh savings.
- The gross kWh savings of Standard HIM 305233 (Lighting 85-225 watt lamp or fixture replacing interior HID 301-500 watt lamp or fixture) of 2,795,157 kWh are equal to 109% of the ex ante kWh savings.
- Standard HIM 305402 (Lighting linear foot LED ≤5.5 watts/foot replacing T8 watt linear foot) had ex post gross kWh savings of 4,491,852 kWh are equal to 107% of the ex ante kWh savings.

In the aggregate, the gross realization rate of the Standard Program is 105%.

Table 3-30 Ex Ante and Ex Post Gross Annual kWh Savings for the Standard Program by Sample Stratum

Standard Program	*Stratum*	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
Non Him	1	402,973	680,612	169%
	2	4,900,720	5,231,327	107%
	3	1,472,439	1,775,801	121%
	4	602,764	648,765	108%
	5	1,480,236	1,603,645	108%
HIM 305401	1	546,164	550,866	101%
	2	577,846	710,883	123%
	3	526,174	518,057	98%
	4	192,635	179,232	93%
HIM 201111	1	427,873	244,180	57%
	2	1,199,730	1,344,242	112%
	3	1,112,202	1,092,196	98%
HIM 200102	1	1,626,602	1,540,787	95%
	2	975,016	903,010	93%
	3	484,652	348,709	72%

Standard Program	*Stratum*	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
HIM 305233	1	2,242,614	2,432,604	108%
	2	1,185,567	1,372,549	116%
	3	724,382	785,890	108%
HIM 305402	1	4,039,672	4,580,273	113%
	2	1,149,299	732,560	64%
	3	3,811,198	3,867,906	101%
Total		29,680,758	31,144,093	105%

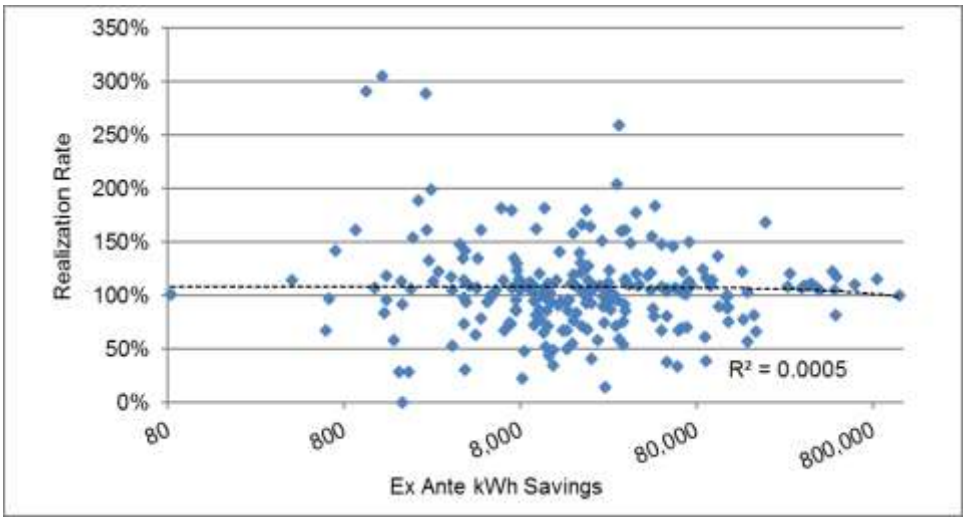
Table 3-31 presents information on ex ante and ex post kWh energy savings of sampled Standard Program measures by end use.

Table 3-31 Ex Ante and Ex Post Annual kWh Savings for Standard Program Sample Measures by End Use

End Use	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
Ext Lighting	9,886	10,040	102%
Lighting	13,188,858	13,894,906	105%
Miscellaneous	147,390	148,034	100%
Refrigeration	3,869	5,512	142%
Total	13,350,003	14,058,493	105%

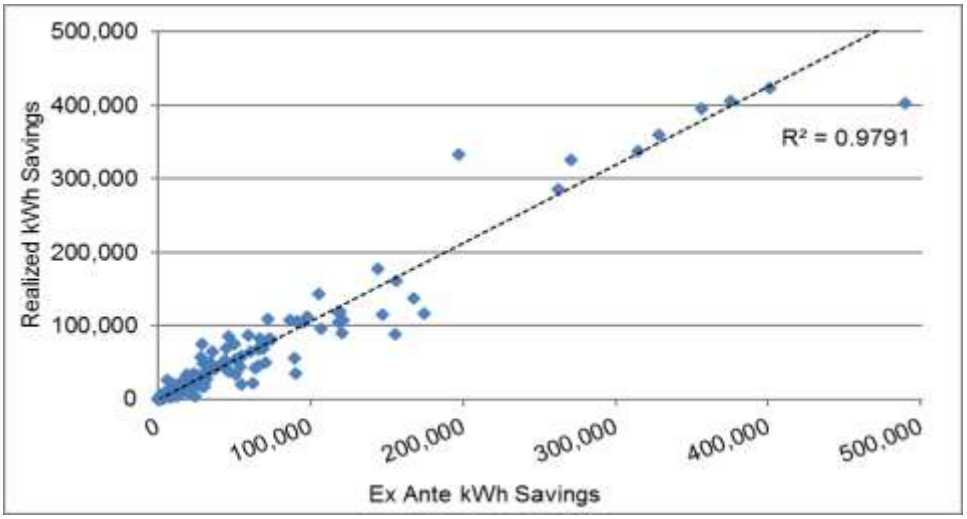
Standard Program gross kWh savings realization rates and gross ex ante kWh savings are plotted in Figure 3-4 for each sample project. The horizontal axis is presented in logarithmic scale in order to facilitate graphical presentation of the full range of data.

Figure 3-4 Standard Program Sample Project Gross kWh Savings Realization Rate Versus Gross Ex Ante kWh Savings



Standard Program ex ante energy savings and ex post energy savings are plotted in Figure 3-5 for each sample project. This figure omits the three largest kWh savings in order to better graphically capture the sample projects accounting for the large majority of the overall sample.

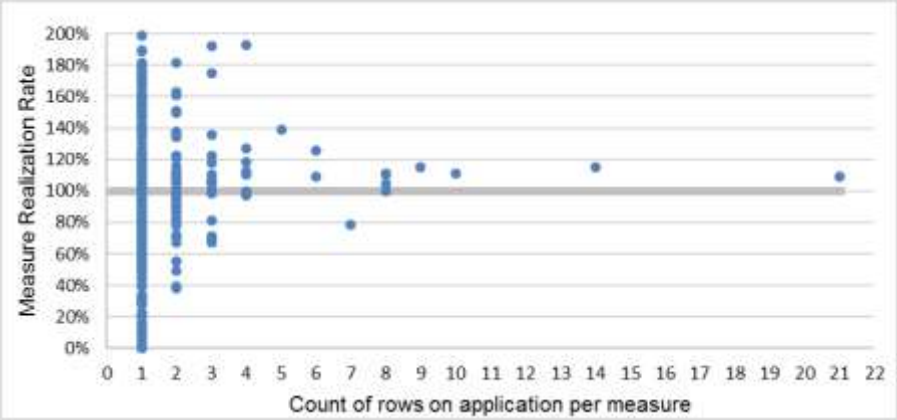
Figure 3-5 Standard Program Sample Project Gross Ex Post kWh Savings versus Gross Ex Ante kWh Savings



As described in section 3.2.1.1, in each program application, a single measure may be presented as a single row of data associated with a single baseline wattage, estimated annual hours of operation, etc.; alternatively, a single measure may be disaggregated and presented as multiple rows of data associated with unique baseline wattages, estimated annual hours of operation, or etc.

Figure 3-6 graphically plots gross realization rates of individual measures within individual Standard Program projects against the corresponding number of rows of application data associated with the individual project measure.

Figure 3-6 Standard Program Sample Project Realization Rate versus Application Measure Detail



As described in section 3.2.1.1 for the Custom Program, applicant provision of more rows of data for a single project measure is associated with lower variability in measure-level, project-level gross realization rates.

The Custom and Standard Incentive Application form should be revised to further direct applicants to provide unique lighting operating hours, where applicable. Currently, the application form prompts entry of annual lighting hours of operation, and provides a tool referred to as the "Facility Operating Hours Calculator," which presents narrative stating: "Each measure could have unique operating hours depending on the technology and use. Use this calculator to record the specific operating hours for each measure as required." In fact, a single measure may be installed in multiple areas with unique lighting hours of operation. ADM recommends that the application form prompt applicants to disaggregate single measures, where appropriate, such that quantities of measures are associated with the applicable annual hours of operation.

3.2.1.3. New Construction Program Ex Post Gross kWh Savings

The gross kWh savings of the New Construction Program during PY2016 are summarized by sampling stratum in Table 3-32.

Overall, ex post gross kWh savings of 1,300,754 kWh are equal to 89% of the ex ante kWh savings.

Table 3-32 Ex Ante and Ex Post Gross Annual kWh Savings for New Construction Program by Sample Stratum

Stratum	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
1	1,044,441	1,047,691	100%
2	548,248	308,637	56%
3	245,026	216,202	88%
Total	1,837,715	1,572,530	86%

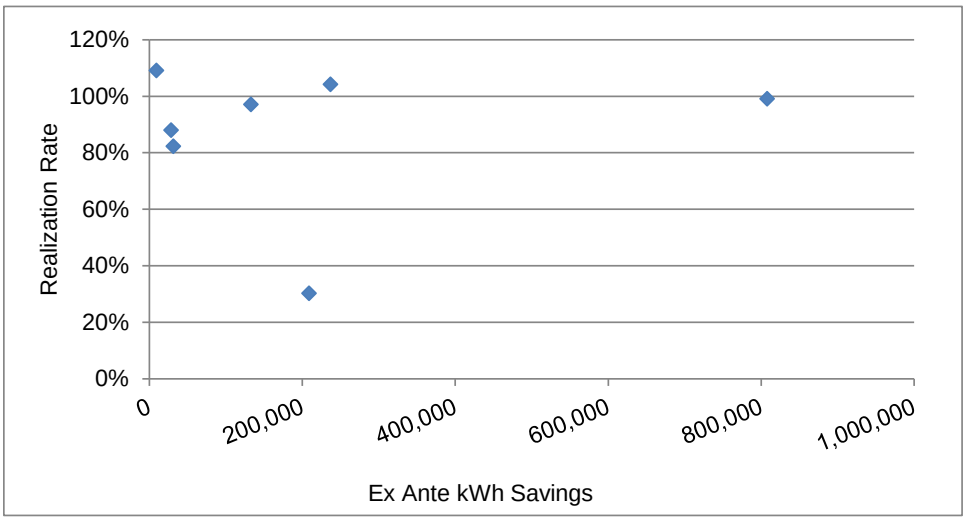
Lighting measures accounted for the entire New Construction Program M&V sample, as shown in Table 3-33.

Table 3-33 Ex Ante and Ex Post Annual kWh Savings for New Construction Program Sample Measures by End Use

End Use	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
Lighting	1,454,847	1,300,754	89%
Total	1,454,847	1,300,754	89%

New Construction Program gross kWh savings realization rates and gross ex ante kWh savings are plotted in Figure 3-7 for each sample project.

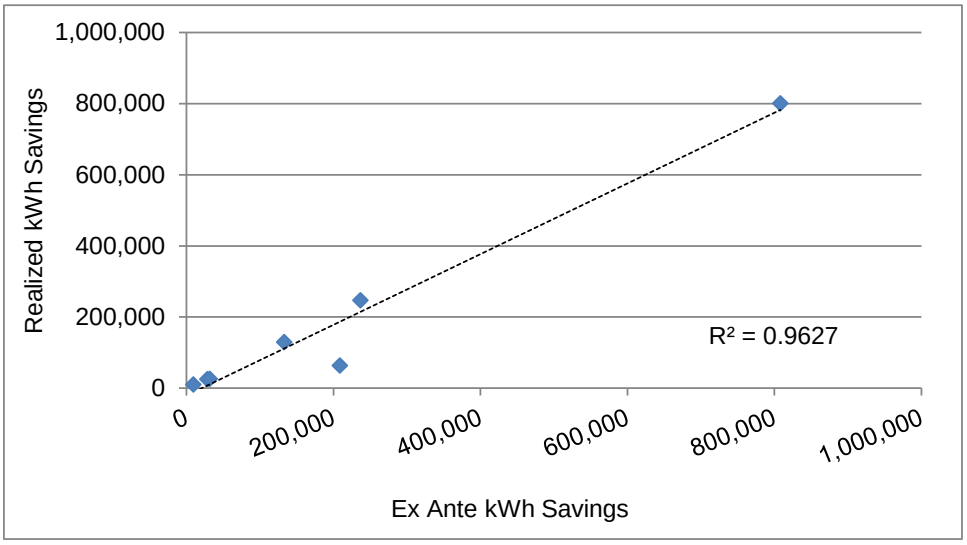
Figure 3-7 New Construction Program Sample Project Gross kWh Savings Realization Rate Versus Gross Ex Ante kWh Savings



There is limited data with which to assess whether or not the magnitude of project-level ex ante energy savings is a factor impacting the variability in gross realization rates across New Construction Program projects.

New Construction Program ex ante energy savings and ex post energy savings are plotted in Figure 3-8 for each sample project.

Figure 3-8 New Construction Program Sample Project Gross Ex Post kWh Savings versus Gross Ex Ante kWh Savings



For the sampled project with the lowest gross realization rate, the ex ante energy savings estimate was premised on the square footage of the entire facility rather than the square footage of the new addition to the facility. For this project, while the per square foot ex ante energy savings estimate was reasonable, factoring it by an erroneous square footage

value generated a very inaccurate project-level ex ante energy savings estimate. For other projects, most of the discrepancies between ex ante and ex post energy savings are associated with inaccurate ex ante estimates of lighting hours of operation, as well as omission of heating and cooling interactive factors (HCIF) from ex ante energy savings estimates. Most of the discrepancies between ex ante and ex post estimates of lighting hours of operation were associated with the ex ante estimates not accounting for holiday-specific lighting operation. Properly accounting for holiday lighting schedules may reduce ex ante savings estimation error on a forward-going basis. The program applied a HCIF of 1.0 for most of the program year, but is currently applying HCIFs for lighting projects implemented in conditioned spaces.

3.2.1.4. Retro-Commissioning Program Ex Post Gross kWh Savings

Only one Retro-Commissioning Program project was completed during PY2016, and this project was subject to M&V. The ex post gross kWh savings of the Retro-Commissioning Program during PY2016 are presented in Table 3-34. The ex post kWh savings of 23,727 kWh are equal to 21% of the ex ante kWh savings.

Table 3-34 Ex Ante and Ex Post Gross Annual kWh Savings for Retro-Commissioning Program

Ex Ante kWh Savings	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
113,004	23,727	21%

Compressed air measures accounted for the entire Retro-Commissioning Program sample, as shown in Table 3-35. As noted above, the single project that was completed during PY2016 was subject to M&V; for that reason, the program-level M&V sample represents a census.

Table 3-35 Ex Ante and Ex Post Annual kWh Savings for Retro-Commissioning Program Sample Measures by End Use

End Use	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
Air Comp	113,004	23,727	21%
Total	113,004	23,727	21%

The baseline associated with the ex ante energy savings analysis was not thoroughly substantiated by the applicant-submitted project documentation. On a forward-going basis, thorough review and substantiation of ex ante baselines may help mitigate the risk of Retro-Commissioning Program project gross realization rates greatly differing from 1.0.

3.2.1.5. SBDI Program Ex Post Gross kWh Savings

The gross kWh savings of the Small Business Direct Install during PY2016 are summarized by sampling stratum in Table 3-36. Overall, for SBDI non-HIMs, ex post gross kWh savings of 303,307 kWh are equal to 105% of the ex ante kWh savings. For SBDI HIMs:

- The gross kWh savings of the SBDI HIM 301132 (Lighting LED 7-32 watt lamp replacing halogen A 53-70 watt lamp) of 122,125 kWh are equal to 117% of the ex ante kWh savings.
- The gross kWh savings of the SBDI HIM 200909 (Lighting LED ≤14 watt lamps replacing halogen BR/R 45-66 watt lamp) of 292,527 kWh are equal to 124% of the ex ante kWh savings.

Table 3-36 Ex Ante and Ex Post Gross Annual kWh Savings for the SBDI Program by Sample Stratum

SBDI Program	*Stratum*	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
Non-HIM	1	219,225	207,023	94%
	2	224,924	230,545	102%
	3	438,583	511,771	117%
HIM 301132	1	194,634	247,335	127%
	2	263,505	307,607	117%
	3	138,970	150,424	108%
HIM 200909	1	235,121	273,066	116%
	2	546,876	690,560	126%
	3	103,703	143,520	138%
	Total	2,365,541	2,761,850	117%

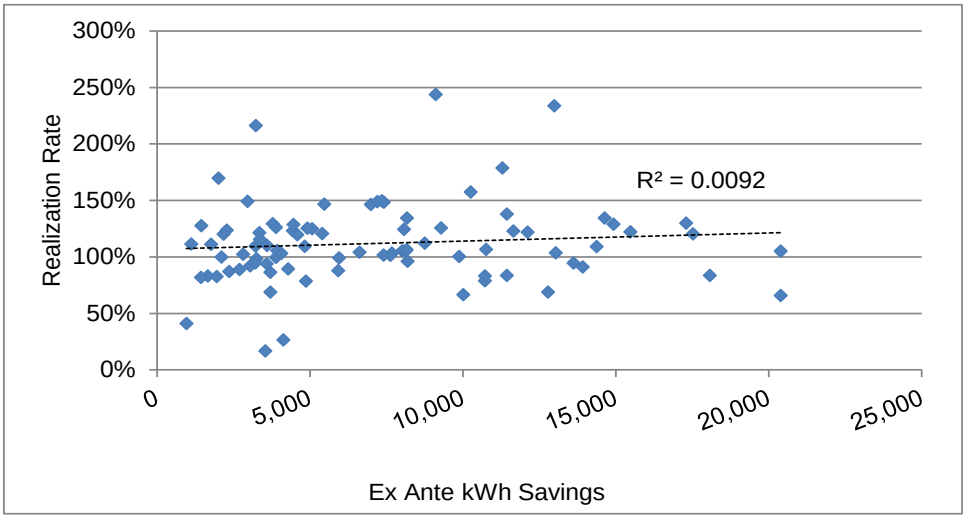
Table 3-37 presents information on ex ante and ex post kWh energy savings of sampled SBDI Program measures by end use.

Table 3-37 Ex Ante and Ex Post Annual kWh Savings for SBDI Program Sample Measures by End Use

End Use	*Ex Ante kWh Savings*	*Ex Post Gross kWh Savings*	*Gross kWh Savings Realization Rate*
Exterior Lighting	5,793	4,271	74%
Lighting	622,589	713,688	115%
Total	628,382	717,959	114%

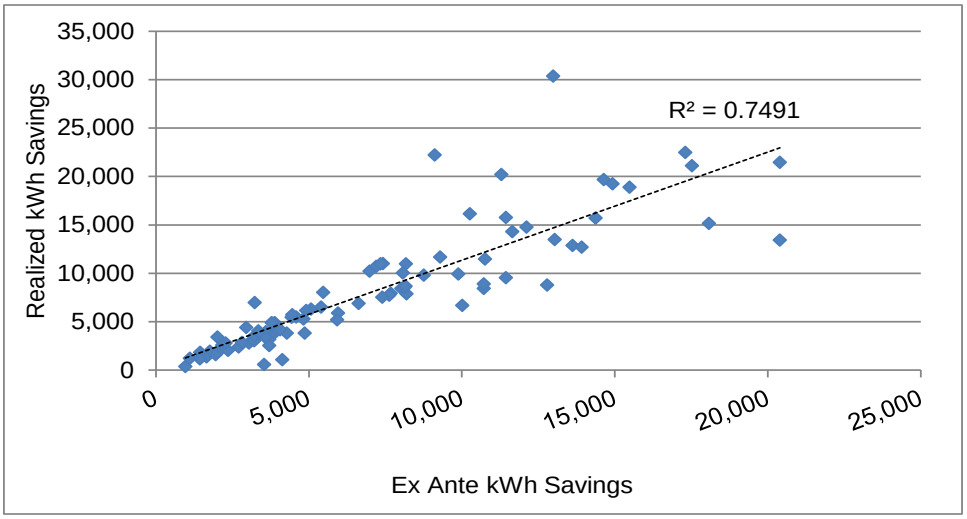
SBDI Program gross kWh savings realization rates and gross ex ante kWh savings are plotted in Figure 3-9 for each sample project. The magnitude of ex ante kWh savings does not appear to be a factor impacting the variability in project-level gross realization rates.

Figure 3-9 SBDI Program Sample Project Gross kWh Savings Realization Rate Versus Gross Ex Ante kWh Savings



SBDI Program ex ante energy savings and ex post energy savings are plotted in Figure 3-10 for each sample project.

Figure 3-10 SBDI Program Sample Project Gross Ex Post kWh Savings versus Gross Ex Ante kWh Savings

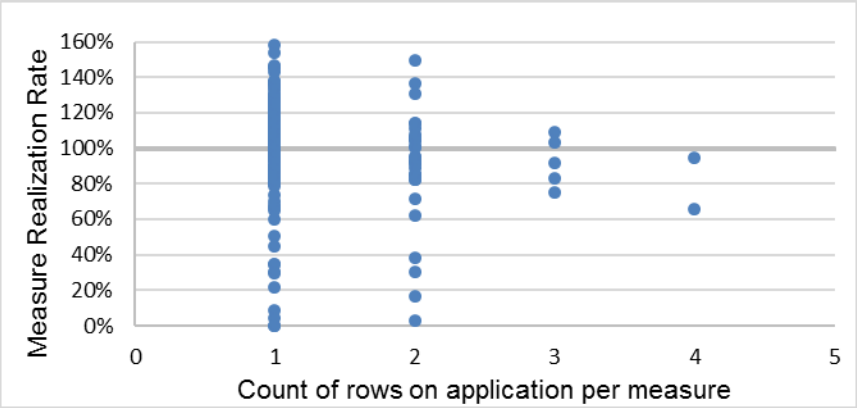


As described in section 3.2.1.1, in each program application, a single measure may be presented as a single row of data associated with a single baseline wattage, estimated annual hours of operation, etc.; alternatively, a single measure may be disaggregated and

presented as multiple rows of data associated with unique baseline wattages, estimated annual hours of operation, or etc.

Figure 3-11 graphically plots gross realization rates of individual measures within individual SBDI Program projects against the corresponding number of rows of application data associated with the individual project measure.

Figure 3-11 SBDI Program Sample Project Realization Rate versus Application Measure Detail



As described in section 3.2.1.1 for the Custom Program, applicant provision of more rows of data for a single project measure is associated with lower variability in measure-level, project-level gross realization rates.

3.2.1.6. Ex Post Gross kWh Savings Cross-Cutting Data

Ex post gross kWh savings of the BizSavers portfolio programs during PY2016 are shown by building type in Table 3-38.

Table 3-38 BizSavers Ex Post Gross kWh Savings by Building Type

Building Type	*Program Component*					
	Custom Incentives	*Standard Incentives*	*New Construction Incentives*	*RCx Incentives*	*SBDI Incentives*	*Total*
Grocery and Convenience	2%	3%	5%		1%	2%
Lodging	7%	12%			1%	8%
Warehouse	6%	4%	11%		2%	6%
Office	11%	12%	17%		12%	11%
Industrial	17%	11%	55%	100%	1%	15%
Education	6%	6%	2%		1%	6%
Entertainment/Re	14%	3%			2%	9%
Healthcare	8%	7%			8%	7%
Retail	9%	25%	1%		37%	16%
Faith-Based	1 %	3%			1%	2%
Gas Station	1%	<1%			1%	1%
IT/Data Center	1%	1%				1%
Food & Beverage Service	1%	3%			32%	3%
Parking Garage	4%	1%				2%
Government	12%	7%			1%	9%
Automotive Services	3%	2%	9%		1%	3%
Total	100%	100%	100%	100%	100%	100%

For those measures implemented during PY2016 that were characterized by the Ameren Missouri TRM, measure-level ex ante kWh energy savings varied from the kWh energy savings estimates found in the Ameren Missouri TRM. Table 3-39 presents information on kWh energy savings of the measures implemented under the BizSavers portfolio that are characterized by the Ameren Missouri TRM. Note that there is not always a one-to-one relationship between BizSavers program measure names and Ameren Missouri TRM measure numbers – measure names reflected in program tracking data may provide further detail than that associated with an individual measures in the Ameren Missouri TRM. In Table 3-39, measure-level detail is provided based on the Ameren Missouri TRM measure numbers, and not on the measure names found in program tracking data. For each Ameren Missouri TRM measure implemented under the BizSavers portfolio during PY2016, Table 3-39, presents ex ante kWh savings, gross ex post kWh savings, and kWh savings calculated based on the Ameren Missouri TRM. The ratio “Gross Ex Post kWh Savings / TRM kWh Savings” provides information on the accuracy of the measure-level kWh savings estimates found in the Ameren Missouri TRM.

The ex ante kWh savings tend to be more predictive than the TRM kWh savings values. This is related to accounting for applicant-provided data regarding lighting hours of operation in the calculation of ex ante kWh savings for lighting measures.

*Table 3-39 Sampled Measure BizSavers Ex Ante and Ex Post Gross kWh Savings for Ameren Missouri TRM Measures**

Measure Name	*TRM Measure Reference Number*	*End Use Category*	*Gross Ex Ante kWh Savings*	*Gross Ex Post kWh Savings*	*TRM kWh Savings*	*Gross Ex Post kWh Savings / TRM kWh Savings*	*Gross kWh Realization Rate*
LED Exit Sign - 3_0 W_Inc30 base	793	Lighting	8,243	8,948	7,610	118%	109%
ENERGY STAR Commercial Glass Door Freezers 30 to 50 ft^3	828	Refrigeration	3,869	5,515	3,869	143%	143%
LED (BAR/R) Reflector Lamp EISA Compliant	3007	Lighting	785,276	1,020,117	966,510	106%	130%
LED (PAR) Reflector Lamp	3008	Lighting	641,044	594,639	682,551	87%	93%
LED 12-20 Watt A-Line Lamp	3009	Lighting	340,154	391,449	382,565	102%	115%
LED 5-11 Watt A-Line Lamp	3011	Lighting	1,018,442	1,000,032	935,935	107%	98%
LED MR16 (12 Watt) Lamp	3012	Lighting	164,321	217,881	176,389	124%	133%
Occupancy Sensor (Dual Technology)	3016	Lighting	7,410	5,226	10,015	52%	71%
Linear Tube T8 4ft Efficient Lamp Upgrade - T12 Base	3019	Lighting	17,205	18,778	14,851	126%	109%

Measure Name	*TRM Measure Reference Number*	*End Use Category*	*Gross Ex Ante kWh Savings*	*Gross Ex Post kWh Savings*	*TRM kWh Savings*	*Gross Ex Post kWh Savings / TRM kWh Savings*	*Gross kWh Realization Rate*
Linear Tube T8 4ft High Efficient Lamp Upgrade - T12 Base	3021	Lighting	30,957	21,972	30,911	71%	71%
Linear Tube T8 4ft High Efficient Lamp Upgrade - T8 Base	3022	Lighting	67,511	60,158	76,241	79%	89%
Linear Tube LED 4ft Efficient Lamp Upgrade - 25W T8 Base	3023	Lighting	4,366	3,053	2,939	104%	70%
Linear Tube LED 4ft Efficient Lamp Upgrade - 28W T8 Base	3024	Lighting	89	2	43	5%	2%
Linear Tube LED 4ft Efficient Lamp Upgrade - 32W T8 Base	3025	Lighting	6,612,120	6,781,502	3,580,635	189%	103%
Linear Tube LED 4ft Efficient Lamp Upgrade - T12 Base	3026	Lighting	1,095,971	1,078,487	567,321	190%	98%

Measure Name	*TRM Measure Reference Number*	*End Use Category*	*Gross Ex Ante kWh Savings*	*Gross Ex Post kWh Savings*	*TRM kWh Savings*	*Gross Ex Post kWh Savings / TRM kWh Savings*	*Gross kWh Realization Rate*
Occ Sensor - Controlling Fixture GT 200 watts and LTEQ 500 watts	3077	Lighting	66,900	63,093	66,900	94%	94%
Occ Sensor (Single Tech) - Controlling Lighting Circuit GT 120 watts	3079	Lighting	72,680	35,105	72,680	48%	48%
Occ Sensor (Single Tech) - Controlling Lighting Circuit GT 50 and LTEQ 120 watts	3080	Lighting	9,750	9,044	9,750	93%	93%
LED 100 Watt Lamp (12 hrs/day)	3004-1	Lighting	109,271	118,929	107,207	111%	109%
LED 100 Watt Lamp (24 hrs/day)	3004-2	Lighting	37,318	40,858	22,181	184%	109%
LED 120 Watt Lamp (12 hrs/day)	3005-1	Lighting	2,461,789	2,798,208	2,793,360	100%	114%
LED 52 Watt Lamp (12 hrs/day)	3006-1	Lighting	253,486	252,109	196,626	128%	99%
Total			13,808,172	14,525,105	10,707,089	136%	105%

** Custom measures (associated with TRM measure 1169) and new construction measures (associated with TRM measure 3000) are not accounted for in this table, as there are no TRM kWh savings associated with such measures.*

3.2.2. Ex Post Gross Peak kW Savings

Table 3-40 shows the ex post gross peak kW reductions of the Custom, Standard, New Construction, Retro-Commissioning, and Small Business Direct Install Programs during PY2016. The ex post gross peak savings, calculated in accordance with the method outlined in section 3.1.5 on page 3-17, are 12,292 kW for the Custom Program, 5,865 kW

for the Standard Program, 297 kW for the New Construction Program, 3 kW for the Retro-Commissioning Program, and 522 kW for the Small Business Direct Install Program. No EMS Pilot Program projects were completed during the program year.

Table 3-40 Ex Ante and Ex Post Gross Peak kW Savings for BizSavers Programs

Program	*Ex Ante Peak kW Savings*	*Ex Post Gross Peak kW Savings*	*Gross kW Savings Realization Rate*
Custom	12,184.75	12,292.37	101%
Standard	5,596.33	5,865.21	105%
New Construction	347.02	296.89	86%
Retro-Commissioning	15.59	3.27	21%
SBDI	449.37	521.61	116%
EMS Pilot	-	-	-
Total	18,593.05	18,979.36	102%

Table 3-41 aggregates the same ex post gross kW in the above table, but by measure sampling groups.

Table 3-41 Ex Ante and Gross Ex Post Peak kW Savings for BizSavers Programs and Measure Sampling Group

Program	*Measure Sampling Group*	*Ex Ante Peak kW Savings*	*Ex Post Gross Peak kW Savings*	*Gross kW Savings Realization Rate*
Custom	Non HIM	12,184.75	12,292.37	101%
Standard	Non HIM	1,643.38	1,841.84	112%
	305402	1,707.91	1,741.29	102%
	305233	788.84	872.13	111%
	200102	586.28	530.47	90%
	201111	519.85	507.33	98%
	305401	350.07	372.15	106%
New Construction	Non HIM	347.02	296.89	86%
Retro-Commissioning	Non HIM	15.59	3.27	21%
SBDI	Non HIM	167.69	177.30	106%
	200909	168.25	210.32	118%
	301132	113.43	133.99	118%
EMS	-	-	-	-
Total		18,593.05	18,979.36	102%

Below, Table 3-42 through Table 3-46 present, for each program, the 2023-presistent gross kW savings by end-use category and equipment EUL. Table 3-47 presents the portfolio-level 2023-presistent kW savings by end-use category and equipment EUL. The

ex ante and ex post kW savings both use the same end use to peak demand factors, but the ex post reclassified the end use for sampled measures when the verified end use was not correct. The end uses in the tables with negative savings, had the savings reclassified to the correct end use. Examples of this include lighting installed in large retail store with an outdoor gardening area for which lighting operated on a dusk to dawn lighting schedule. Approximately, 0.75% of the ex post gross kWh savings were reclassified for the end use.

Table 3-42 Custom Program End-Use Category and 2023-Persistent kW Savings

End Use	*EUL*	*Ex Post Gross kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent Gross kW Savings*
Air Comp	15	249,199	0.0001379439	34.38
Building Shell	20	19,823	0.0004439830	8.80
Cooling	10	101,411	0.0009106840	92.35
Cooling	15	4,930,203	0.0009106840	4,489.86
Cooling	20	476,899	0.0009106840	434.31
Ext Lighting	10	3,802	0.0000056160	0.02
Ext Lighting	15	249,963	0.0000056160	1.40
HVAC	10	460,498	0.0004439830	204.45
HVAC	15	2,776,843	0.0004439830	1,232.87
Lighting	10	704,544	0.0001899635	133.84
Lighting	12	1,021,762	0.0001899635	194.10
Lighting	15	24,423,117	0.0001899635	4,639.50
Miscellaneous	15	4,524,585	0.0001379439	624.14
Miscellaneous	16	685	0.0001379439	0.09
Motors	15	1,250,744	0.0001379439	172.53
Process	15	73,494	0.0001379439	10.14
Refrigeration	15	144,340	0.0001357383	19.59
Total		41,411,911		12,292

Table 3-43 Standard Program End-Use Category and 2023-Persistent kW Savings

End Use Category	*EUL*	*Ex Post Gross kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent Gross kW Savings*
Cooking	12	35,881	0.0001998949	7.17
Ext Lighting	9	10,040	0.0000056160	0.06
Ext Lighting	12	11,786	0.0000056160	0.07
Lighting	8	38,100	0.0001899635	7.24
Lighting	9	9,049,162	0.0001899635	1,719.01
Lighting	10	422,654	0.0001899635	80.29
Lighting	11	208,872	0.0001899635	39.68
Lighting	12	6,199,622	0.0001899635	1,177.70
Lighting	16	73,790	0.0001899635	14.02
Lighting	17	14,178,764	0.0001899635	2,693.45
Miscellaneous	9	12,141	0.0001379439	1.68
Miscellaneous	12	442,551	0.0001379439	61.05
Miscellaneous	17	52,135	0.0001379439	7.19
Refrigeration	12	383,085	0.0001357383	52.00
Water Heating	15	25,512	0.0001811545	4.62
Total		31,144,093		5,865

Table 3-44 New Construction Program End-Use Category and 2023-Persistent kW Savings

End Use	*EUL*	*Ex Post Gross kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent Gross kW Savings*
Lighting	10	20,173	0.0001899635	3.83
Lighting	15	1,518,541	0.0001899635	288.47
Refrigeration	12	33,816	0.0001357383	4.59
Total		1,572,530		297

Table 3-45 Retro-Commissioning Program End-Use Category and 2023-Persistent kW Savings

End Use	*EUL*	*Ex Post Gross kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent Gross kW Savings*
Air Comp	10	23,727	0.0001379439	3.27
Total		23,727		3.27

Table 3-46 SBDI Program End-Use Category and 2023-Persistent kW Savings

End Use	*EUL*	*Ex Post Gross kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent Gross kW Savings*
Ext Lighting	17	16,502	0.0000056160	0.09
Lighting	9	2,400,457	0.0001899635	456.00
Lighting	11	21	0.0001899635	0.00
Lighting	12	29,412	0.0001899635	5.59
Lighting	16	975	0.0001899635	0.19
Lighting	17	314,483	0.0001899635	59.74
Total		2,761,850		522

Table 3-47 Portfolio End-Use Category and 2023-Persistent kW Savings

End Use	*EUL*	*Ex Post Gross kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent Gross kW Savings*
Air Comp	10	23,727	0.000137944	3.27
Air Comp	15	249,199	0.000137944	34.38
Building Shell	20	19,823	0.000443983	8.80
Cooking	12	35,881	0.000199895	7.17
Cooling	10	101,411	0.000910684	92.35
Cooling	15	4,930,203	0.000910684	4,489.86
Cooling	20	476,899	0.000910684	434.30
Ext Lighting	9	10,040	0.000005616	0.06
Ext Lighting	10	3,802	0.000005616	0.02
Ext Lighting	12	11,786	0.000005616	0.07
Ext Lighting	15	249,963	0.000005616	1.40
Ext Lighting	17	16,502	0.000005616	0.09
HVAC	10	460,498	0.000443983	204.45
HVAC	15	2,776,843	0.000443983	1,232.87

End Use	*EUL*	*Ex Post Gross kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent Gross kW Savings*
Lighting	8	38,100	0.000189964	7.24
Lighting	9	11,449,619	0.000189964	2,175.01
Lighting	10	1,147,371	0.000189964	217.96
Lighting	11	208,893	0.000189964	39.68
Lighting	12	7,250,796	0.000189964	1,377.39
Lighting	15	25,941,659	0.000189964	4,927.97
Lighting	16	74,765	0.000189964	14.20
Lighting	17	14,493,247	0.000189964	2,753.19
Miscellaneous	9	12,141	0.000137944	1.67
Miscellaneous	12	442,551	0.000137944	61.05
Miscellaneous	15	4,524,585	0.000137944	624.14
Miscellaneous	16	685	0.000137944	0.09
Miscellaneous	17	52,135	0.000137944	7.19
Motors	15	1,250,744	0.000137944	172.53
Process	15	73,494	0.000137944	10.14
Refrigeration	12	416,901	0.000135738	56.59
Refrigeration	15	144,340	0.000135738	19.59
Water Heating	15	25,512	0.000181155	4.62
Total		76,914,112		18,979

4. Estimation of Net Ex Post Savings

This chapter reports the results from estimating the net impacts of the program during program year 2016 (PY2016), where net ex post savings represent the portion of ex post gross savings by program participants that can be attributed to the effects of the program. Net savings equal gross savings, *minus* free ridership, *plus* participant spillovers, and non-participant spillovers.

4.1. Procedures Used to Estimate Net Savings

The procedures used to estimate net savings for the BizSavers programs are the same. The savings induced by the programs are the net savings that are attributable to the programs.

4.1.1. Procedures Used to Estimate Free Ridership

Free riders are those program participants that would have installed the same energy efficiency measures without the program incentives. Net savings may be less than gross savings because of free ridership impacts, which arise to the extent that participants in a program would have adopted energy efficiency measures and achieved the observed energy changes even in the absence of the program. Conversely, net savings may be greater than gross savings due to energy savings spillovers or market transformation impacts attributable to the program. Participants or non-participants may implement energy efficiency measures due to the influence of the program, without receiving program incentives for implemented measures.

Survey response data collected from a sample of program participants was used to support the net-to-gross analysis. A copy of the survey instrument is presented in Volume II of this report. Based on review of this information, the preponderance of evidence regarding free ridership inclinations was used to attribute a customer's savings to free ridership.

Several criteria determine which portion of a participant's savings should be attributed to free ridership. The first criterion comes from the response to the question: "Would you have been financially able to install the equipment or measures without the financial incentive from the BizSavers Program?" If a customer answered "No" to this question, a free ridership score of 0 was assigned to the project. That is, if a customer required financial assistance from the program to undertake a project, then that customer was not deemed a free rider.

For decision makers who indicated that they could undertake energy efficiency projects without financial assistance from the program, three additional factors determined what percentage of savings is attributable to free ridership. The three factors are:

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

For each of these factors, rules were applied to develop binary variables indicating whether a participant showed free ridership behavior. Responses to the decision-maker questionnaire helped to develop the rules for the free ridership indicator variables

The first required step was to determine if a participant stated that his or her intention was to install an energy efficiency measure without the help of the program incentive. The survey respondents' answers to a combination of questions, then a set of rules determined whether a participant's behavior indicated likely free ridership. Two binary variables were constructed to account for customer plans and intentions: one, based on a more restrictive set of criteria that may describe a high likelihood of free ridership, and a second, based on a less restrictive set of criteria that may describe a relatively lower likelihood of free ridership.

The first, more restrictive criteria (Definition 1) indicating customer plans and intentions that likely signify free ridership are as follows:

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

The second, less restrictive criteria (Definition 2) indicating customer plans and intentions that likely signify free ridership are as follows:

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

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

This criterion indicates that the program’s influence may lower the likelihood of free ridership when either of the following conditions are true:

- The respondent answered “very important” to the following question: “How important was previous experience with the BizSavers Program in making your decision to install [Equipment/Measure]?
- The respondent answered “yes” to the following question: “Did a representative of the BizSavers Program recommend that you install [Equipment/Measure]?”

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

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

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

The four sets of rules just described were used to construct four different indicator variables that address free ridership behavior. For each customer, a free ridership value was assigned based on the combination of variables. With the four indicator variables, there were 11 applicable combinations for assigning free ridership scores for each respondent, depending on the combination of answers to the questions creating the indicator variables. Table 4-1 shows these values. A free ridership score of 100% indicates total free ridership, and a free ridership score of 0% indicates no free ridership.

ADM recognizes that there are potential survey respondent biases, including social desirability bias, which may impact self-report data. The free ridership assessment methodology employed by ADM is constructed with the intention of mitigating those impacts by asking a *series* of questions in assessing the likelihood of free ridership. Additionally, decision maker responses and project documentation were reviewed to assess the reasonableness of free ridership estimates developed using the methodology described above, and to ensure that reported free ridership estimates account for available data regarding the decision-making process.

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

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

4.1.2. Procedures Used to Estimate Participant Spillover

ADM used two data sources for calculation of program participant spillover; Lockheed Martin measure-level spillover report and participant survey data. The measure-level spillover report includes all measures that were flagged as an “Installed Spillover Measure.” Generally, the non-incented measures were small components of a broader project comprised of incentivized measures. The spillover ex ante savings estimates were reviewed by ADM, and determined to be reasonable and aligned with ex ante savings estimates for incentivized measures. The savings were calculated as equal to the ex ante savings of the non-incented measure, factored by 1) the project-specific gross realization and 2) the project-specific non-free ridership rate [(Ex Post Gross kWh - Free Ridership Ex Post kWh) / Ex Post Gross kWh].

The second source of participant spillover was additional measures installed without incentives identified by decision makers that completed the online participant survey. Survey respondents provided information on the installation of additional equipment implemented without a program incentive, including information on the program’s influence on the decision to the install the additional equipment, and information on the measure specifications used to estimate the energy saving impacts of the equipment.

Specifically, respondents were asked:

- Since participating in the BizSavers Program has your organization installed any ADDITIONAL energy efficiency measures at this facility or at your other facilities

within Ameren Missouri's service territory that did NOT receive incentives through Ameren Missouri's BizSavers Program?

Customers who indicated "yes" were identified as potential spillover candidates. Potential spillover candidates were also asked to identify the type of additional equipment installed and provide information about the equipment for use in estimating energy savings. For each type of equipment that respondents reported installing, respondents were asked the following two questions to assess if any savings resulting from the additional equipment installed were attributable to the program:

- [SP1] How important was your experience with the BizSavers Program in your decision to install this [EQUIPMENT TYPE], using a scale of 0 to 10, where 0 is not at all important and 10 is extremely important?"
- [SP2] If you had not participated in the BizSavers Program, how likely is it that your organization would still have installed this [EQUIPMENT TYPE], using a 0 to 10 scale, where 0 means you definitely WOULD NOT have installed this equipment and 10 means you definitely WOULD have installed this equipment?

A spillover score was developed based on these responses as follows:

Spillover Score = Average(SP1, 10-SP2)

The energy savings of equipment installations associated with a spillover score of greater than five were attributed to the program.

The energy savings of the spillover measures were estimated using the deemed values from the Ameren Missouri TRM.

In total, spillover impacts were calculated for nine survey respondents. Survey respondent net savings were adjusted based on the reported spillover savings. To extrapolate spillover savings to non-survey respondents, a spillover ratio was calculated as follows:

Spillover Ratio = Sum of Sample Reported Spillover/ Sum of Sample Ex Post Gross Savings

4.1.3. Procedures Used to Estimate Non-Participant Spillover

The evaluation team assessed PY2016 non-participant spillover energy savings through data collected via trade ally surveys.

A detailed description of the methodology used for the analysis is presented in Volume II of this report. The evaluation team's objective was to take a conservative approach to estimate non-participant spillover energy savings that occurred outside of the program but were influenced through upstream program partners, program trade allies. The evaluation team deemed it appropriate to focus only on lighting measure groups for which kWh energy savings could be reliably estimated.

4.2. Results of Net Savings Estimation

The procedures described in the preceding section were used to estimate net-to-gross ratios for the BizSavers Program for program year 2016 (PY2016), which occurred during March 2016 - February 2017.

4.2.1. Results of Estimation of Free Ridership

The data used to assign free ridership scores were collected through a customer survey of 198 customer decision makers for projects completed during PY2016. Individual free ridership rates were estimated for all four programs in the table below.

For purposes of adjusting gross savings to account for free ridership, note that gross savings of projects associated with decision makers that were surveyed by ADM are adjusted by that decision makers specific free-ridership score (Gross Savings * (1 – Free Ridership Score)). Gross savings of projects associated with decision makers that were *not* surveyed by ADM are adjusted by the program-level free ridership score. For the programs for which free ridership research was conducted, Table 4-2 below provides a summary of the program-level free ridership scores stated above.

Table 4-2 Percent of kWh Savings Associated with Free-Ridership

Program Component	*Percent of kWh Savings Associated with Free Ridership*
Custom	7.5%
Standard	6.4%
New Construction	13.4%
SBDI	4.9%

4.2.2. Results of Estimation of Spillover Energy Savings

PY2016 spillover energy impacts were assessed from program participants and non-participants. Table 4-3 summarizes the results.

Table 4-3 Summary of Spillover kWh Energy Savings

Program	*Spillover Total*	*Participant Spillover (Tracked)*	*Participant Spillover (Survey)*	*Non-Participant Spillover*
Custom	1,122,605	996,508	125,826	270
Standard	2,560,338	69,526	538,647	1,952,164
New Construction	54,068	54,068		-
Retro-Commissioning	-	-		-
SBDI	39,581	-		39,581
EMS	-	-		-
Total	3,776,592	1,120,102	664,473	1,992,016

4.3. Net Ex Post kWh Savings

Table 4-4 summarizes the program-level net ex post kWh savings. During this period, net ex post energy savings of the Custom Program totaled 39,410,096 kWh and net ex post savings of the Standard Program totaled 31,712,056 kWh. The Custom Program estimated net-to-gross ratio is 95% and 102% for the Standard Program.

The net ex post energy savings of the New Construction Program totaled 1,415,155 kWh and the net ex post savings of the Retro-Commissioning Program totaled 23,727 kWh. The estimated New Construction and Retro-Commissioning Programs net-to-gross ratios are 90% and 100%, respectively.

The ex post net savings of the Small Business Direct Install Program totaled 2,667,056 kWh and the net-to-gross ratio is 97%. There were neither gross nor net savings for EMS Pilot Program.

Table 4-4 Summary of Free Ridership, Spillover, and Net kWh Savings by Program

Program	*Estimated Free Ridership*	*Spillover*	*Ex Post Gross kWh Savings*	*Net Ex Post kWh Savings*	*Estimated Net-to-Gross Ratio*
Custom	3,124,420	1,122,335	41,411,911	39,410,096	95%
Standard	1,992,375	2,560,338	31,144,093	31,712,056	102%
New Construction	211,443	54,068	1,572,530	1,415,155	90%
Retro-Commissioning	-	-	23,727	23,727	100%
SBDI	134,376	39,581-	2,761,850	2,667,056	97%
EMS Pilot	-	-	-	-	
Total	5,462,615	3,776,592	76,914,112	75,228,089	98%

Table 4-5 below provides the free-ridership and spillover values as a percent of ex post net kWh savings. At the portfolio level, kWh savings associated with free ridership represents 7.3% of total ex post net kWh savings. Additionally, at the portfolio level, spillover kWh savings represents 5.0% of total BizSavers ex post net kWh savings.

Table 4-5 Summary of Free Ridership and Spillover as Percent of Ex Post Gross kWh

Program Component	*Net Ex Post kWh Savings*	*Estimated Free Ridership*	*FR as a % of Ex Post Net kWh*	*Spillovers*	*SO as a % of Ex Post Net kWh*
Custom	39,410,096	3,124,420	8%	1,122,335	3%
Standard	31,712,056	1,992,375	6%	2,560,338	8%
New Construction	1,415,155	211,443	15%	54,068	4%
Retro-Commissioning	23,727	-	0%	-	0%
SBDI	2,667,056	134,376	5%	39,581	2%
EMS	-	-	-	-	-
Total	75,228,089	5,462,615	7%	3,776,592	5%

ADM performed an analysis to assess the impact of removing the financial ability component of the free ridership scoring for respondents that indicated that they “probably would have” or “definitely would have” implemented the program project if the financial incentive was not available. The incremental difference in realized net energy savings associated with the administration of the sensitivity test is shown Table 4-6. As shown, this modification would result in a very small incremental impact on realized net energy savings.

Table 4-6 Financial Ability Component of Sensitivity Analysis

Program Component	*Realized Net kWh Savings*	*Sensitivity Analysis Realized Net kWh Savings*	*Difference*
Custom	39,410,096	39,410,096	0.0%
Standard	31,712,056	31,638,812	-0.2%
New Construction	1,415,155	1,415,155	0.0%
Retro-Commissioning	23,727	23,727	0.0%
SBDI	2,667,056	2,667,056	0.0%
EMS	-	-	0.0%
Total	75,228,089	75,154,844	-0.1%

Table 4-7 summarizes the number of respondents who did not have the financial ability to pay for the efficiency improvements and their assessed likelihood of completing the project without the program incentives. As shown, most respondents who reported that they did not have the financial ability to implement the program projects also stated that they “probably would not have” or “definitely would not have" implemented the projects without a program incentive.

Table 4-7 Summary of Responses for Respondents without the Financial Ability to Implement Efficiency Projects

Financial Ability	*Likelihood of Completing Project without Program Incentive*	*Count of Respondents*	*Gross kWh Savings Associated with Responses*
N	Definitely would have	1	30,634
N	Probably would have	8	100,832
N	Probably would not have	64	3,341,449
N	Definitely would not have	11	716,986

The following tables provide program-level net kWh energy savings summarized by end use category. The net kWh savings of the Custom, Standard, New Construction, Retro-Commissioning, and Small Business Direct Install Programs are presented in Table 4-8, Table 4-9, Table 4-10, Table 4-11, and Table 4-12, respectively.

Table 4-8 Custom Program Net kWh Savings by End Use Category

End Use Category	*Ex Post Net kWh Savings*	*Percent of Total Net Ex Post kWh Savings*
Air Comp	222,567	1%
Building Shell	18,388	<1%
Cooling	5,142,839	13%
Ext Lighting	705,961	2%
HVAC	2,916,242	7%
Lighting	25,208,108	64%
Miscellaneous	3,806,671	10%
Motors	1,187,260	3%
Process	68,172	<1%
Refrigeration	133,888	<1%
Total	39,410,096	100%

Table 4-9 Standard Program Net kWh Savings by End Use Category

End Use Category	*Ex Post Net kWh Savings*	*Percent of Total Net Ex Post kWh Savings*
Cooking	34,206	<1%
Ext Lighting	34,696	<1%
Lighting	30,788,694	97%
Miscellaneous	497,276	2%
Refrigeration	332,862	1%
Water Heating	24,321	1%
Total	31,712,056	100%

Table 4-10 New Construction Program Net kWh Savings by End Use Category

End Use Category	*Ex Post Net kWh Savings*	*Percent of Total Net Ex Post kWh Savings*
Lighting	1,331,818	94%
Refrigeration	83,337	6%
Total	1,415,155	100%

Table 4-11 Retro-Commissioning Program Net kWh Savings by End Use Category

End Use Category	*Ex Post Net kWh Savings*	*Percent of Total Net Ex Post kWh Savings*
Air Comp	23,727	100%
Total	23,727	100%

Table 4-12 SBDI Program Net kWh Savings by End Use Category

End Use Category	*Ex Post Net kWh Savings*	*Percent of Total Net Ex Post kWh Savings*
Ext Lighting	4,439	<1%
Lighting	2,662,617	100%
Total	2,667,056	100%

4.4. Net Ex Post Peak kW Savings

The PY2016 net ex post peak kW savings are summarized by program in Table 4-13. The net ex post peak savings for the Custom Program are 11,486.30 kW, while the net ex post peak savings for the Standard Program are 5,970.72 kW. The net ex post peak savings for the New Construction Program are 264.31 kW, while the net ex post peak savings for the Retro-Commissioning Program are 3.27 kW. For the Small Business Direct Install Program, the net ex post peak savings are 503.57 kW.

Table 4-13 Summary of Free Ridership, Spillovers, and Net Peak kW Impacts by Program

Program	*Estimated Free Ridership kW*	*Spillovers kW*	*Ex Post Gross Peak kW Savings*	*Net Ex Post Peak kW Savings*
Custom	959.13	153.05	12,292.37	11,486.30
Standard	373.77	479.28	5,865.21	5,970.72
New Construction	39.92	7.34	296.89	264.31
Retro-Commissioning	-	-	3.27	3.27
SBDI	25.49	7.45	521.61	503.57
EMS	-	-	-	-
Total	1,398.30	647.12	18,979.36	18,228.17

Below, Table 4-14 through Table 4-18 present, for each program, the 2023-presistent gross kW savings by end-use category and equipment EUL.

Table *4-19* presents the portfolio-level 2023-presistent kW savings by end-use category and equipment EUL.

Table 4-14 Custom Program End-Use Category and 2023-Persistent Net kW Savings

End Use Category	*EUL*	*Net kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent kW Savings*
Air Comp	15	222,567	0.0001379439	30.70
Building Shell	20	18,388	0.0004439830	8.16
Cooling	10	94,068	0.0009106840	85.67
Cooling	15	4,581,738	0.0009106840	4,172.52
Cooling	20	467,033	0.0009106840	425.32
Ext Lighting	10	6,730	0.0000056160	0.04
Ext Lighting	15	790,577	0.0000056160	4.44
HVAC	10	441,162	0.0004439830	195.87
HVAC	15	2,475,080	0.0004439830	1,098.89
Lighting	10	677,869	0.0001899635	128.77
Lighting	12	973,557	0.0001899635	184.94
Lighting	15	23,022,517	0.0001899635	4,373.44
Miscellaneous	15	4,248,585	0.0001379439	586.07
Miscellaneous	16	905	0.0001379439	0.13
Motors	15	1,187,260	0.0001379439	163.78
Process	15	68,172	0.0001379439	9.40
Refrigeration	15	133,888	0.0001357383	18.17
Total		39,410,096		11,486

Table 4-15 Standard Program End-Use Category and 2023-Persistent Net kW Savings

End Use Category	*EUL*	*Net kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent kW Savings*
Cooking	12	34,206	0.0001998949	6.84
Ext Lighting	9	31,936	0.0000056160	0.18
Ext Lighting	12	2,760	0.0000056160	0.02
Ext Lighting	15	11,786	0.0000056160	0.07
Lighting	8	36,322	0.0001899635	6.90
Lighting	9	8,674,036	0.0001899635	1,647.75
Lighting	10	409,280	0.0001899635	77.75
Lighting	11	190,042	0.0001899635	36.10
Lighting	12	6,120,628	0.0001899635	1,162.70
Lighting	15	(31,949)	0.0001899635	(6.07)
Lighting	16	99,334	0.0001899635	18.87
Lighting	17	15,259,052	0.0001899635	2,898.66
Miscellaneous	9	14,701	0.0001379439	2.03
Miscellaneous	12	418,175	0.0001379439	57.69
Miscellaneous	15	20,163	0.0001379439	2.78
Miscellaneous	17	64,400	0.0001379439	8.88
Refrigeration	12	332,862	0.0001357383	45.18
Water Heating	15	24,321	0.0001811545	4.41
Total		31,712,056		5,971

Table 4-16 New Construction Program End-Use Category and 2023-Persistent Net kW Savings

End Use Category	*EUL*	*Net kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent kW Savings*
Lighting	10	17,461	0.0001899635	3.32
Lighting	15	1,314,357	0.0001899635	249.68
Refrigeration	12	83,337	0.0001357383	11.31
Total		1,415,155		264

Table 4-17 Retro-Commissioning Program End-Use Category and 2023-Persistent kW Savings

End Use Category	*EUL*	*Net kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent kW Savings*
Air Comp	10	23,727	0.0001379439	3.27
Total		23,727		3

Table 4-18 SBDI Program End-Use Category and 2023-Persistent Net kW Savings

End Use Category	*EUL*	*Net kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent kW Savings*
Ext Lighting	15	12,231	0.0000056160	0.07
Ext Lighting	17	4,439	0.0000056160	0.03
Lighting	9	2,290,585	0.0001899635	435.13
Lighting	11	21	0.0001899635	0.00
Lighting	12	28,706	0.0001899635	5.45
Lighting	15	(12,231)	0.0001899635	(2.32)
Lighting	16	1,312	0.0001899635	0.25
Lighting	17	341,993	0.0001899635	64.97
Total		2,667,056		504

Table 4-19 *Portfolio End-Use Category and 2023-Persistent Net kW Savings*

End Use Category	*EUL*	*Net kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent kW Savings*
Air Comp	10	23,727	0.0001379439	3.27
Air Comp	15	222,567	0.0001379439	30.70
Building Shell	20	18,388	0.0004439830	8.16
Cooking	12	34,206	0.0001998949	6.84
Cooling	10	94,068	0.0009106840	85.67
Cooling	15	4,581,738	0.0009106840	4,172.52
Cooling	20	467,033	0.0009106840	425.32
Ext Lighting	9	31,936	0.0000056160	0.18
Ext Lighting	10	6,730	0.0000056160	0.04
Ext Lighting	12	14,546	0.0000056160	0.08
Ext Lighting	15	790,577	0.0000056160	4.44
Ext Lighting	17	16,670	0.0000056160	0.09
HVAC	10	441,162	0.0004439830	195.87
HVAC	15	2,475,080	0.0004439830	1,098.89
Lighting	8	36,322	0.0001899635	6.90
Lighting	9	10,964,620	0.0001899635	2,082.88
Lighting	10	1,104,610	0.0001899635	209.84
Lighting	11	190,063	0.0001899635	36.10
Lighting	12	7,090,942	0.0001899635	1,347.02
Lighting	15	24,336,875	0.0001899635	4,623.12
Lighting	16	100,646	0.0001899635	19.12
Lighting	17	15,588,813	0.0001899635	2,961.31
Miscellaneous	9	14,701	0.0001379439	2.03
Miscellaneous	12	438,339	0.0001379439	60.47

End Use Category	*EUL*	*Net kWh Savings*	*End-Use Category Energy to Coincident Peak Demand Factor*	*2023-Persistent kW Savings*
Miscellaneous	15	4,248,585	0.0001379439	586.07
Miscellaneous	16	905	0.0001379439	0.12
Miscellaneous	17	64,400	0.0001379439	8.88
Motors	15	1,187,260	0.0001379439	163.78
Process	15	68,172	0.0001379439	9.40
Refrigeration	12	416,199	0.0001357383	56.49
Refrigeration	15	133,888	0.0001357383	18.17
Water Heating	15	24,321	0.0001811545	4.41
Total		75,228,089		18,228

5. Process Evaluation

This chapter presents the results of the program year 2016 (PY2016) process evaluation of the Ameren Missouri BizSavers Programs. The purposes of this process evaluation are to assess the effectiveness of Ameren Missouri's 2016-2018 BizSavers Programs in delivering appropriate energy efficiency technologies to the business sector served by Ameren Missouri and to identify ways to improve the BizSavers Programs and inform future program design. The evaluation has been guided by five regulatory research questions specified in 4 CSR 240-22.070(8): to identify the primary market imperfections; to investigate whether the target market segment is appropriately defined, program measures reflect the target market's needs and available technologies, and communication and delivery channels and mechanisms are appropriate; and to investigate whether there are better ways to address market imperfections to increase adoption of program measures.

This evaluation addressed topics of importance to the BizSavers programs in general, such as program communication, customer decision making, and trade allies' and customers' program experience. In addition, the evaluation investigated several specific areas of particular interest:

- The suspension of the program in early 2016.
- Increased emphasis on kW as opposed to kWh savings in determination of program offering and incentive levels.
- Awareness of and interest in the new SBDI Program and EMS pilot program.

The remainder of this chapter is organized into six main sections. Section 5-1 presents a summary of evaluation data sources and high-level summaries of process findings. The next two sections, 5.2 and 5.3 provide details of methods and cross-cutting findings from program staff interviews and analyses of the customer and program databases. Section 5.4 covers methods and findings specific to the continuing BizSavers programs, and Sections 5.5 and 5.6 present methods and findings regarding the new EMS pilot and the new SBDI Program.

5.1. Summary of Evaluation Sources and Findings

The evaluation team collected or analyzed both qualitative and quantitative data to understand program process and outcomes. As summarized in Table 5-1 the team interviewed or surveyed eight staff members of Ameren Missouri and its implementation contractor, Lockheed Martin; more than 250 program participants and near-participants; 30 trade allies, including 10 that serve the new SBDI Program; 93 nonparticipant customers; and 47 attendees of program outreach and education events. The team also reviewed program documentation to gain a full understanding of plans (e.g., marketing

plan) and processes and analyzed the program database to characterize the population of program participants and review data quality. High-level findings follow.

Table 5-1 Evaluation Data Collection Activities

*Data Source**	*Method*	*Dates*	*Key Research Topics*	*Analysis Type*
Program staff (8): Ameren Missouri (2) Lockheed Martin (6)	Telephone in-depth interview	December 2016	Program management; communication; current and new offerings; goals and progress; trade all relations; marketing and outreach; tracking and reporting; quality assurance	Qualitative
Program documentation	Document review	July 2016 to April 2017	Program function; tracking and reporting; quality control	Qualitative
Database analysis	Database review	January to April 2017	Number of projects; project type and details; data quality	Quantitative
Participants, Standard and Custom Programs (240)	Online survey	October 2016 to March 2017	Program awareness, decision-making, equipment preferences; experience and satisfaction	Quantitative
Participants, New Construction Program (6)	Telephone interview	February 2017	Program experiences; installed equipment; satisfaction with program	Qualitative
Participants, SBDI Program (10)	Telephone interview	February 2017	Reasons for participating; energy-related decision making and practices; program experience and satisfaction	Quantitative and Qualitative
Near-participants, Standard and Custom Programs (10)	Telephone interview	February to March 2017	Program awareness; reason for program withdrawal; other energy efficiency activities; satisfaction with program	Qualitative
Trade allies, all programs (20)	Telephone interview	February 2017	Program changes; awareness of and interest in new programs; effect of the suspension of the BizSavers Program; and reasons for participation	Quantitative and Qualitative
Service providers, small business direct install program (10)	Telephone interview	February 2017	Program awareness and reasons for enrolling; program rules and processes; and effect of the suspension of the BizSavers Program	Qualitative
Nonparticipant customers (93)	Telephone survey	January to February 2017	Program awareness, interest, and barriers to participating; equipment decisions	Quantitative and Qualitative
Event attendees (47)	Online survey	July and September 2016	Event satisfaction; experience with training; Intention to work with *BizSavers*; firmographics	Quantitative and Qualitative

5.1.1. Program Staff Feedback

Both Ameren Missouri and Lockheed Martin have experience some organizational changes since the previous program year. Ameren Missouri named a new Program

Manager, who had several years of experience with the BizSavers Program, and Lockheed Martin reorganized existing staff and added some new staff.

Contacts reported good continuing program communication, including effective use of a new SharePoint site, and good communication and coordination between the program and Ameren Missouri account staff.

Staff reported that marketing and outreach activities closely followed the marketing plan and were going well. Program marketing efforts were focused on informing the general market about program offerings, customer success stories, and easy ways to save. Program staff reported they were moving away from the development and distribution of printed case studies and fact sheets and toward greater use of online distribution of program information.

The program continues to aggregate accounts with common decision-makers—such as business chains and franchises, school districts, and airports—into customer “towers” to facilitate outreach. At the time of the interviews, Lockheed Martin staff reported having identified close to 900 towers, representing approximately 175,000 individual accounts.

The program had done little segment-specific marketing during PY2016, but planned efforts to identify any underserved segments for which targeted marketing could be developed. Contacts reported two primary marketing challenges: 1) the Ameren Missouri marketing staff structure can impede timely response to program needs; and 2) concern about the market’s ability to grasp the change in the incentive structure.

The continuing Standard, Custom, New Construction, and Retro-Commissioning Programs are progressing well, but staff admitted that the application process for custom projects is more complicated, with a multiple end-use-based incentive structure. Staff noted that the SBDI Program had received fewer applications than expected and the EMS pilot had gotten off to a slow start.

The program re-enrolls trade allies at the start of each program cycle. In PY2016, the start of a new cycle, the program focused on enrolling the trade allies who were most active in the previous program cycle. Lockheed Martin developed a new trade ally website portal to provide real-time project information and continues to send an electronic trade ally newsletter and offer co-branding.

Key reported changes in incented measures are the elimination of incentives for exterior lighting, the expectation that linear tube LEDs (or TLEDs) will be the next big wave of lighting savings, and the beginning of discussions about a de-lamping measure.

5.1.2. Program Database

For most building end uses, the distribution of participants matches relatively well with the distribution of buildings in the population. However, the offices and healthcare segments appear to be somewhat underrepresented in the program population, while the retail, food

& beverage service, and lodging segments appear to be overrepresented, although this could be at least partly a function of the method used to estimate the population proportions.

One-third of projects were completed by customer accounts identified as “towers” (see section 5.1.1). Custom projects had the greatest proportion of such customers, while SBDI projects had the smallest proportion.

BizSavers Program penetration varies by rate class, with a high of 82% of 11M customers having done at least one BizSavers project since 2013 and possibly as few as 3% of 2M customers having done so.

The proportion of small (2M rate class) customers in the program database is consistent with the proportion of total electric reportable usage of those customers within Ameren Missouri territory. Program participants in the 2M rate class tend to be disproportionately located outside of St. Louis and its suburbs. Much of that appears to reflect the distribution of 2M customers, who are disproportionately located outside of St. Louis and its suburbs.

The BizSavers Program delivered incentives within the contractually mandated 45 days for 98% of Fast Track 3.0 projects, 93% of Pre-Approval Projects, and 92% of New Construction projects.

Finally, while members of the Ameren Missouri Trade Ally Network (TAN) comprised just under half of the submitted BizSavers applications, they accounted for a large majority of (80%) the program savings.

5.1.3. Trade Allies and Other Service Providers

The suspension of the BizSavers Program had adverse effects on most trade allies’ workload because it caused their customers to postpone or cancel projects and to avoid starting new ones. The suspension reportedly had the greatest impact on lighting work and did not appear to affect any particular business type more than any other.

The elimination of incentives for exterior lighting had a largely adverse impact on trade allies, reducing or stopping sales and even reportedly resulting in at least one trade ally’s going out of business. These adverse effects came not just from the loss of the exterior lighting sales themselves, but of the loss of entire lighting projects because they could not include exterior lighting. The elimination of exterior lighting incentives most affected commercial or retail customers with outdoor parking, car dealerships, churches, fire stations, ambulance districts, casinos, community centers, and large industrial customers.

To the extent that the change to the custom incentive structure (basing incentive levels on multiple end uses) had any effect on trade allies, the effect was largely positive, providing increased incentives or more custom project opportunities.

Trade allies saw participation in BizSavers as a largely positive experience, but a large minority suggested the application process was overly burdensome, requiring information that sometimes was hard to obtain or not providing a wide enough range of standard incentive options. A large minority also identified program communication problems, including inadequate notification of program changes.

Trade allies who attended two informational trade ally trainings held during the program year highly regarded those events, registering high satisfaction with the events and reporting that the content was informative and the format appropriate.

5.1.4. Program Participant Online Survey

Equipment vendors and building contractors continue to be primary sources of awareness, project influence, and application assistance, but energy savings were greatest for participants who identified program marketing or outreach as sources of program awareness.

Somewhat fewer than half of Standard Program participant respondents reported awareness of custom incentives. However, the percentage was higher when the respondent's title or role related facilities, maintenance, engineering, or electrical services (57%) than when the respondent was the owner or executive-level employee whose title did not denote a technical function (32%).

Participants were moderately proactive in deciding to do an efficiency upgrade, with about one-third saying their company initiated the idea of the energy efficient equipment upgrade they did.

Participants generally were satisfied with the application process as well as most other aspects of participation, although more than one-quarter of those with custom projects had to resubmit or provide supporting documentation for their applications.

5.1.5. New Construction Participant Interviews

Two-thirds of the interviewed new construction program participants became aware of the new construction program incentives through their contractor or equipment vendor. Participants largely sought BizSavers new construction incentives to reduce their energy costs.

Two of the six interviewed participants were aware of Ameren Missouri's other incentive programs.

All but one of the interviewed participants reported that the program incentives induced them to use more efficient lighting than they otherwise would have, but otherwise the program had little or no effect on most of the new construction projects because the program was not involved in the design or early construction phases or, in some cases, because the participant was a tenant who had responsibility only for lighting equipment.

The two participants with program involvement in the design phase reported they installed all or most of the measures recommended by program staff in the design meetings.

The interviewed participants reported on how their incentives compared to expectations. Four of the six interviewed participants reported that incentives were less than they expected, two because they and their contractors did not understand that they could not receive incentives for measures that were part of their design before contacting the program and two for other reasons.

Participants reported that the application process for their eligible measures was relatively easy and straightforward.

Participants were largely satisfied with most aspects of program participation, with the main cause of dissatisfaction being their inability to receive incentives for non-lighting equipment because they applied for the incentives after purchasing the equipment.

5.1.6. Near Participants

As in previous evaluations, interviews with “near participants”—customers that had started BizSavers applications that later were discontinued—did not reveal any process challenges leading to the application discontinuation. Most such near participants who had any ongoing or completed projects did not recall discontinuing any applications. Most of those who could confirm discontinuing applications reported that they had done so because they had filed applications for exterior lighting incentives and then discovered that those incentives had been eliminated.

5.1.7. Non Participants

The nonparticipant survey found that nonparticipants are interested in doing energy efficient building upgrades. Respondents noted that contractors are more influential in making upgrade decisions than utility staff, designers, and retailers/distributors.

Nonparticipants who had learned about the BizSavers Program through program representatives (rather than contractors, vendors, or word of mouth, for example) indicated they had gotten the information needed about the program.

However, the nonparticipant survey revealed a much lower level of awareness of the BizSavers programs (21%) than found in the evaluation of the 2014 program year (56%). The difference in the awareness level could not be accounted for by sample differences related to customer annual energy consumption, customer type, or respondent title.

The evaluation team identified two factors that might possibly account for some of the difference in awareness found in the two evaluations. First, the nonparticipant survey for the 2014 program year evaluation took place after the program had been operating without interruption for about 21 months, while the current survey took place about nine months following a three-month program suspension. Second, only one of the 93 current

survey respondents reported learning about the program from a contractor, compared to 22% of those in the previous survey. This is despite the fact that survey responses suggest that the respondents to the two surveys likely have had a similar degree of exposure to contractors and equipment vendors, on average.

It is possible that fewer contractors are actively promoting the program or doing so in an effective manner. It is worth investigating whether this could be related to the decision to move away from the development and distribution of printed collateral (see section 5.1.1).

5.1.8. Findings Specific to the SBDI Program

Program staff reported that the SBDI Program had received fewer applications than expected. SBDI project starts declined from November 2016 through February 2017, although Lockheed Martin reported that the pipeline had "bounced back to a healthy level" and that recent incentive updates may produce more improvement.

Suggesting potential for increases in program participation, just over half of surveyed program-eligible nonparticipants indicated they would be likely to participate in the program if approached by an SBDI contractor. The primary barrier to participating is not understanding the benefits of an energy assessment.

More than 90% of SBDI projects came from three service providers, with about three-quarters of them coming from a single provider. As a group, the three most active providers appeared similar in the sizes of projects of projects they pursued—about 4,000 to 7,000 kWh per project, affecting about 2,200 to 3,400 square feet of building space, on average—and they differed from the sizes of projects that the least active providers, as a group, pursued—about 12,000 kWh per project, affecting about 16,000 square feet, on average. Still, the single most active provider generated more than 50% more savings per project and per building square foot than the nearest competitor, and about twice the savings per square foot as the least active providers. Lockheed Martin staff reported they may remove service providers that have not generated any projects and are not likely to do so and may add four or more new ones.

SBDI participants tend to be disproportionately located outside of St. Louis and its suburbs. Although much of that appears to reflect the distribution of 2M customers, who are disproportionately located outside of St. Louis and its suburbs (see section 5.1.2), SBDI participation appears to be somewhat underrepresented, relative to the concentration of 2M accounts, in the outer suburbs and overrepresented in other areas of the state. Program staff reported they were examining the list of SPs to ensure there are enough in each area to cover the area's demand.

Interviewed service providers largely reported a simple sign-up process, adequate training, and positive experiences with program staff. They joined the program with the expectation of increased sales with small businesses, a new or underserved market for

them. Interviewees were split among those who said the sales had met expectations, they had not met expectations, or it was too soon to tell.

Services providers reported that the program's claims of covering at least 50% of project costs are exaggerated, as incentives cover only about a third most projects' costs, and that about half or more of customers have upgrade needs that would exceed the SBDI Program incentive cap.

Feedback from program participants supports the purpose and value of the program. Although most participants reported having planned equipment upgrades prior to program participation, most had not completed upgrades and most planned and completed upgrades had motives other than improving energy efficiency.

Participants generally reportedly found the program's walkthrough assessment helpful in making upgrades, found service providers' recommendations appropriate, and completed all recommended upgrades. Participants also reported satisfaction with program processes and the service providers' explanations of the program rules.

Inconsistent with the service providers' feedback on incentives, program participants largely expressed satisfaction with the incentive level and reported no issues with the incentive cap. This latter is consistent with participants' reports that their service provider did not mention additional Ameren Missouri incentives.

5.1.9. Findings Specific to the EMS Pilot Program

Although program contacts reported that the pilot's rollout was well implemented, staff acknowledged that only two EMS projects had been started, and review of the program database indicated that no additional EMS projects had been started by the time of this report.

Awareness of the EMS pilot program was low among interviewed trade allies who reported doing relevant work, but two-third of those trade allies said they would likely do program-incented EMS projects in the coming year, generally five or fewer such projects.

Awareness of the pilot program also was low (about 15%) among surveyed nonparticipants representing tax-exempt entities. Even after being told about the Ameren EMS incentives, fewer than one in six said they were likely to apply for the incentives.

5.2. Cross-Cutting Program Staff Feedback

The evaluation team interviewed two Ameren Missouri staff members—the Program Manager and a Program Supervisor responsible for auditing Lockheed Martin invoices—and six members of Lockheed Martin's BizSavers implementation staff—the Program Manager and the Operations, Specialty Programs, Marketing, Business Development, and Engineering Leads. The interviews covered program management, including the interviewees' roles and responsibilities, reporting structure, and communication; current

program offerings, including new offerings and any changes to continuing offerings; program progress relative to goals; marketing and outreach; trade ally relations; and tracking, reporting, and quality assurance. The following sections summarize feedback from the interviewed staff on these topics.

5.2.1. Roles and Responsibilities

Program staff provide oversight and support to Lockheed Martin program implementation staff. Lockheed Martin is responsible for conducting all BizSavers Program activities and actively managing the program to meet program goals. This section describes the roles of staff in each organization and their interactions.

5.2.1.1. Ameren Missouri

The PY2016 Ameren Missouri BizSavers program management team, consisting of a Program Manager and a Program Supervisor, was the same team as was in place in 2015, and their responsibilities were largely the same as they had been in 2015. The only exception is that both staff took on added responsibilities by including the new Energy Management System (EMS) pilot and the new Small Business Direct Install (SBDI) program within their scopes of responsibility.

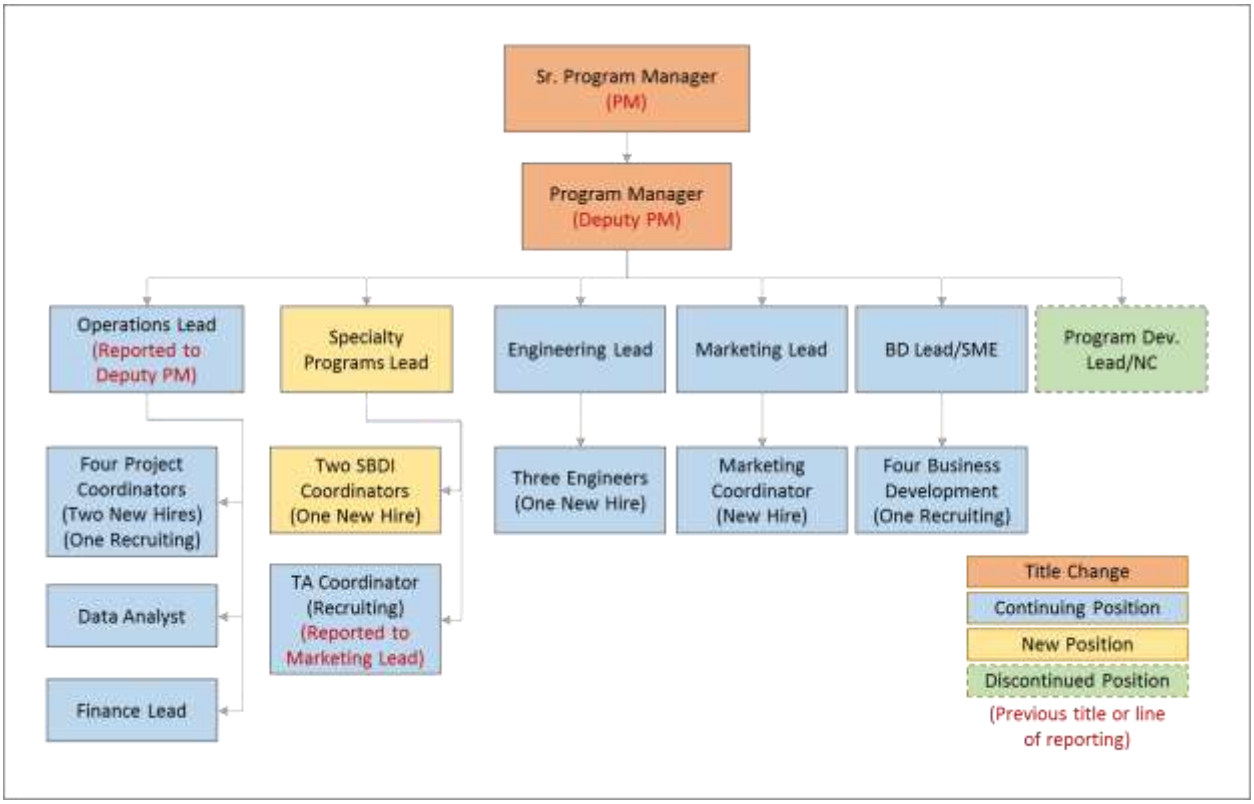
In January of 2017, the Program Manager moved to Ameren Missouri's residential sector energy efficiency department and was replaced by one of the Ameren Missouri Program Specialists who had worked with the Program Manager through the prior program cycle. In addition, the Program Supervisor retired in January of 2017 and has been replaced.

Lockheed Martin staff reported they were preparing for the changes in Ameren Missouri program management by ensuring the documentation of their process and their program data dictionaries and are up-to-date. Lockheed Martin reported plans to use these tools to train the new Ameren Missouri managers and quickly bring them up to speed.

5.2.1.2. Lockheed Martin

Lockheed Martin made organizational as well as several staffing changes to its implementation team since the last evaluation. Previously, the Deputy Program Manager—as well as the New Construction Program Lead, Marketing Manager, Business Development Lead, and Engineering Team Lead—all reported directly to the Program Manager. Under the new structure, the Program Manager has been promoted to Senior Program Manager, and the Deputy Program Manager has been promoted to Program Manager. As depicted in Figure 5-1 the Program Manager is the Senior Program Manager's only direct report; all program "Leads" now report to the new Program Manager.

Figure 5-1 Lockheed Martin BizSavers Program Organizational Chart



Additionally, Lockheed Martin added a Specialty Programs Lead who oversees the two the new Small Business Direct Install (SBDI) Coordinators and the Trade Ally Coordinator. The Specialty Program Lead manages the implementation and the inspections for SBDI as well as for the New Construction (NC) program (but does not manage the EMS pilot). The Engineering Lead, Marketing Lead, and BD Lead also support the SBDI and NC programs. A program contact explained that this structure enables Lockheed Martin to balance the work among the team leads: placing the Trade Ally Coordinator under another team lead (e.g., under the Marketing Lead, where this position was previously placed) would have created too much work for that lead and resulted in insufficient work for the Specialty Programs Lead. The program contact further elaborated that there was no organizational benefit to the Trade Ally Coordinator reporting to the Marketing Lead.

The Trade Ally Coordinator has “one foot in operations and engineering, and the other in marketing and outreach” but the position is “more behind the scenes—tracking performance of trade allies, supporting marketing efforts” to develop the right collateral to get to the trade allies. In addition, the contact reported that the Specialty Programs Lead has a very good understanding of marketing and outreach, and the newness of the SBDI Program makes it an important focus for trade ally support, both of which make

overseeing the Trade Ally Coordinator position is a good fit for the Specialty Programs Lead.

The Business Development (BD) staff, on the other hand, have primary responsibility for conducting trade ally outreach, and each is assigned to work with specific trade allies. Their job is to motivate, educate, and provide updates to the trade allies. Unlike in earlier program cycles, when just one BD worked with the NC program, all BDs now are involved with the NC program. The BD group faces two upcoming challenges. The first is replacing a very productive BD who recently left his position. Second, the BD group must get "up to speed" on cooling technologies since their goal structure will encourage great cooling savings now that Ameren Missouri is focusing on peak demand reductions.

The Specialty Program Lead serves as a resource to the BDs and has conducted training sessions for the BDs on the NC program. The training covered: setting a design baseline, individuals' roles at each stage of a project, and tracking program applications (which are more complicated than Standard and Custom program applications). Staff reported it has been helpful to have all of the BDs trained on the NC program so they can provide more specific information to customers and, once started, can see NC programs all the way through.

Beyond the changes to the organizational structure, Lockheed Martin has made quite a few staffing changes. The previous Trade Ally Coordinator now fills one of the four Project Coordinator positions, and Lockheed Martin is recruiting for a new Trade Ally Coordinator. Two of the other Project Coordinator positions are held by new hires and Lockheed Martin is recruiting for the fourth Project Coordinator position. Contacts reported that two Project Coordinators are dedicated to SBDI—training as "jacks of all trades" in business development as well as in engineering and operations—to help ensure the program gets the attention it warrants and can meet its goals. In addition, Lockheed Martin hired one new Engineer, one SBDI Coordinator, and a new Marketing Coordinator. Lockheed Martin is also recruiting for one additional Business Development staff member.

5.2.2. Program Communication

All contacts reported that communication is excellent or good, both between Ameren Missouri and Lockheed Martin and within the implementation staff. Ameren Missouri staff stated that Lockheed Martin provides all of the information they request, and does so in a timely manner. Lockheed Martin staff reported they are getting the support they need and that everyone from both organizations is very engaged, keeps others informed of what they are working on, and responds quickly to questions.

Staff identified the following regular meetings:

- Weekly meetings for Ameren Missouri, Lockheed Martin, and the evaluation team; during these meetings staff provide program updates and discuss current tasks, issues, and risks.
- Biweekly meetings for the program operations and engineering staff; Ameren Missouri staff attend these meetings so they can stay up-to-date on the information sharing that takes place among Lockheed Martin staff and can be more involved with customer inquiries about NC and SBDI. Other topics typically include numbers of incoming applications, applications processing, and any issues that have arisen.
- Biweekly meetings for program marketing and outreach, business development, and Ameren Missouri staff. These meetings focus on the "big picture" and cover challenges and new program updates.
- Biweekly (alternative weeks) meetings exclusively for the business development staff. These meetings focus on specifics such as internal coordination, new projects that have come in, and whether to talk with vendors about upcoming projects.
- Lockheed Martin holds internal weekly meetings for engineering staff and the project coordinators. These meetings give the staff responsible for entering the applications an opportunity to talk with the engineers who are responsible for approving the applications.
- The Marketing Lead meets with the Program Supervisor and other staff bi-weekly to discuss more detailed marketing materials and topics, such as issues related to design and collateral.

Other communication channels include informal communication (face-to-face, phone calls, emails) as well as emailed "action item" alerts generated from the Lockheed Martin program's SharePoint site. Program staff create the alerts to keep other staff updated about program activities, such as new email campaigns or the development of new marketing collateral. Alerts are also generated about offers made to customers that are not going forward. Most interviewed staff gave positive feedback about the value of the alerts; however, one contact indicated s/he finds it difficult to keep up with the volume of the emailed alerts.

Both Lockheed Martin and Ameren Missouri staff now use Lockheed Martin's SharePoint site, whereas previously each organization maintained its own, separate site. One contact enthused that working from just one SharePoint site improves Lockheed Martin-Ameren Missouri communication since there is now one space for online collaboration, document storage, and meeting space.

5.2.3. Program Marketing and Outreach

Staff stated that Lockheed Martin's marketing efforts were closely following the marketing plan and going well. Staff are currently focusing on informing the general market about program offerings, customer success stories, and easy ways to save. Messaging includes, for example, information that upgrading from T8 lamps to linear LEDs can save customers money even if they upgraded to T8s just a few years ago. Lockheed Martin plans to conduct more targeted marketing to specific segments in PY8.

The following subsections highlight specific outreach and marketing activities that occurred during the program year. These include the emphasis on electronic marketing, continued use of customer "towers," marketing developed specifically for the SBDI Program, and communicating Ameren Missouri's shift in focusing on peak demand savings in lieu of energy savings.

5.2.3.1. BizSavers Collateral

Lockheed Martin, Ameren Missouri, and ICF (Ameren Missouri's residential program implementer) have together developed new branding guidelines and materials, updating the look of program collateral to make it distinct from collateral from previous years. BDs distribute collateral at events. Collateral materials are generally not available online for download since the content of these materials is very similar to the content on Ameren Missouri's website.

5.2.3.2. Electronic Media

The contacts reported that marketing efforts are moving away from printed case studies and fact sheets, and making greater use of online distribution of program information. Marketing staff are using email campaigns to drive customers and trade allies to Ameren Missouri's website. The website has undergone a substantial update, which was initiated in 2014. According to staff, the look and feel of the website is greatly improved. In addition, staff are able to examine website analytics beyond the top level, and the site's updated content allows businesses of every type to identify energy-efficient equipment and associated saving that are applicable to their facilities. The website will soon include a video that explains why customers should make energy-efficient upgrades, and Lockheed Martin will have collateral around the video as well.

Lockheed Martin develops and provides social media content about energy efficiency and BizSavers to Ameren Missouri. Ameren Missouri then uses that content, along with content on other topics, on its own Facebook and Twitter accounts.

Lockheed Martin prepared a LED lighting video that was uploaded to the Ameren YouTube channel in January 2017 and to Ameren Missouri's "Featured Incentives" web page in the near future.

5.2.3.3. Email Activities

Lockheed Martin delivered the following topic-specific emails to customers during the program year:

- Custom Incentive Updates (to 10,778 customers and TAs, May)
- EMS Launch (to 2,295 eligible non-profits, October)
- SBDI Program (to 1,164 St. Louis metro small businesses, October)
- Easy Ways to Save invitation (to 1,380 St. Louis customers with T8s, October)
- Missouri DED Energy Loan Program (to 242 eligible loan participants, November)

In addition, Lockheed Martin delivered the following topic-specific emails to TAs:

- BizSavers Program Launch (1,725 then 1,702 TAs, March)
- Ameren TA Network Seminar Invitation (1,751, then 1,725, then 846 TA and contractor recipients in 3 separate email blasts, June)
- SBDI Service Provide RFQ (191, then to 1,826 TA and contractor recipients in 2 separate email blasts, July)
- Application Tool Update (1,892 TA and contractor recipients, September)
- Trade Ally End of the Year Reminder (1,605 recipients, November)

Finally, top performing TAs received the following emails from Lockheed Martin during the program year:

- Top-performing Trade Ally invitation (129 recipients, November)
- Top-performing Trade Ally happy hour final reminder (62 recipients, December)

One informant explained that while emails can be effective for some, they are generally opened and read by a segment of the market. A broader set of marketing and outreach activities are required to reach the rest of the market.

5.2.3.4. Direct Mail

Lockheed Martin does very few mailings; staff noted direct mailings are a little more successful for the SBDI Program than for BizSavers overall. During PY2016, Lockheed Martin performed only one direct mailing. In October, Lockheed Martin sent postcards to customers in the St. Louis metro area promoting the SBDI Program. The postcards generated 29 leads.

5.2.3.5. Outreach Events

Based on records shared by Lockheed Martin, outreach staff delivered 23 group presentations to more than 1,650 attendees during the program year. These presentations were held from January through August, in 11 cities throughout the state. BizSavers markets the Energy Loan Program at events, and BDs talk directly to customers and TAs about the Energy Loan Program. (See Section 5.2.3.9 for a discussion of outreach events specific to the SBDI Program.)

5.2.3.6. Customer Towers

In the previous program cycle, Lockheed Martin used Ameren Missouri customer account data to identify groups of accounts that are part of single, large organizations that likely make or influence equipment-related decisions at the account level. Lockheed Martin creates a customer tower for each organization it identifies whose accounts, in aggregate, consume at least two million kWh per year. Examples of these customer "towers" include business chains and franchises, school districts, and large campus-like organizations, such as airports. At the time of the interviews, Lockheed Martin staff reported having identified close to 900 towers, representing approximately 175,000 individual accounts.

Customer towers continue to drive Lockheed Martin's outreach strategy, since working with a single point of contact at each tower is much more efficient than working with a point of contact at each individual account. To support the tower system, Lockheed Martin staff reported they have transferred tower data, which was previously stored in off-system database programs, to LM Captures. Since towers are created "by hand," Lockheed Martin staff explained that they add new towers as they are identified.

Lockheed Martin finds that five BD staff (including the BD lead) are sufficient to effectively work with all 900 towers. The program relies on the personal relationships that the BDs develop with the key point of contact at each tower: maintaining strong communications, and understanding of each customer's needs and wants.

5.2.3.7. Targeting Specific Customer Segments

Ameren Missouri discontinued the Distributor Partnership Program (DPP) during PY2016. DPP provided six local distributors with marketing collateral, poster boards, DPP-specific paper applications, and information about online applications, and developed as a way to raise program awareness with smaller business "walk in" customers. One contact suggested that the DPP was discontinued because it had generated little activity.

While Lockheed Martin did little segment-specific marketing during PY2016, staff discussed their interest in using video more frequently to promote BizSavers to specific market segments, such as grocery stores, in the future. The Lockheed Marketing Lead, Operations Lead, and Program Manager were planning to work together to determine

whether there are underserved sectors with high energy-savings potential for which videos or other targeted marketing could be effective.

In terms of segmenting by geography, customer service advisors, or CSAs, support customers and bring in leads from outlying areas. Staff reported that the CSAs have historically covered the outlying areas thoroughly and are continuing to do so. During the program year, two BDs also focused on outlying areas: one in mid-Missouri, and the other in southeastern Missouri. Staff stated that the two BDs are also effectively covering the outlying areas as evidenced by the new projects that continue to come in from those parts of the state.

5.2.3.8. Coordination with Ameren Missouri Account Support Staff

The evaluation team also obtained follow-up information on the program's coordination with Ameren Missouri account support staff. Account support staff include Customer Service Advisors, CSAs, and Key Account Executives, or KAEs.

Program staff reported good communication with account staff. Program staff make monthly presentations to the CSAs and KAEs, providing program updates, including current program statistics. During these monthly meetings CSAs and KAEs have the opportunity to ask program staff questions and discuss any issues they have been experiencing.

In addition to the monthly meetings, program staff provide the CSAs and KAEs with monthly reports about projects in their service territories/zip codes, and invite CSAs and KAEs to all BizSavers events. Ameren Missouri CSAs and KAEs also have access to LM Captures so they can look up customer project information as needed.

Program staff reported they had recently given an energy-efficiency program kick-off presentation to all customer operations staff, and that they had distributed tear sheets/flyers for field staff to give customers who have questions or are interested in pursuing programs.

Finally, Lockheed Martin provides field staff with customer information such usage data and completed projects so they are informed about the customers they interact with.

5.2.3.9. SBDI-Specific Marketing

Lockheed Martin has developed two brochures for the SBDI Program. The first is a brochure for SPs that lists contractors on the back. The second is an 8.5" x11" bi-fold brochure that shows the SBDI incentives. This brochure is printed out for SBDI SPs so they can distribute the brochure to customers.

Lockheed Martin promotes the SBDI Program through community outreach meetings, often at Chambers of Commerce. As a result of SBDI's launch, Lockheed Martin staff anticipated more meetings will be held at Chambers of Commerce than in prior program

years. CSAs are responsible for connecting with Chambers of Commerce and scheduling these meetings, at which BD staff present information about SBDI.

5.2.3.10. Marketing Challenges

Staff stated that the key challenges facing BizSavers marketing are related to staffing issues. These include: changes in program staff; the breadth of individuals outside the energy-efficiency group that affect marketing (for example, staff working on Ameren Missouri's website and digital content); and the structure of Ameren Missouri's energy-efficiency marketing team—where one individual oversees both residential and commercial/industrial marketing, and reports to a communications manager, so can be overloaded and unable to respond in a timely manner. Staff would like to see marketing-related roles better defined and approval processes clarified.

One contact reported that it has taken some time for the market to grasp the change in incentive structure—increased emphasis on kW as opposed to kWh savings in determination of incentive levels, and from lighting-versus-non-lighting to end use-based incentives. This contact thought that more heavily weighting kW savings than kWh savings in determination of incentive levels, while retaining the lighting/non-lighting distinction, would have been an easier message to convey, and a simpler shift for the market to grasp. Nonetheless, the contact thought that Ameren Missouri did a good job communicating the changes, and the reasons for the changes, to the TAN.

5.2.4. Market Response

Contacts reported that the continuing Standard, Custom, New Construction, and Retro-Commissioning Programs are progressing well and have met or exceeded their project pipeline goals. The programs were especially successful during the summer and fall months, then tapered off somewhat toward the end of the program year. The BDs actively keep "an ear to the ground" to stay abreast of the market's response to Ameren Missouri's program offerings.

One contact reported that program continuity is important, so that program participants can be assured the programs will continue. The contacted mentioned the importance of continuity applies especially to the New Construction program which involves long-term projects: a hard stop or a gap in the program can mean customers are unable to receive the incentive funding they had anticipated when doing project planning months earlier.

Another contact observed that during PY2016, there were fewer compressed air projects and fewer industrial process projects in general, as compared with earlier program years. The contact thought this situation could be improved by having the BDs work more closely with TAs to help the TAs close deals.

5.2.5. New Program Offerings

Staff contacts reported on general changes to program offerings as well as on the new program offerings—the EMS pilot and the SBDI Program. Those comments are discussed in Sections 5.5 and 5.6.

5.2.6. Working with Trade Allies and Other Service Providers

At the time of the staff interviews, all TAs from previous program cycles had been re-enrolled. Lockheed Martin had scheduled training sessions for returning TAs to inform them about program updates and changes, as well as workshops for new TAs to provide more in-depth information about the programs.

Lockheed Martin staff reported that manufacturer reps have done a good job training TAs (as well as distributors) on linear LEDs, which were recently added to the program and expected to be a source of substantial savings over the next several years (see Section 5.2.9 for more information about linear LEDs).

Updated information about TAN membership; the program's communication and training for trade allies; co-branding; and the tiered trade ally structure is provided in the subsections that follow.

5.2.6.1. Trade Ally Network (TAN) Membership

At the time of the interviews, Lockheed Martin had signed up 245 trade allies (equivalent to roughly 200 to 210 unique companies, since some of the 245 TA are branches of the same company). This is fewer than were enrolled in the previous program cycle because the program is focusing on trade allies who were active in the previous cycle and weeding out the less active trade allies.

Lockheed Martin is working on changing the TAN tier system. The system currently bases a trade ally's tier on the total cumulative number of projects the trade ally has completed, regardless of the time period over which those projects took place. As a result, under the current system less active trade allies may eventually attain the same tier level as more active trade allies. Lockheed Martin has not established a timeline for rolling out a revised system.

5.2.6.2. Communicating and Training

Lockheed Martin recently rolled out a new website portal for trade allies, enabling trade allies to obtain real-time information on their projects. Lockheed Martin has also created friendly, customer-facing reports for TAs to share with customers. These reports provide site-specific electric usage, electricity bills, and other information.

Lockheed Martin held a "thank you" happy hour for top-performing TAs in late 2016 and announced the new portal at that event. In addition, staff report that the marketing group

is doing a good job communicating with TAs about the program and any upcoming changes.

At the time of the staff interviews, Lockheed Martin had not carried out or planned any events or activities specifically for SBDI SPs.

Lockheed Martin plans to continue sending electronic *BizSavers* newsletters on a quarterly basis. At the time of the interviews, the newsletter was undergoing a rebranding to make it more visual and less wordy.

5.2.6.3. Co-Branding

Upon enrolling in BizSavers, a TA informs Lockheed Martin whether they would like to participate in co-branding. Program staff developed a separate co-branding document for SBDI, and informs SBDI TAs that co-branding can help them be viewed as "legitimate" in the eyes of customers. Lockheed Martin's marketing staff handle questions about co-branding.

5.2.6.4. Trade Ally Tiers

As of the end of PY2016, BizSavers was continuing to maintain a tier structure, which was based on the TAs' performance—specifically the numbers of projects they completed—in 2015. However, the program is considering revising the tier system under which:

- "Silver" allies have fewer than 25 projects and less than 1 million kWh savings.
- "Gold" allies have completed 25 to 49 projects or saved 1-5 million kWh, and get expanded co-branded program collateral and program window clings.
- "Platinum" trade allies have completed 50 or more projects or achieved at least five million kWh in savings, and receive the "gold" benefits plus vehicle magnets, sponsored events, and other rewards as well as acknowledgement at the annual awards banquet.

The current tier system is cumulative: it is based on a TA's total numbers of projects and savings since joining the TAN. Thus, each TA continues to move up through the tiers and, if all TAs become platinum, the system will not distinguish one TA from another. One contact said the program is considering separate tiers for large and small companies, so that the system provides better apples-to-apples comparisons. The contact was not able to provide a timeline for a decision on, or implementation of, a revised tier system.

5.2.7. New Focus on Peak Demand

Unlike previous program cycles which focused on decreasing energy usage, the current program cycle focuses on decreasing peak demand. The programs still calculate incentives based kWh savings, but now integrate end use-specific $/kWh incentive levels

reflecting end use specific coincident demand factors in the incentive calculations. Contacts noted that, as a result, the application process is now more complicated than the process used in the previous program cycle which involved only two $/kWh incentive levels.

5.2.8. Project Tracking, Reporting, and Quality Assurance Processes

All contacts reported that the program tracking and reporting system works well and meets or exceeds their needs; no one mentioned a need for any additional recurring reports. Ameren Missouri appreciates having the ability to log in and review data in real time. The system has a variety of dashboard reports and allows the production of ad hoc reports, which some staff use extensively. One contacted stated that the introduction of new data fields in 2016 enabled Ameren Missouri staff to more easily find information about specific projects and customers, and more easily analyze program data and generate reports to stakeholders. Ameren Missouri and Lockheed Martin outreach staff often share the site-specific information produced by the system with customers. One contact reported staff are considering adding additional fields to the tracking system—such as dates TAs attended trainings, the status of TAs, and TA needs (such as additional training, or issues that need resolution)—to so they can better assess how individual TAs and the overall TA network is doing.

Only one contact reported not using the system at all because the system is incompatible with the operating system on that contact's computer, but a future system upgrade will resolve this incompatibility. Until the system upgrade occurs, the contact will continue getting needed reports from other staff.

Contacts also reported that quality assurance/quality control (QA/QC) activities were working well. Examples of QA/QC processes include:

- Lockheed Martin checks complicated kW savings calculations (applying end use specific factors to kWh savings to derive kW savings) before submitting monthly savings reports to Ameren Missouri. Other examples include:
- Lockheed Martin automated the checking and deleting of customer contact information duplicates.
- The system now automatically uploads measures from customers' applications thereby avoiding data entry errors.
- All emails are pre-populated with data from LM Captures.
- Lockheed Martin conducts inspections of the first five projects for each TA in the SBDI Program. One contact stated that this effort has been success in quickly identifying problems.

5.2.9. Program Measures

When asked about changes and additions to BizSavers measures, several contacts first responded by discussing this program cycle's shift in end use classifications, rather than discussing specific measures. One said that "challenge is an understatement" when describing the difficulty of understanding and implementing the 13 end use classifications

The Standard program added the replacement of linear fluorescents with linear tube LEDs (also known as TLEDs) as a new measure this year. Several contacts opined that this will be the most popular prescriptive measure, and the source of the next big wave of savings. They attributed the expected surge in interest to the fact that linear LED prices have come down, linear tube LED technology is reliable, and linear tube LEDs are a prescriptive measure, so participants install them before applying for an incentive. One contact suggested offering a higher incentive for projects where fluorescent-to-LED changeouts require rewiring, so that some of the labor for rewiring could be covered by the incentive. Another said that the Standard program offers an incentive for T8 to LED changeouts, and that Ameren Missouri will work with the Public Service Commission to add a T5 to LED prescriptive measure.

Multiple staff reported they are beginning discussions about adding a "de-lamping" measure to the Standard, SBDI, and/or Custom programs. With the addition of linear tube LED's to the Standard program, one contact explained that participants will be replacing four fluorescent tubes with two linear tube LEDs, thereby doubling the savings of a one-for-one replacement. Though these participants can get an incentive for the two linear LEDs, they currently cannot get an incentive for the two linear fluorescents that were not replaced. Adding "de-lamping" would enable participants to receive incentives for the fluorescent tubes that are replaced, as well as for the fluorescents that are removed and not replaced.

BizSavers now prioritizes peak demand savings over energy savings. Measures that provide energy savings, but do not provide substantial peak demand savings (for example, heating-only equipment), are no longer eligible for program incentives. One contact relayed that "many participants had expressed concern, aggravation, and downright rebuttal" about the discontinuation of incentives for some measures. Staff reported it has taken several months for the market to "come to terms" with the fact that incentives are no longer available for exterior lighting (unless the lighting operates 24 hours per day, seven days a week). They reported hearing from TAs that they have lost interior lighting jobs because they could not also do exterior lighting. Thus, not offering incentives for exterior lighting could lead to lost opportunities. Several contacts mentioned that participants would very much like the program to return to offering an incentive for exterior lighting.

As a result of the shift to peak-saving measures, one contact suggested the program offer additional technical assistance and data for mechanical contractors who install energy-

efficient chillers and rooftop units, measures that will yield peak demand savings. The contact explained that many of the companies that install cooling equipment are mechanics who may not know a great deal about energy and may not understand how to do energy savings calculations. Without that knowledge, these companies miss the opportunity to install more efficient models at the time of equipment replacement.

5.3. Cross-Cutting Database Analysis

As of the end of the program year, the vast majority of completed projects continued to be in the Standard and Custom Programs. The evaluation team carried out an analysis of the participant database to identify characteristics of participating participants, the projects they have done, and the service providers associated with them. The analysis provides information on how the project population compares to the broader business population from nationwide data.

The following subsections provide an overall analysis of projects and participants; show analyses of program participation by building end use type, business size (rate class), and geographic area; and show information on contractor participation.

5.3.1. Overall Analysis of Projects and Participants

The analysis identified 1,106 unique participants with completed BizSavers projects, where the identification of a unique participant was based on the Parent Company field in the program tracking system. Those 1,106 participants collectively had completed 1,743 projects across 1,458 separately identifiable buildings by the end of MEEIA Cycle 1. While a large majority of participants had a single completed project, those participants with multiple completed projects accounted for half of completed projects (Table 5-2).

Table 5-2 Participants with Single and Multiple Projects

Participant Type	*Participants (n=1,106)*	*Buildings (n=1,458)*	*Projects (n=1,743)*
Associated with one project	79%	87%	50%
Associated with multiple projects	21%	13%	50%
Total	100%	100%	100%

Since a participant may have had multiple projects at multiple sites or multiple projects at a single site, the participant-level and building-level analysis counts some participants more than once. Therefore, the percentages of participants and buildings across, for example, incentive types or building types sum to greater than 100%.

Completed standard projects were more common than custom projects at both project and participant levels, as shown in Table 5-3. Nine percent of participants had projects that combined both types of measures, and those types of projects accounted for 7% of

all projects and happened in 8% of the buildings. Additionally, SBDI projects made up nearly one-fifth (19%) of all projects, and more than one-quarter (26%) of participants completed an SBDI project.

Table 5-3 Incentive Types of Participants and Completed Projects

Incentive Type	*Participants (n=1,106)*	*Buildings (n=1,458)*	*Projects (n=1,743)*
Standard (with or without Custom)	55%	57%	59%
Custom (with or without Standard)	33%	32%	29%
Standard only	48%	50%	52%
Custom only	26%	24%	22%
SBDI	26%	22%	19%
Custom and Standard	9%	8%	7%
New Construction	1%	1%	1%
Retro-commissioning	<1%	<1%	<1%

5.3.2. Building End Use Type

At both the participant, building, and project levels, the most common building end uses were retail, office, and food & beverage service (Table 5-4). Together, those three end use types made up 45% of all projects.

Table 5-4 Building End Use Types

Building End -Use Type	*Participants (n=1,061)*	*Buildings (n=1,458)*	*Projects (n=1,743)*
Retail	21%	23%	21%
Office	16%	13%	14%
Food & Beverage Service	12%	11%	10%
Industrial	10%	8%	8%
Lodging	7%	6%	8%
Faith-Based	6%	6%	6%
Education	6%	6%	7%
Warehouse	6%	5%	4%
Healthcare	5%	5%	6%
Automotive Services	4%	4%	4%
Government	4%	5%	5%
Entertainment/Recreation	3%	3%	3%
Grocery and Convenience	3%	2%	2%

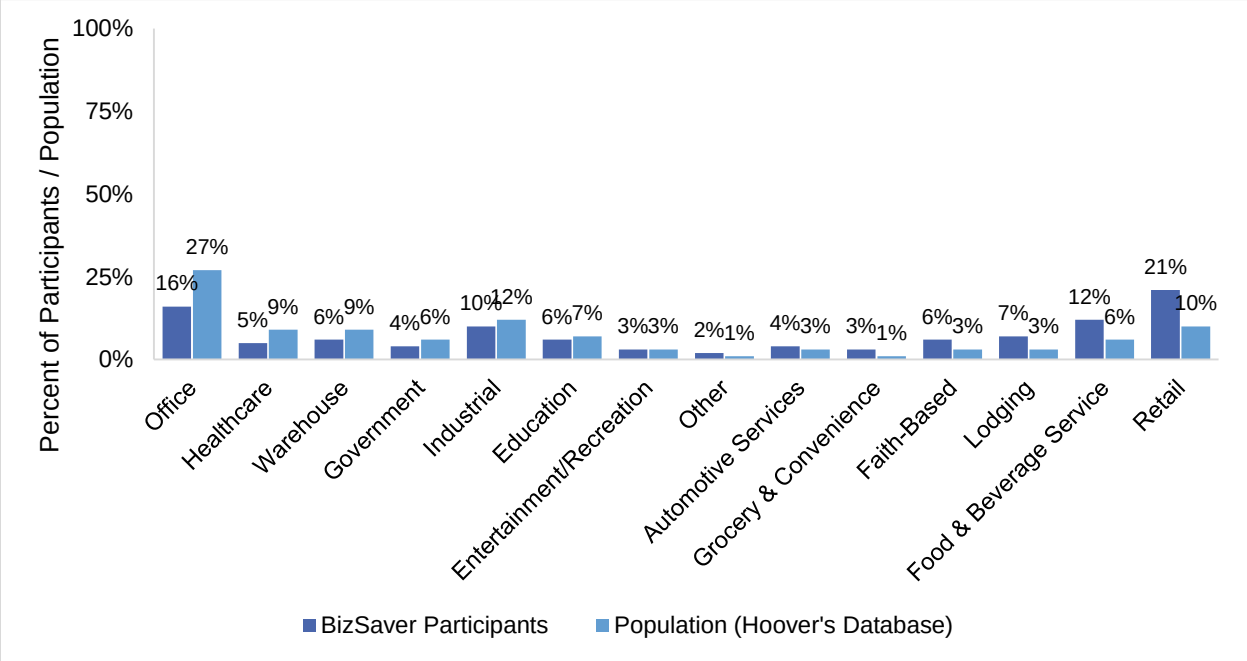
Building End -Use Type	*Participants* *(n=1,061)*	*Buildings (n=1,458)*	*Projects (n=1,743)*
Parking Garage	1%	1%	1%
Other*	2%	2%	1%
Total	103%	100%	100%

** Other includes IT/data centers and gas stations.*

The evaluation team compared the distribution of PY2016 BizSavers participants across building end use types to the estimated distribution of nonresidential buildings in the broader population. To provide the population data, the evaluation team used data from the Hoover's database on entities doing business in the zip codes that make up the Ameren Missouri service territory. A detailed explanation of the method, and the reason for using the Hoover's database rather than data from the Commercial Buildings Energy Consumption Survey (CBECS), as done previously, is found in Section 6.3.9.

Figure 5-2 shows that, for most building end uses, the distribution of program participants matches relatively well with the distribution of buildings in the population. The offices and healthcare segments appear to be somewhat underrepresented in the program population, while the retail, food & beverage service, and lodging segments appear to be overrepresented. We cannot rule out the possibility that the appearance of over- or under-representation is at least partly a function of the method used to estimate the population proportions. The evaluation team will attempt to refine these analyses in future reports.

Figure 5-2 Distribution of Participants by Building End Use Types, Compared to Population Data



Analyses further examined building type by custom or standard incentive type. Completed standard projects were more common than custom projects at both the project level and the participant level, as previously shown in Table 5-5. One-tenth of participants had projects that combined both types of measures, and those types of projects accounted for just seven percent of all projects.

For both standard and custom projects, two of the three most common building end uses were retail and office (Table 5-5). However, standard and custom projects each had higher rates of a particular end use, respectively; industrial and education end uses were more common in custom projects and lodging and faith-based end uses were common in standard projects.

Table 5-5 Building End Use Types by Incentive Type

Building End -Use Type	*Standard (n=1,025)*	*Custom (n=503)*
Retail	17%	12%
Office	14%	15%
Lodging	10%	5%
Faith-Based	10%	4%
Industrial	9%	14%
Education	8%	10%
Healthcare	7%	4%
Food & Beverage Service	7%	5%
Government	5%	7%
Warehouse	4%	8%
Automotive Services	4%	4%
Entertainment/Recreation	3%	3%
Grocery and Convenience	2%	4%
Parking Garage	1%	2%
Gas Station	<1%	1%
IT/Data Center	<1%	1%
Total	100%	100%

5.3.3. Business Size

The evaluation team was unable to use building size data to analyze participation by business size, as building size data were missing for 60% of projects completed during the program year. To evaluate how well BizSavers is reaching small business customers, the evaluation team evaluated the distribution of projects, buildings, and participants

across the four commercial rate classes—2M, 3M, 4M, and 11M—each representing increasingly larger volume accounts.

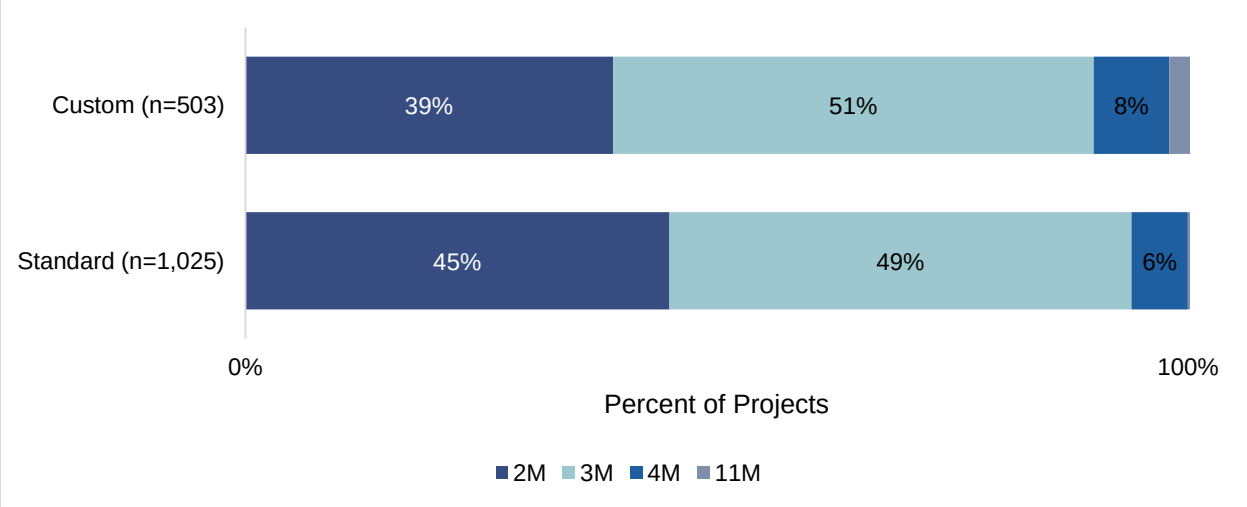
When the small commercial rate class (2M) customers' share of the number of projects (54%), buildings (59%), and participants (60%) are compared to their share of accounts (93%), they appear to be underrepresented in the BizSavers Program. However, when their share of total program savings (20%) is compared to their share of total electric reportable usage (17%), their representation is the same as that for the 3M rate class (Table 5-6).[2]

Table 5-6 Participation, Savings, and Population by Rate Class

Rate class	*Percentage of…*						*Ratio of Savings % to Usage %*
	Projects (n=1,743)	*Buildings (n=1,458)*	*Participants (n=1,106)*	*Total Savings*	*Accounts*	*Electric Reportable Usage*	
2M	54%	59%	60%	20%	93%	17%	1.15
3M	40%	36%	34%	55%	7%	42%	1.15
4M/11M	6%	5%	5%	25%	<1%	41%	0.62
Total	100%	100%	100%	100%	100%	100%	1.00

2M customers tended to be slightly more highly represented in standard than custom Figure 5-3.

Figure 5-3 Rate Class by Project and Incentive Type



[2] The percentage of accounts and electric reportable usage are for the period from October 2015 through September 2016, the latest 12-month interval for which data were available to the evaluation team.

As expected, as the rate class increases, so do the mean savings per project as well as the mean number of projects per building and (generally) per participant (Table 5-7). Note also that 2M customers that were part of a customer tower did larger and more projects, on average, than those not in a customer tower. In fact, 2M customers that were in a tower did more projects, on average, than 3M and 4M customers.[3]

Table 5-7 Total and Average kWh Savings by Rate Class

*Rate Class**	*Total kWh Savings*	*Mean kWh Savings per…*			*Est. Mean # Projects per Building***	*Est. Mean # Projects per Participant****
		Project (n=1,743)	*Building (n=1,458)*	*Participant (n=1,106)*		
2M-nt	12,678,682	15,221	16,255	18,980	1.1	1.2
2M-t	2,393,430	24,423	25,736	85,480	1.1	3.5
3M	41,472,557	59,078	80,063	107,164	1.4	1.8
4M	15,669,647	176,063	279,815	313,393	1.6	1.8
11M	3,360,284	160,014	305,480	305,480	1.9	1.9
Total	75,574,600	43,359	70,962	68,331	1.6	1.6

* t = “in a customer tower”; nt = “not in a customer tower.”

** Estimated by dividing the mean savings per building by the mean savings per project.

*** Estimated by dividing the mean savings per participant by the mean savings per project.

5.3.4. Penetration of the Target Market

The project database shows 4,602 unique companies with completed projects from 2014 through February 2017. To estimate the rate of penetration this represents of Ameren Missouri business customers in the various rate classes, the evaluation team divided the number of participating companies in each rate class by the total number of Ameren Missouri customers in the rate class. The team identified 79,855 unique customers from the customer database and the rate class or classes associated with each one. Many customers had multiple accounts, some of which had differing rate classes. The team counted each customer in each rate class in which that customer had an account.

Table 5-8 penetration for the 2M rate class is much lower than for the other rate classes, particularly 4M and 11M. This is somewhat consistent with the analysis of participation by rate class, shown above, but the degree of difference between the 2M and other rate classes appears greater here. The evaluation team will seek to refine this analysis in future reports.

[3] Note that tower customers were not limited to the 2M rate class but also included 3M customers. However, the current analysis focuses on 2M customers because they make up more than 90% of all customer accounts.

*Table 5-8 Estimated Penetration by Rate Class**

Rate Class	*Number of PY2016 Program Participants*	*Number of Ameren Missouri Customers*	*Estimated Penetration Rate by Customer*
2M	2,503	74,620	3%
3M	1,815	7,474	24%
4M	239	524	46%
11M	45	55	82%
Total	4,602	79,855	6%

* Customers may be identified in multiple rate classes; therefore, the total number of customers is less than the sum of customers in each rate class.

5.3.5. Customer Towers

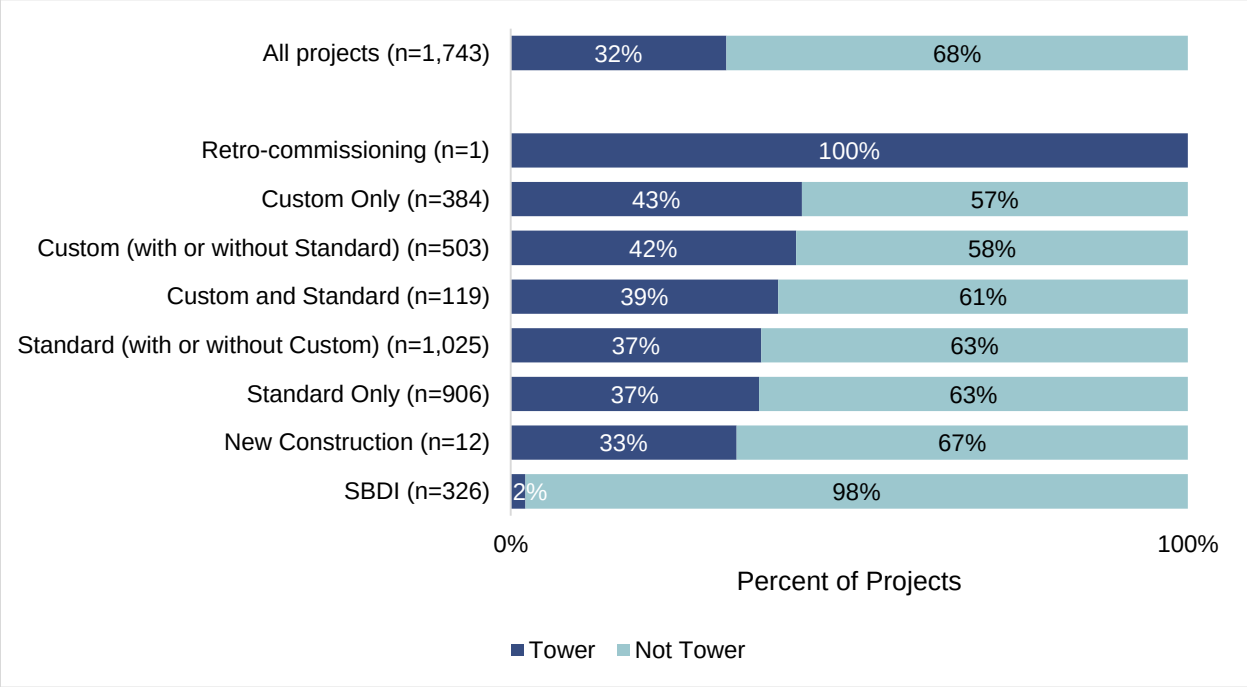
In the previous cycle, the BizSavers Program took a new approach to outreach by organizing customer accounts into “towers,” which identify companies or other entities that have multiple accounts. Of the 1,061 participants, 194 were part of a tower (Table 5-9). Towers completed 32% of all projects, with an average of 2.9 projects per participant, compared to an average of 1.3 for non-towers.

Table 5-9 Participation and Projects in Tower and Non-Tower Groups

Account type	*Number of Participants*	*Mean Number of Projects per Participant*	*% of projects*
Tower	194	2.9	32%
Not Tower	912	1.3	68%

Overall, about one-third of projects were completed by customer accounts identified as “towers.” Custom projects had the greatest proportion of “tower” customers compared to all other programs. Conversely, SBDI projects had the smallest proportion of “tower” customers, with just seven projects (Figure 5-4).

Figure 5-4 Comparison of Tower and Non-Tower Projects by Program Type



5.3.6. Geographic Area

When only the distribution of business entities is concerned, BizSavers activity appears to be disproportionately in the St. Louis metro area and outer suburban areas, which comprising up to 80% of participants, buildings, projects, and savings, compared to 65% of businesses (Table 5-10). However, when total customer usage is taken into account, BizSavers activity is well distributed across geographic areas.

*Table 5-10 Geographical Distribution of Completed Projects**

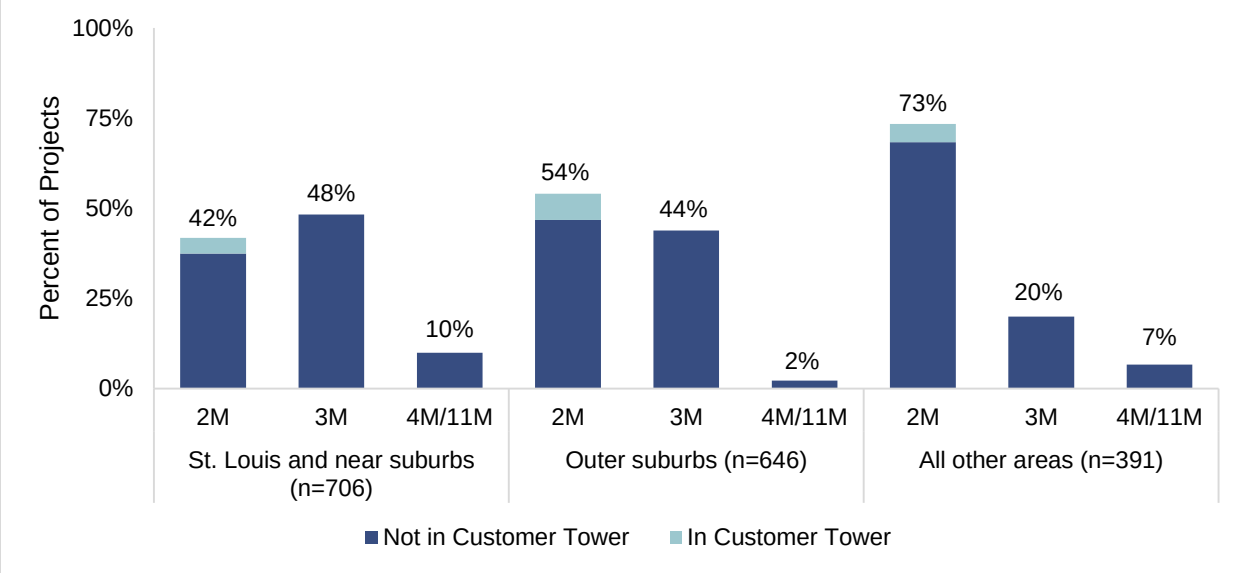
Area	*Participants (n=1,106)*	*Buildings (n=1,458)*	*Projects (n=1,743)*	*Savings*	*Businesses*	*Usage*
St. Louis metro	40%	39%	41%	46%	33%	43%
Outer suburbs	40%	38%	37%	33%	32%	38%
All other areas	26%	24%	22%	21%	35%	20%
Total	106%	100%	100%	100%	100%	100%

* Data on distribution of businesses are from US Census Bureau County Business Patterns http://www.census.gov/econ/cbp/. Data on distribution of accounts are from Ameren Missouri customer data. St. Louis metro encompasses zip codes 63101 through 63147. Outer suburbs encompass zip codes 63001 through 63091 and 63301 through 63390. Other areas are all other Ameren service area zip codes.

The distribution of rate classes differed markedly among the St. Louis metro area, the outer suburbs, and other parts of Ameren Missouri's service territory (Figure 5-5). Customers in the small (2M) rate class—in particular, those *not* in a customer tower—

make up a greater percentage of the project mix in areas outside of St. Louis and its suburbs. This is consistent with the finding, above, that the areas outside of St. Louis and its suburbs account for 35% of businesses but only 20% of usage—they tend to be smaller businesses.

*Figure 5-5 Rate Class Distribution by Location**



While the distribution of projects across geographic areas was similar for the Standard and Custom Programs, St. Louis and its suburbs accounted for a much smaller percentage of SBDI projects (Table 5-11). This is consistent with the above finding that St. Louis and its suburbs account for a disproportionately low percentage of 2M customers. In fact, St. Louis and its near suburbs accounts for the same percentage of SBDI customers, 2M participants (all programs), and 2M accounts. However, SBDI participation appears to be somewhat underrepresented, relative to the concentration of 2M accounts, in the outer suburbs and overrepresented in other areas of the state.

Table 5-11 Geographical Distribution of Completed Projects

Area	*Standard (n = 1,025)*	*Custom (n = 503)*	*SBDI (n = 326)*	*2M Participants (n = 931)*	*2M Accounts (n = ~148k)*
St. Louis and near suburbs	42%	42%	31%	32%	31%
Outer suburbs	40%	43%	23%	37%	40%
All other areas	18%	14%	46%	31%	30%
Total	100%	100%	100%	100%	100%

5.3.7. Interval Between Project Completion and Incentive Delivery

The evaluation team examined the time interval between completion of project installation and delivery of the incentive, separately for Fast Track 3.0, Pre-Approval, and New Construction projects. Table 5-12 shows that the program delivered the incentive within 30 days after project installation for a large majority 92% of Fast Track 3.0 projects, 78% of Pre-Approval projects, and 50% of New Construction projects. The program delivered the incentive within the contractually mandated 45 days for all but 24 (2%) of Fast Track 3.0 projects, 36 (7%) of Pre-Approval Projects, and one New Construction project.

Table 5-12 Time from Project Installation to Incentive Delivery

Time Interval	*Fast Track 3.0 Projects (n=1,212)*	*Pre-Approval (n=517)*	*New Construction (n=12)*
7 days or fewer	4%	1%	0%
8 to 15 days	59%	33%	8%
16 to 30 days	29%	44%	42%
31 to 45 days	6%	14%	42%
46 days or more	2%	7%	8%
Total	100%	100%	100%

5.3.8. Analysis of Contractors

The evaluation team analyzed information on all contractors associated with completed PY2016 projects in the participant database; specifically, the evaluation team looked at the percentage of contractors that were members of the TAN and of the various TAN tiers and the corresponding energy savings. Table 5-13 shows the breakdown of active contractor firms by Network membership and energy savings achieved during the program year. Members of the BizSavers Trade Ally Network comprised fewer than half (48%) of contractors in the project tracking database and accounted for the large majority (86%) of savings. Platinum-level trade allies generated the most program savings—nearly 40 thousand kWh on average per trade ally firm for all PY2016 completed projects.

Table 5-13 Trade Ally Network Membership and Energy Savings

Trade Ally Network (TAN) Membership	*Count*	*Percent of All Contractor Firms*	*kWh Savings*	*Percent of Total kWh Savings*	*Average kWh Savings Per Trade Ally Membership Type*
TAN Member	95	43%	60,529,051	80%	42,269
Platinum	29	13%	29,767,042	39%	39,064
Gold	19	9%	8,809,957	12%	43,614
Silver	33	15%	16,738,481	22%	41,951
General	14	6%	5,213,571	7%	
Not TAN Member	119	53%	15,045,549	20%	48,378
Total	223	100%	75,574,600	100%	282,492

Contractors located inside Ameren Missouri service territory represented the majority (83%) of completed projects during the program year (Table 5-14).

Table 5-14 Geographic Distribution of Trade Allies by Projects Completed

*Location**	*PY2016*	
	TA Projects	*TA Projects %*
Saint Louis and near suburbs	507	29%
Outlying suburbs	770	44%
North	7	0%
South	84	5%
Central	87	5%
Missouri, outside Ameren territory	14	1%
Bordering state	14	1%
Other state	225	13%
Unknown	35	2%
Total	1708	98%

*North = ZIP codes 63400-63599, 64000-64099, 64400-64499, and 64600-64699.
South = ZIP codes 63600-63999, 64800-64899, 65400-65599, and 65700-65799
Central = ZIP codes 65000-65300
Unknown = projects had no identified contractor or a contractor without a ZIP code in the database.

5.3.9. Hoovers Data Methodology Note

In previous analyses, the ADM team based population estimates on the Commercial Buildings Energy Consumption Survey (CBECS), a nationwide survey of commercial buildings conducted by the U.S. Energy Information Administration.[4] There were three drawbacks to using that source. First, the categories of building types it used overlap partially with those in the BizSavers project database; as a result, the evaluation team

[4] Source: http://www.eia.gov/consumption/commercial/data/2012/.

had to group all non-overlapping categories from either source into an “other” category that represented a large proportion of building types, resulting in a significant loss of granularity in the analysis. Second, the CBECS data are based on a national sample of buildings, and so are not specific to Ameren Missouri service territory. Third, CBECS does not have data on industrial buildings, and so the previous analyses excluded the industrial sector from the analysis.

The Hoover’s dataset has 491 “Primary Industry” categories, which the team mapped to the 16 BizSavers building types in the following manner. First, the team generated a listing of 172,818 entities doing business in the zip codes that make up the Ameren Missouri service territory. The team then attempted to match the BizSavers program participants to the 172,818 entities in the Hoover’s listing on company name, phone number, and street address. This provided information on how the Hoover’s Primary Industry categories correspond to the BizSavers building types for program participants.
Approximately half of the program participants matched Hoover’s records. The matched records represented 147 of the 491 Hoover’s Primary Industry categories, which together made up 67% of the Hoover’s records. The team cross-tabulated the BizSavers building types and the 147 associated Hoover’s Primary Industry categories for those matched records. The Hoover’s Primary Industry categories did not map neatly onto BizSavers building types—that is, some records with a given Hoover’s Primary Industry might have one BizSavers building type but others with that Primary Industry might have different building types.

The team calculated the percentage of records with each Primary Industry that had each building type. The team then applied those percentages to the total counts of unmatched Hoover’s records with those 147 Primary Industry categories to estimate the total number of those records associated with each building type (Table 5-15).

Table 5-15 Calculating Number of Records Associated with Building Types

BizSavers Building Type	*Percent of Each Matched Hoovers Primary Industry Associated with Each BizSavers Building Type*			
	Cat 1	Cat 2	Cat 3	Cat 4
Type 1	70%	0%	10%	0%
Type 2	0%	10%	0%	0%
Type 3	10%	0%	0%	5%
…	…	…	…	…
Total	100%	100%	100%	100%

Percentages Multiplied by Total Count of Hoovers Records of Each Matched Type
⇩

BizSavers Building Type	*Hoovers Primary Industry*				*BizSavers Building Type*	
	Cat 1	*Cat 2*	*Cat 3*	*Cat 4*	*Count*	*Percent*
Type 1	700	0	25	50	775	42%
Type 2	0	10	0	0	10	1%
Type 3	100	0	0	0	100	5%
…	…	…	…	…	…	…
Total	1,000	100	250	500	1,850	100%

The above process allowed the team to estimate the number and percentage of each BizSavers building type category for the two-thirds of Hoover's records with one of the 147 matching Primary Industry categories.

About one-quarter of the remaining 33% of Hoover's records—8% of the total—had a Primary Category name that included the term "manufacturing." The team assumed that those records were distributed across the BizSavers building types in the same proportions as were the 62 matched records with a Hoover's "manufacturing" category: 58% Industrial, 23% Office, and 19% Warehouse.

The team then mapped most of the remaining Hoover's categories, representing 24% of the Hoover's records, onto BizSavers building types based on the category names. In each case, the team assigned each Hoover's category entirely (100%) to a single BizSavers building type. For example:

- Any category indicating a professional service (e.g., banking, financial services, consulting) or commercial real estate was assigned to the Office building type.
- Any category with the word "store" in the name was assigned to the Retail building type.
- Any category referencing medical care was assigned to Healthcare.
- Any category referencing farming or food production was assigned to Industrial.
- Any category referencing wholesale or storage was assigned to Warehouse.

One caveat is that this analysis assumes that the BizSavers records that the team could match to the Hoover's records represent all BizSavers records. To check this assumption,

the team compared how the matched and unmatched project records were distributed across the BizSavers building types. Table 5-16 show that, in general, the two groups of records were similarly distributed across building types. The most notable exceptions are that the Retail building type makes up a smaller percentage of the matched than unmatched records and vice-versa for the Industrial building type.

Table 5-16 Building Type

BizSavers Building Type	*Records that Matched Hoover's (n = 932)*	*Records that Did Not Match Hoover's (n = 995)*
Retail	15%	21%
Office	14%	14%
Industrial	14%	7%
Food & Beverage Service	9%	8%
Education	8%	8%
Lodging	6%	8%
Faith-Based	7%	4%
Warehouse	5%	6%
Government	6%	5%
Healthcare	4%	6%
Automotive Services	5%	3%
Entertainment/Recreation	4%	3%
Grocery and Convenience	2%	3%
Parking Garage	1%	2%
Gas Station	1%	1%
IT/Data Center	0%	1%

5.4. Feedback on Continuing BizSavers Programs

5.4.1. Contractor and Other Service Provider Feedback

In February 2017, evaluation team interviewed 20 trade allies who completed projects through the Ameren Missouri BizSavers Standard, Custom, and New Construction programs. The interviews covered topics related to program suspension and changes, program improvement, awareness of the SBDI Program and the EMS pilot, and reasons for participation. The following subsections describe the methods and results relating to the continuing BizSavers programs. Results specific to the new EMS pilot and SBDI Program are found in Sections 5.5 and 5.6.

5.4.1.1. Methods

The evaluation team carried out a purposive sampling approach, with a goal of including at least 12 of the most active trade allies included in the 20 interviewed trade allies, where "most active" meant either: 1) being in the top 90th percentile in total number of completed projects; or 2) being in the top 90th percentile in total kWh and having completed at least five projects. The purpose of the dual criterion was to ensure that the sample included some of the most active mechanical and lighting trade allies: those who do mainly mechanical projects generally do fewer projects in a given year than those who do mainly lighting projects. The evaluation team randomly ordered the 36 "most active" trade allies by the above criteria and the 170 "less active" trade allies and called through the lists until they had interviewed 20 trade allies, 13 of the most active ones and seven others.

5.4.1.2. Trade Ally Characteristics

The interviewed trade allies represented a diverse group in terms of program activity and type of firm. About three-quarters (15 of 20) had experience with lighting equipment and half (11 of 20) had experience with non-lighting equipment, with about one-third (7 of 20) having experience with both. Most (15 of 20) noted their companies were either distributors, installers, or both (Table 5-17).

Table 5-17 Type of Trade Ally Firm (n = 20)*

Type of Firm	*Count*
Distributor	11
Installer	9
Manufacturer	3
Rebate processing firm	2

*Some trade allies indicated more than one type.

Trade ally firms ranged in size, with exactly one-half having a single location and one-third (7 of 20) with multiple locations in Missouri. The remainder (3 of 20) reported having no locations in Missouri. Of those, two were rebate processing firms and one was an installer firm based in Ohio but with locations nationwide, serving 400 utility companies.[5] The number of employees also varied, from 1 to 200, with a median of 13.

Trade allies reported serving all areas of Ameren Missouri's territory (Table 5-18).

[5] At the time that the interview sample was drawn, the last firm had done 33 BizSavers projects in 21 cities, nearly all of which were within the greater St. Louis metropolitan area or otherwise were within a few miles from the Illinois border. Three were somewhat more remote but close enough to an urban center in another state that it would be feasible to complete a project remotely: two were in Washington and Jefferson City, about 58 miles and 135 miles, respectively from East St. Louis, Illinois, and one was in Kirksville, about 45 miles from Bloomfield, Iowa.

Table 5-18 Areas Served of Trade Allies (n=20)

Area Served	*Count*
Statewide	10
Eastern half of the state	5
St. Louis Metro	4
Southeastern Missouri	1

5.4.1.3. Impact of Program Interruption in 2016

Ameren Missouri incentive programs were suspended for about three months between January 2016 and March 2016. Most (17 of 20) trade ally contacts reported the program suspension affected their company's project workload:

- Fifteen reported that customers were uneasy to start projects or cancelled or postponed projects until the program started again.
- Nine reported that their firms did fewer jobs, sold fewer products, or saw a drop in customer interest for high efficiency equipment.
- Four put program-related work on hold or were not promoting the program.

The "most active" trade allies were at least as likely to identify the above issues as were the "less active" ones.

Two trade allies – not in the less active group – said the program suspension had no effect and one trade ally was unaware that rebates had been suspended. These three firms were less active with the program, which may explain their responses.

When asked whether some customers were affected more by the program suspension than others, the interviewed trade allies were as likely to say that industrial customers as commercial customers were affected (six and five trade allies, respectively). None of the respondents indicated that the program suspension had a disproportionately great effect on businesses of any particular type (e.g., restaurant, retail), size, geographic location, or ownership structure. However, four said that the suspension had the greatest effect on customers conducting lighting upgrades, but those comments appeared to reflect in part the focus of their work or the other suppliers they work with.

When asked about new construction, four trade ally contacts reported that new construction projects were either less affected or not at all affected by the program suspension.

5.4.1.4. Impact of Changes to Custom Incentive Structure

The evaluation team asked contractors about their awareness of and the impact of the change in the incentive structure for BizSavers custom projects. Previously, incentives were paid per kWh saved at two levels—one for lighting and one for non-lighting

measures. Now, incentives are paid per kWh saved at five levels, depending on the end use or equipment type.

Trade allies had heard of the changes to the custom incentives through various channels:

- Webinars/meetings or training sessions (5 responses)
- Emails (4 responses)
- Ameren representative (2 responses)
- Website (1 response)
- A tool supplied by Ameren (1 response)

Eleven of the 16 trade ally contacts said that the custom incentive changes had no effect on their program-affiliated work. Five trade allies identified possible effects. Of those, three identified largely positive effects, saying that the change allows for increased incentives or more custom project opportunities. One of those three indicated that, with the firm's expertise in running building simulations to estimate savings, the firm could capitalize on the HVAC incentive changes to get larger incentives, driving higher sales. One of the three said the changes increased incentives, helping customers offset some of the upfront cost. That contact elaborated, though, that incentive changes will likely only affect whether a customer completes a project "…immediately or down the road."

Two trade allies identified downsides to the changed incentive structure. One suggested that changes to the incentives for some measures as well as changes in program guidelines will affect payback calculations and cautioned when payback is extended beyond 18 months, customers typically are not interested in pursuing the project. The other trade ally reported that some items for which prescriptive incentives previously had been available now were available only in custom projects.

5.4.1.5. Impact of Elimination of Outdoor Lighting Incentive

The evaluation team also asked contractors about the impact of the elimination of the incentives for outdoor lighting. Twelve trade allies reported being affected by this program change. Seven of those 12 said that elimination of the outdoor lighting incentive had a big effect on their business: it either stopped sales or reduced the scope or number of their outdoor lighting projects or leads. Five of these seven firms were lighting contractors or vendors. One reported on the impact that the change had on an installation firm that she sold to:

> *"I have one customer/partner that went broke. He said when [the outdoor lighting incentive] stopped, $1.8 million in lighting projects went up in smoke. By March and April they couldn't pay their bills and they just vanished. Didn't even declare bankruptcy. They owe a manufacturer hundreds of thousands of dollars. It's*

devastating to many practitioners and it's now way harder to sell an outdoor lighting project."

A few trade allies explained why it is harder to sell lighting projects after outdoor lighting incentives were eliminated. Two said that it was harder to come up with an attractive overall project cost. One explained: "Most like to consider doing their exterior and interior at the same time; without exterior lighting incentives, we fall short in a cost standpoint of reducing overall cost up front." Another explained: "The outdoor projects had the best payoff. When Ameren took the outdoor incentive away, it made it so much harder to sell the indoor projects." Two trade allies also noted that their clients will complete upgrades in phases or one bulb at a time now that outdoor lighting incentives are no longer available.

Seven of the 20 interviewed trade allies identified the types of customers that were most affected by the elimination of incentives for outdoor lighting. Four of those specified commercial or retail customers with outdoor parking and two identified car dealerships as particularly affected. Other types of affected customers, identified by one trade ally each, were churches, fire stations, ambulance districts, casinos, community centers, and large industrial customers.

5.4.1.6. Reasons for Program Participation

When asked the reasons for their company's involvement with the Ameren Missouri BizSavers Program, all interviewed trade allies said that it helps them with sales (14 responses) and/or the program benefits their customers and they want to their customers to be happy (12 responses).

Seven trade allies elaborated on how the program helps with sales. Four said without the incentives, some projects would have had a long payback period or unattractive return on investment (ROI). Two noted the incentives push businesses who were on the fence to complete a project. One trade ally said that the pre-approval process gives customers confidence that the contractor's calculations are correct, which helps when selling a project.

Five who elaborated on how the program benefits their customers all pointed to saving money and/or improved profitability. One contact who works in the nonprofit sector noted that money savings allows nonprofits to use more of their budgets on their core mission of serving the people in need.

None of the interviewed trade allies identified any issues in maintaining their trade ally network (TAN) membership.

5.4.1.7. Program Experience

All but one trade ally reported some program-related challenge or provided a suggestion for program improvement. The most common comments related to incentives, the application requirements and options, communication, and timeliness of application processing.

The largest category of comments consisted of those relating to incentives, with 13 trade allies making some incentive-related comment—all objecting to the elimination of the outdoor lighting incentive (see section 5.4.1.5).

Eleven interviewed trade allies had some comment or suggestion relating to program processes. The specific comments were varied. Six commented on the burdensome amount of information required for the applications, including labor rates for custom applications. For one of those trade allies, the time and effort required to develop the information required for the incentives is a cost to the trade ally, which may not be recovered if the application is not approved.

Three of the 20 trade allies made comments indicating a desire to be able to do more projects with the prescriptive application. The comments differed for the one trade ally in the "most active" group and the two others. The "most active" trade ally indicated in general that the program has done a good job of providing a range of measures that can be handled with prescriptive applications; that ally suggested only that, *"the more stuff they can make standard the better."*

The other two trade allies, who had done two and three projects, respectively, made comments suggesting they were not aware the program has a standard or prescriptive application process:

> *"Wouldn't it be nice to give us the choice to go custom or standard? There are certain things they will turn into a standard payment."*
>
> *"There're prescriptive based programs in other parts of the country."*

On a somewhat related note, one other "less active" trade ally (one project) suggested that the program should not automatically disqualify projects in which emergency replacement equipment was purchased prior to approval because:

> *"…for emergency HVAC replacements … if they would allow us to purchase equipment knowing the rebate might not be approved because it hasn't been reviewed yet, so we can just say 'okay, we're going to try to get this rebate, we can't guarantee it, because Ameren might deny it, but we need to get equipment on order.' If Ameren would let us do that and still have the rebate application be pending and then hopefully it gets reviewed and we get approval. Just being able to order equipment before the rebate is approved would be helpful."*

In essence, this trade ally was suggesting that some projects could be treated as FastTrack projects – not requiring pre-approval – even though the incentive may exceed the FastTrack ceiling. Given that no other trade ally suggested this and that such a change could potentially increase free ridership, this may not be an appropriate change to make. In future research, the evaluation team will attempt to determine whether many other trade allies share this concern and to identify possibly program responses.

One trade ally commented more generally about the amount of time that participating in the program entails:

> *"Right now, for me, I have economic issues, and they make some things a lot more difficult. I just can't afford to spend a lot of time on stuff when I'm not certain that it's going to pay off. So, as Ameren has made the changes they made, I literally have done less with the program."*

Five trade allies commented on communication with the program. Again, comments were varied. Four suggested a need to keep better informed about program changes. One commented on getting emails "kicked back" from Lockheed Martin. One trade ally said that the engineering staff at Lockheed Martin had not been highly cooperative:

> *"That's kind of a problem we've experienced. We work with Ameren in Illinois and Missouri and in Missouri, it seems like they're not as cooperative with… we never have projects rejected in Illinois, but we do in Missouri. And I don't know why that is. I don't know if it's a personality thing or one or two reviewers that are hard to work with."*

Two trade allies identified slow rebate turnaround as a challenge, one noting it sometimes takes 45 to 60 days to receive a check after the project that is done. Both of those trade allies were among those who cited a need for better program communication.

In commenting on program challenges, four of the trade allies identified some way in which the Missouri program is more cumbersome or less lucrative than the Illinois program:

- One of those who commented on application burdens noted how custom projects are handled differently in the Missouri and Illinois programs. According to this trade ally, the Missouri program requires custom projects, including lighting projects, to meet payback requirements that take into the account installation cost, whereas in Illinois, the custom incentives are based only on the efficiency of the equipment or wattage of the bulb.[6] Another difference is that the Illinois application does not consider hours of operation, which the Ameren Missouri

[6] The evaluation team compared the custom project applications for the Ameren Missouri and Ameren Illinois programs, which appeared to confirm the trade ally's comment. Of course, the two programs operate in different regulatory environments, which may account for the differences in program requirements.

BizSavers application does. As a result, this trade ally reported doing two to three times as much work with the Illinois program than with the Missouri one. The trade ally was not clear on why he could not submit lighting projects as standard applications.

- The second trade ally noted that the Ameren Missouri BizSavers Program does not underwrite the cost of audits to identify savings opportunities to address through the standard and custom programs, whereas the Illinois program funds 80% of the cost of an audit to find low-cost, no-cost, or custom improvements. That trade ally said that difference would result in choosing to work in Illinois rather than Missouri.
- The third trade ally who compared the Missouri and Illinois programs said that the latter provides superior co-branding and marketing materials for contractors to use for sales. This contact explained that they are trying to convey the same message to a customer whether they are in Missouri or Illinois, and the message is easier to convey in Illinois because, unlike the program in Missouri, Illinois program provides a "plethora" of well-defined promotional materials.
- The fourth one suggested a need for better engagement with trade allies comparable to that offered by the Ameren Illinois program.

Several additional comments were offered by one trade ally each. Even though these were minority views, their content may warrant consideration.

One suggested that the program revisit payback requirements since technology changes with time.

One trade ally suggested the program should emphasize lighting quality, not just savings. This individual suggested that the program staff "have no clue that LED is a terrible lighting for people's eyes. They only thing people are looking at is the wattage." This ally emphasized the importance of full-spectrum lighting and stating that "LED is the furthest thing from full-spectrum." As that ally further elaborated, LED is:

> *"a light to see. Not a light to see by… It's not useful for visual acuity. When people put the stuff in and can't see what they're doing, a lot of times they're coming back angry and saying, 'I need more light.' And I say yes, I told you that to begin with. But you listened to the other people. You looked at what you saw on the internet."*

One trade ally noted that big companies, such as chain retail stores, design their new buildings expecting to get certain incentives, on average, nationwide. They scan all the incentives for new construction across the country and then make a decision on the design of the building based on those incentives. The challenge is when they apply for the new constructing Missouri program incentive. The Missouri program staff may want

to affect the design of the building, but that may not work because companies already decided on the building design.

Finally, one trade ally suggested that Ameren Missouri offer educational or certification classes for individuals entering the trades, as college and university degree programs incur too great a debt.

5.4.2. Participant Online Survey

From October 2016 through March 2017, the evaluation team invited 947 PY2016 program participants to take an online survey and received 240 responses, for a response rate of 25.3%.

The survey collected data on program awareness, customer decision-making and preferences, experience with program processes and installed equipment, satisfaction with various aspects of the program, and any new construction plans. Some questions addressed all survey respondents, while some were specific to participants of a given program.

Key findings are:

- Respondents were most likely to report a source outside of Ameren Missouri or its program implementer, primarily an equipment vendor or building contractor, as sources of awareness, project influence, and application assistance. However, energy savings were greatest for participants who identified program marketing or outreach as sources of program awareness.
- Nearly one-third of Standard Program participants reported awareness of custom incentives.
- Participants were moderately proactive in deciding to do an efficiency upgrade.
- Participants generally were satisfied with the application process as well as most other aspects of participation, although more than one-quarter of those with custom projects had to resubmit or provide supporting documentation for their applications.

5.4.2.1. *Description of Sample*

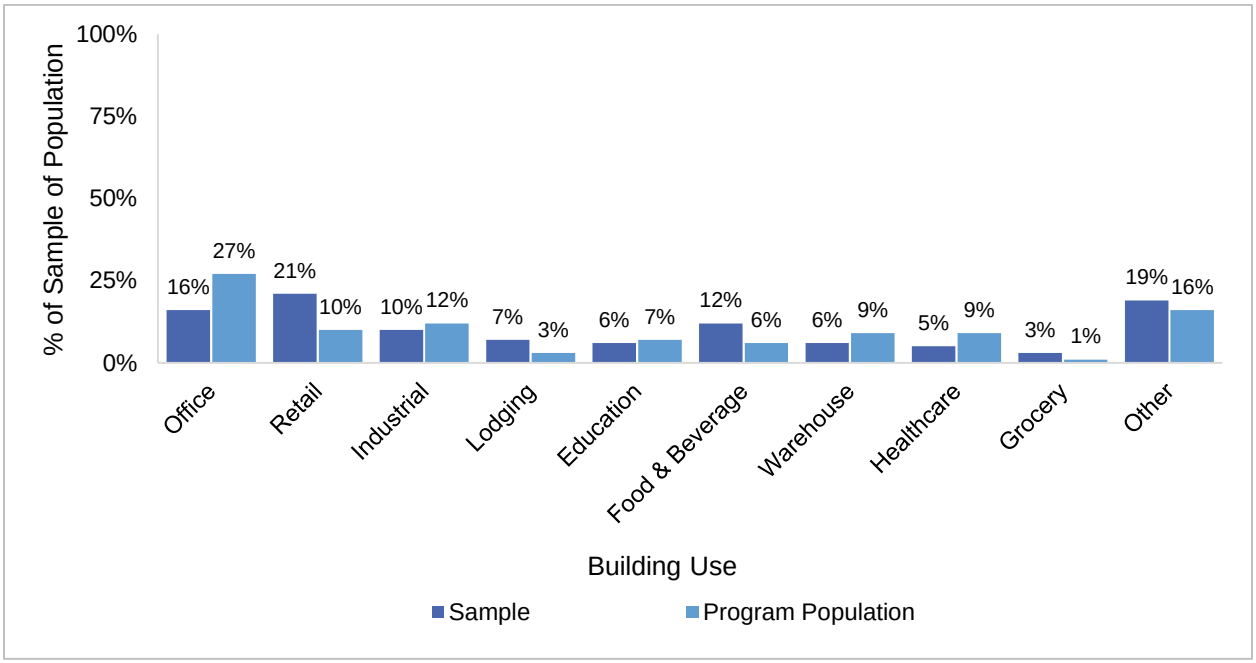
Of the 240 survey respondents, 60% had completed standard project, 47% had completed custom projects (16% had completed both and were counted in both totals). In addition, twenty-one respondents had completed an SBDI project and three respondents had completed a New Construction project. No respondents completed a Retro-Commissioning or EMS project.

5.4.2.2. Respondent Characteristics

Respondents most commonly reported a title that indicated facilities management or other facilities responsibilities (41%), while most others were the company owner, president, or a top officer or director (34%) or reported some other management or administrative responsibility (25%).

Respondents represented a variety of building types. As Figure 5-6 shows, the distribution of the survey sample by building use is consistent with the distribution of the participant population, with offices and retail facilities the most common.

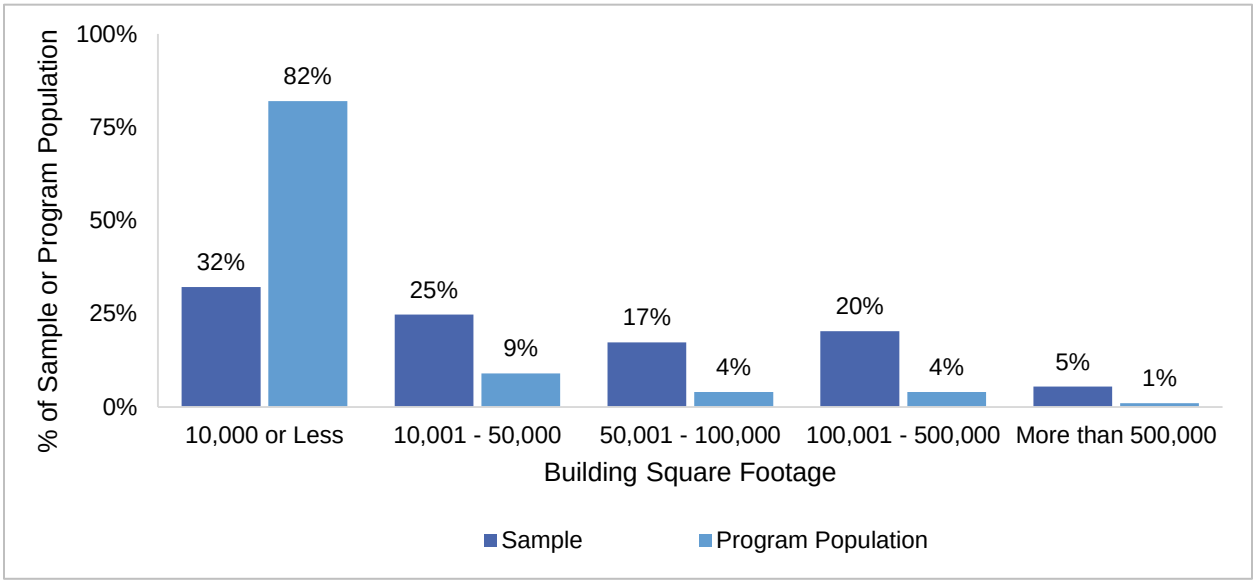
Figure 5-6 Type of Building – Sample Compared to Program Population



The size of the facility where the project occurred varied from less than 5,000 square feet (15% of respondents) to more than 1,000,000 square feet (1% of respondents). About two-thirds of respondents (70%) reported facilities of 100,000 square feet or less. As Figure 5-7 shows, the distribution of survey respondents by building size is more diverse and skewed towards larger building sizes compared to all program participants.[7]

[7] Interpretation of this comparison should take into account that building size was missing for 15% of database project records and 16% of survey respondents.

Figure 5-7 Building Size – Sample Compared to Program Population



Among respondents who reported the number of locations within Ameren Missouri territory (68% of the sample), 77% reported five or fewer locations, 16% reported six to 25 locations, and 7% reported more than 25.

5.4.2.3. BizSavers Awareness

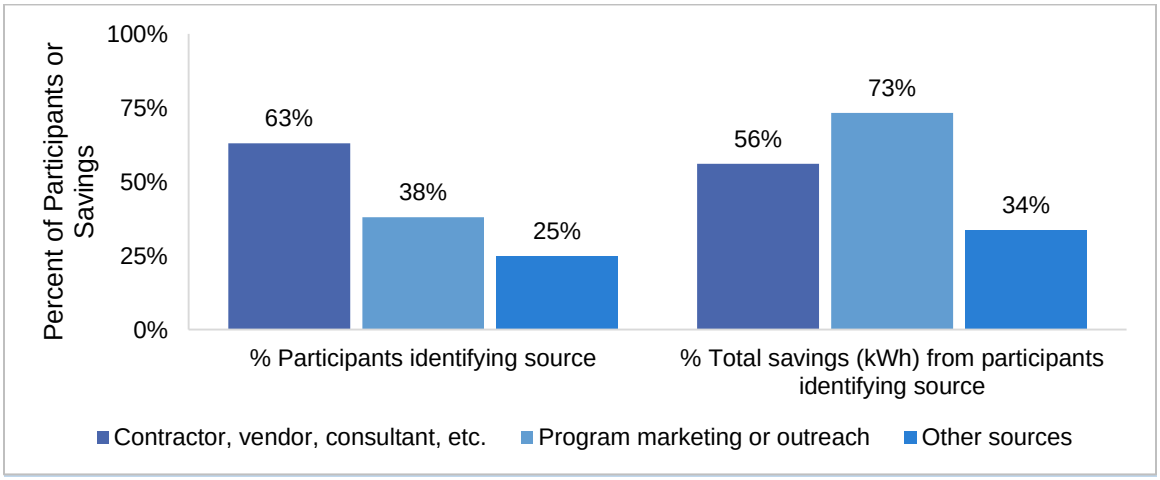
Respondents learned about the program through a variety of sources (Table 5-19). Respondents were more likely to report a source outside of Ameren Missouri or its program implementer—primarily an equipment vendor or building contractor—than an Ameren Missouri source. More respondents reported face-to-face outreach (contact by an Ameren Missouri key account representative or a BizSavers representative) than reported program mass/direct marketing (including brochures, newsletters, and broadcast ads) or from the program website. This does not necessarily imply, of course, that mass or direct marketing reached fewer respondents; rather, it conceivably could reflect a recall bias in favor of the more personal form of outreach.

Table 5-19 Sources of Program Awareness (n=240; multiple responses allowed)

Source	*Count*	*Percent*
Contractor, vendor, consultant, etc.	152	63%
Program marketing or outreach	92	38%
From a BizSavers Rep.	42	18%
From an Ameren Missouri Account Rep.	38	16%
Program website	26	11%
Program mass or direct marketing	18	8%
Sources other than Ameren or contractor, vendor, or consultant	61	25%
Past program experience	36	15%
Friend, colleague, professional association	18	8%
From an event/trade show	10	4%
From a search engine	3	1%
Other	4	2%
Do not know	2	1%

In addition to examining the percentage of respondents that reported each source of awareness, the research team also examined the percentage of project-related energy savings associated with each source. Figure 5-8 shows that, while awareness from trade allies (contractors, vendors, or consultants) was more commonly reported than program outreach or other sources of awareness; however, awareness from program sources generated higher levels of savings than from trade ally awareness. Thus, program-related outreach is responsible for a significant proportion of program savings and is an important source program awareness.

Figure 5-8 Sources of Program Awareness: Participants and Associated Savings Reached by Each Source (n = 226; multiple responses allowed)[8]



[8] We excluded fourteen respondents (6%) from this analysis because we were unable able to match kWh savings to survey responses.

5.4.2.4. Awareness of Custom Incentives, Reasons for Not Seeking Them

The survey asked the 165 respondents with Standard or SBDI projects whether they were aware of incentives for custom projects. Seventy-one respondents (43%) reported they were aware of Custom Program incentives. The percentage was much higher for the 144 who received standard incentives (47%) than for the 21 surveyed SBDI participants (19%). The percentage also was much higher (57%) when the respondent's title or role related to facilities, maintenance, engineering, or electrical services than when the respondent was the owner or an executive-level employee whose title did not denote a technical function (32%).

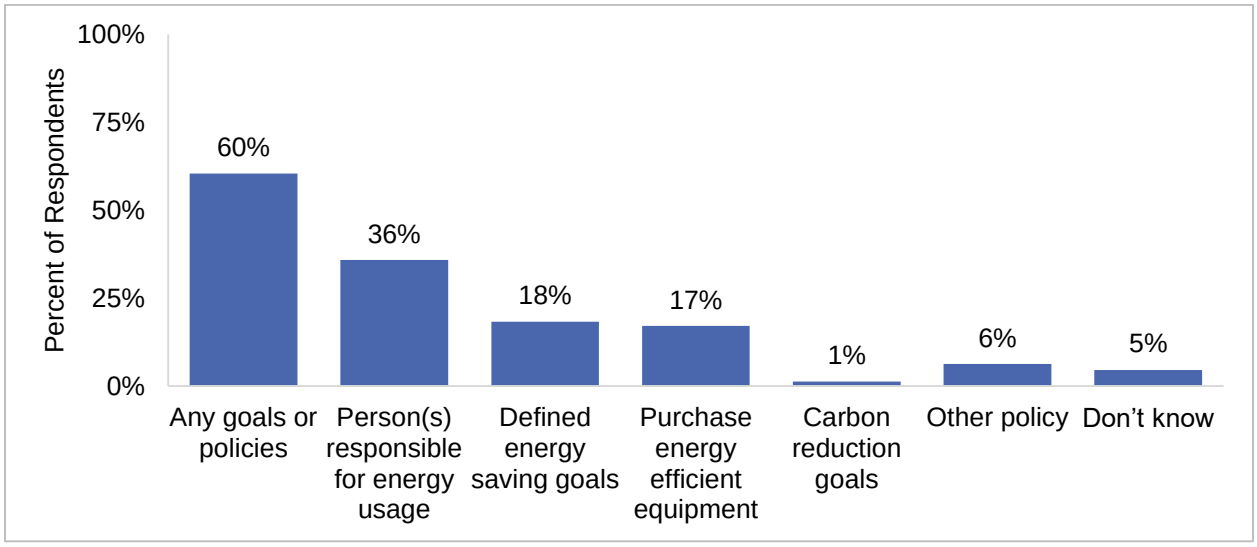
Previous evaluations found that most such participants did not choose the Custom Program option mainly because the Standard Program application covered all equipment of interest to them but in some cases because they did not wish to complete the custom application or because of cost concerns. For the current evaluation, the evaluation team chose not to assess reasons for not pursuing custom projects to allow room to investigate other issues.

5.4.2.5. Proactivity in Saving Energy

The survey investigated proactivity toward energy efficiency by asking about company policies or practices related to energy management and about the company's role in originating the upgrade project. As explained below, the findings suggest moderate proactivity.

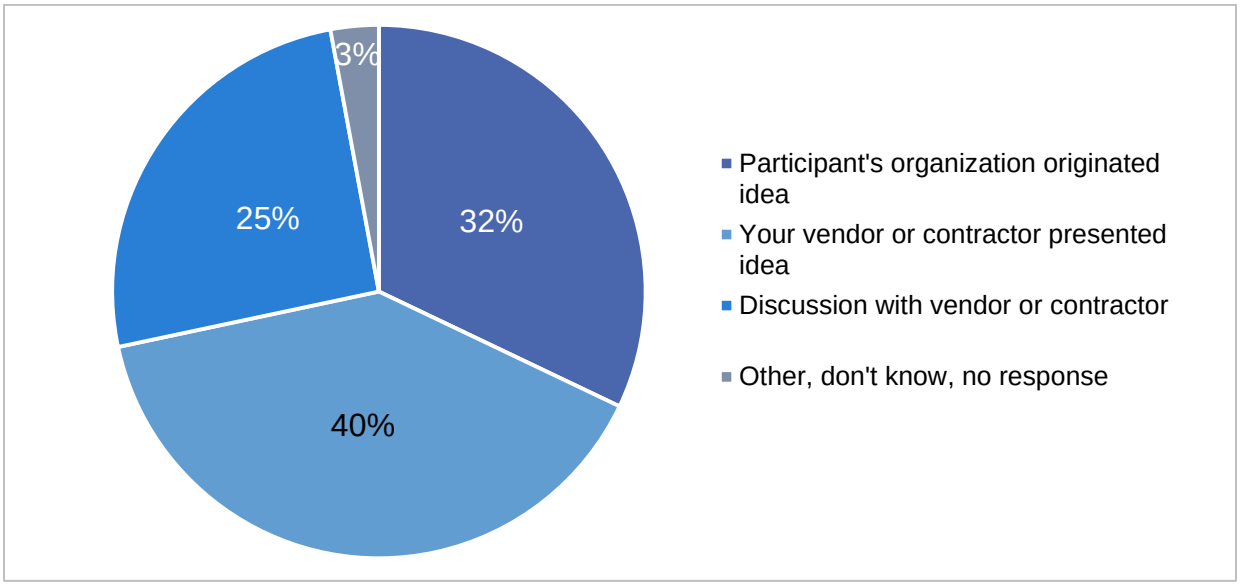
Just under two-thirds reported that their company had one or more energy-related policies, the most common of which was having an employee or employees responsible for energy monitoring or management. About one-fifth, reported having defined energy-saving goals or an energy efficient equipment purchase policy (Figure 5-9).

Figure 5-9 Energy Related Policies (n=240; multiple responses allowed)



About one-third of respondents reported that the idea to participate in the program originated within their organization, while more said that a vendor or contractor presented the idea and about one-quarter said the idea came up in a discussion with their vendor or contractor (Figure 5-10).

Figure 5-10 Party Initiating Discussion about Program Participation (n=240)



In previous evaluations, respondents that reported energy-related policies were more likely also to report that their organizations took the initiative regarding their project. The evaluation team interpreted that relationship as indicating these are indicators of a proactive approach to saving energy. In the current evaluation, while those who reported taking the initiative in projects were more likely than those who did not take the initiative to report energy-efficient policies (64% vs. 55%), the difference was not statistically significant.

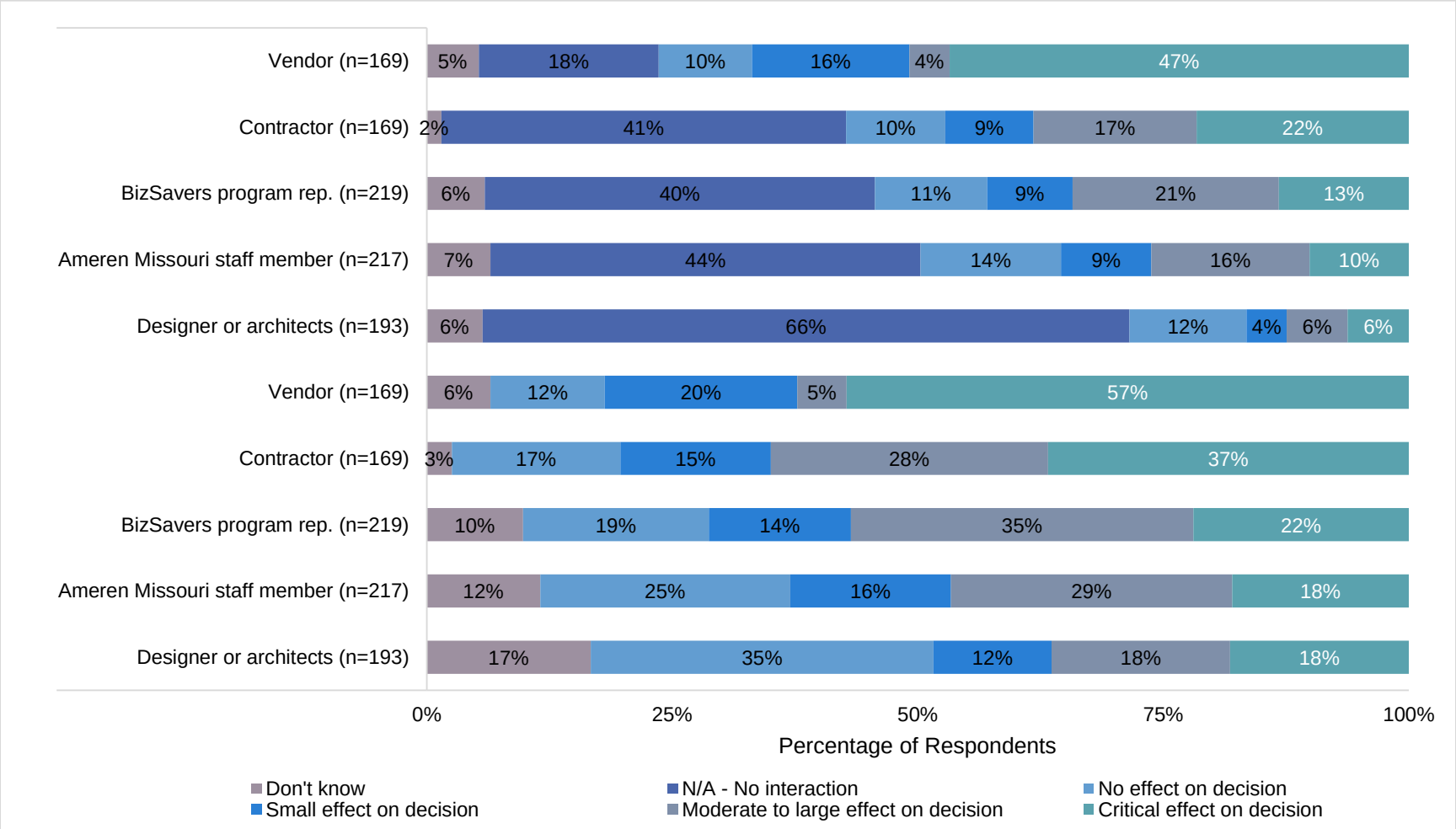
5.4.2.6. Persons Affecting Customer Decisions

Figure 5-11 shows that participants were most likely to have interacted with equipment vendors in making equipment decisions, and vendors had the greatest reported influence on the decision to install the efficient equipment. More than three-quarters of respondents reported having had interactions with equipment vendors, and among those, more than half reported that vendors had a critical influence on their decisions.

Just over half of respondents reported interactions with contractors, of whom just over one-third reported the contractor had a critical influence on their decisions and just over one-quarter reported at least a moderate influence.

Almost as many survey respondents reported interactions with BizSavers program representatives as with contractors, but the program representatives had somewhat less influence on their equipment decisions.

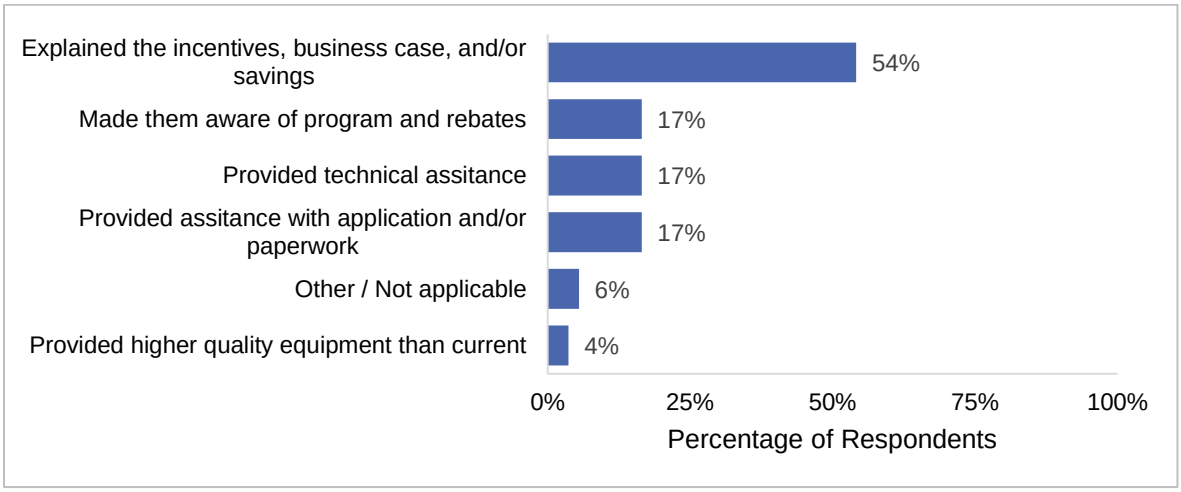
*Figure 5-11 Influence of Vendors, Contractors, and Utility Staff on Decision to Install Efficient Equipment (multiple responses allowed)**



*To improve legibility, percentages less than 3% are not shown.

The 109 respondents who reported that someone had at least a "moderate" level of influence reported a variety of ways in which those persons influenced them (Figure 5-12). The most common form of influence was explaining the incentives and/or the business case for using the incentive to make the upgrade, with more than one-half (54%) of the respondents citing one or both of those influences. Nearly one-fifth of respondents (17%) cited trade allies making them aware of rebates, providing technical assistance (equipment recommendations), and/or aiding with the rebate application. Additionally, four respondents mentioned contractors installing higher quality equipment than what was installed previously. Six respondents made comments that were too general to reliably categorize (e.g., "Reassured about the warrantee program").

Figure 5-12 Actions Taken by Trade Allies to Influence Participants' Decision to Install Efficient Equipment (n=109, multiple responses allowed)



5.4.2.7. Customer Experience with the Application

A slight majority (78%) of respondents reported that they or a co-worker had a direct role in completing their application for incentives (Table 5-20). Similarly, a slightly smaller proportion of applicants also reported they had had outside help in completing their applications (74%)—most commonly, a vendor (44%). About two-fifths of respondents (38%) said both they and some outside party had direct roles.

Table 5-20 Direct Experience with the Application (multiple responses allowed)

Role	*Count*	*Percent*
Applicant*	187	78%
Any outside help	178	74%
Vendor	102	43%
Contractor	73	30%
Designer or architect	3	1%
Someone else	4	2%
Do not know / no response	5	2%
Total	240	100%

*Survey respondent or co-worker.

Respondents who reported that either they or a co-worker played a direct role in the application were significantly more likely to say that their organization initiated the discussion regarding their decision to participate in the program, compared to those who were not directly involved in the application process. The program provides two versions of the application worksheets that applicants may complete: an online Excel-based version or a downloadable Excel version. Either may be submitted as an email attachment or by fax or postal mail. Around one-third (32%) of respondents did not know which application version they completed or did not respond to the question.[9] Of the 98 respondents who knew which version they completed, over half (51%) reported using the online version and more than two-fifths (45%) reported using the downloadable version.

Of the 144 respondents with custom, new construction or retro-commissioning projects, nearly one-third (31 respondents) reported they had to resubmit or provide additional supporting documentation before their application could be approved. Of those thirty-one, thirteen (42%) reported being asked to provide additional supporting documentation, such as invoices. Of the remaining respondents, nine reported issues related to how they (or their proxy) had calculated energy savings, ten reported other miscellaneous issues or did not know why they had to resubmit.

Of the 163 respondents with standard or SBDI projects, about one-fifth (23%) reported the 180-day timeframe limited the types of project they might propose. The remaining respondents said either the timeframe did not impose a limit to their projects (48%) or that they did not know or did not provide a response (29%).

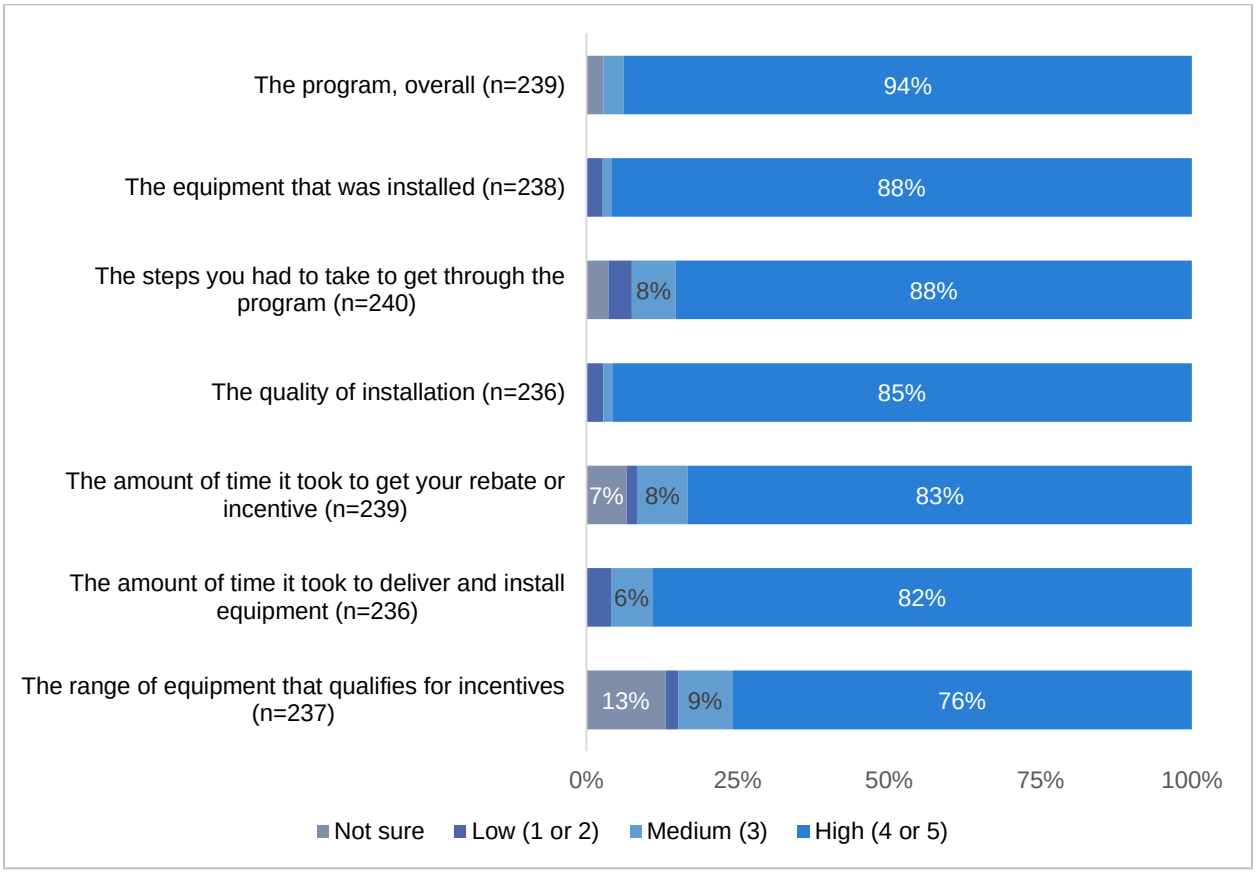
5.4.2.8. Customer Satisfaction with the Program

All respondents rated their satisfaction with the program overall and various aspects of participation.[10] On their overall experience, 95% of participants indicated high satisfaction (Figure 5-13). Satisfaction was greatest with the program overall, of the installed equipment and steps taken throughout the program—those aspects of participation most directly influenced by the participant's dealings with a contractor or vendor. Satisfaction was lowest regarding the range of equipment and amount of time it took to deliver and install the equipment.

[9] Around two-fifths (39%) of those who did not know which version they completed reported having received outside help to complete their application, which may help explain why they were not sure which version they completed.

[10] Responses were on a 5-point scale from one ("not at all satisfied") to five ("very satisfied").

*Figure 5-13 Satisfaction with Participation**

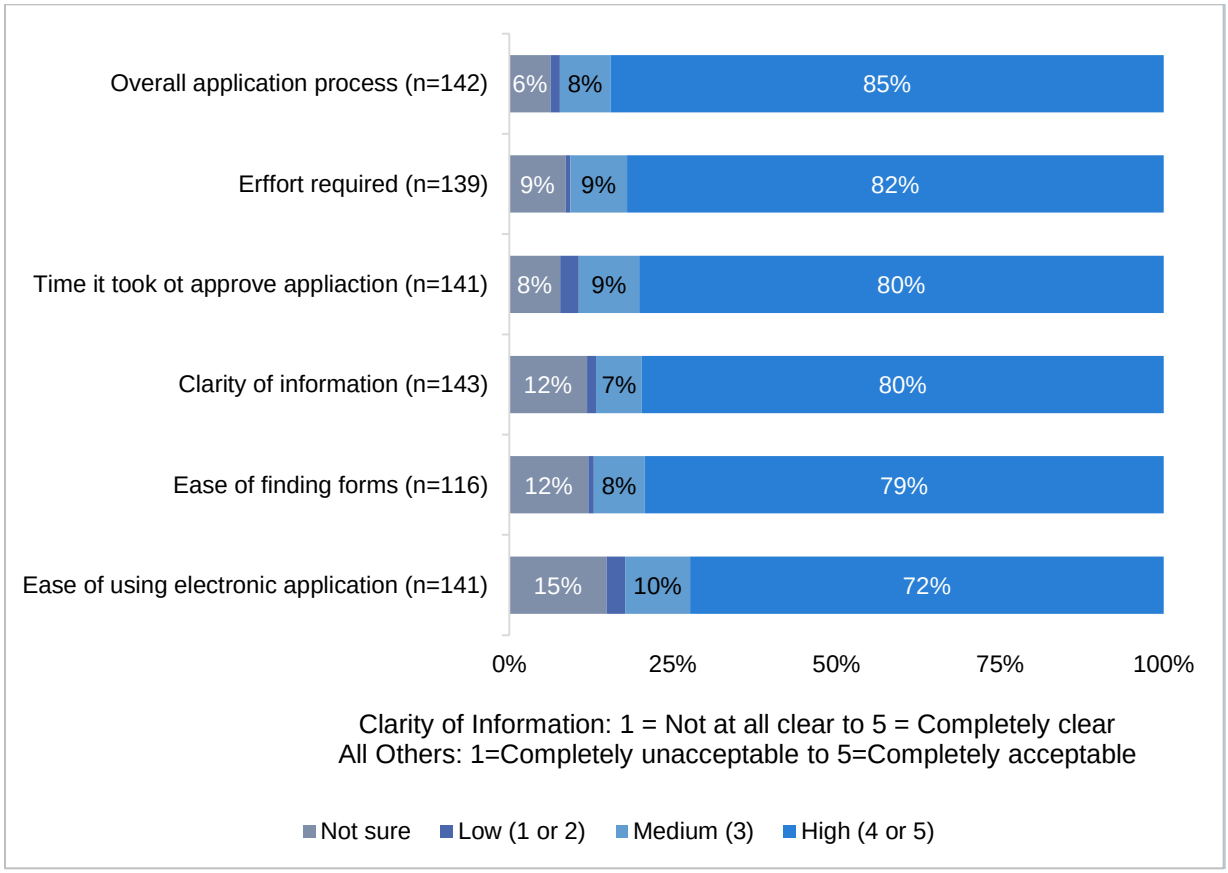


*To improve legibility, percentages less than 5% are not shown.

To get more detail about satisfaction with the application process, all respondents were asked to rate several aspects of their experience with the process, including the clarity of application instructions.[11] As Figure 5-14 shows, respondents gave high ratings on most indices. The lowest satisfaction was for the ease of using the electronic rebate application, with nearly three-quarters (72%) still reporting high satisfaction on this index.

[11] Responses were on a five-point scale. For “clarity of information,” the scale endpoints were defined as one = “not at all clear and to five = “completely clear.” For all others, the endpoints were one =”completely unacceptable” and five = ”completely acceptable.”

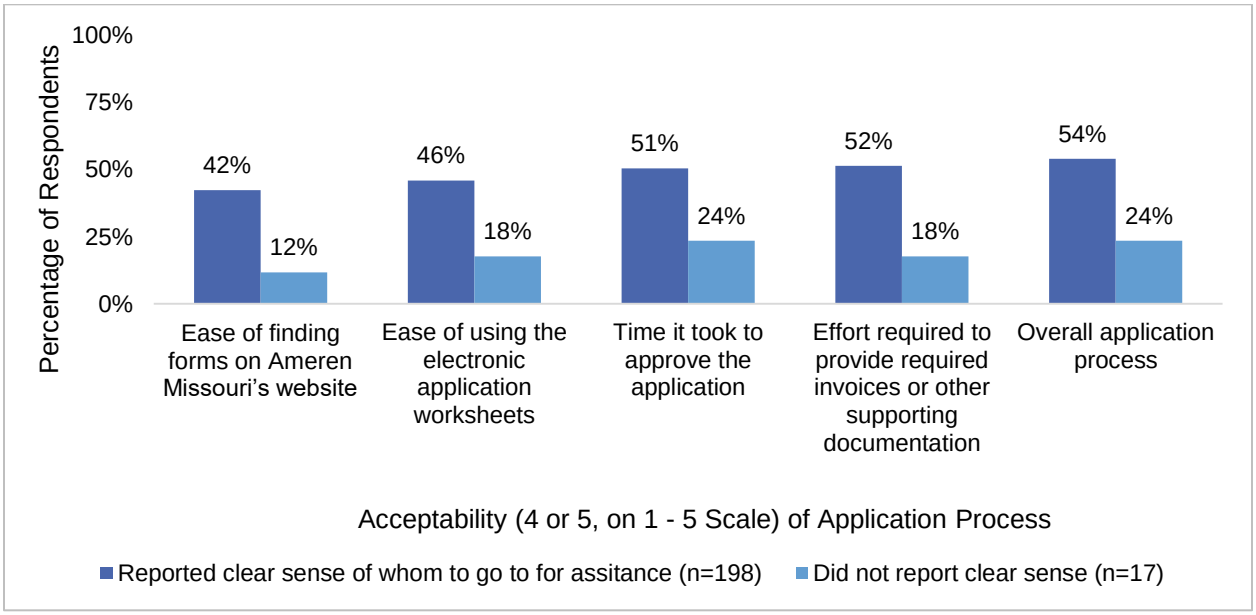
*Figure 5-14 Clarity of Application Instructions and Acceptability of Application Process**



* The percentages shown exclude respondents who indicated the question was “not applicable” (e.g., they did not obtain application forms from the program website, they were not required to provide documentation). To improve legibility, percentages less than 5% are not shown.

All respondents were asked if they had a clear sense of who they could go to for assistance with the application process, 198 (83%) said they had a clear sense of whom they could go to for assistance with the application process. Those 198 respondents were more likely than the seventeen other respondents to rate all aspects of the application process as acceptable (Figure 5-15). While it would make sense that those who know where to get application assistance would, in the end, find the application process more acceptable, we cannot infer a causal relationship with any certainty. However, the fact that knowing where to go for assistance correlates with application acceptability indicates that there is a small group of participants who found the process challenging and did not know where to get help with it. These customers found a way to complete their applications and participate in the program, but their difficulty could prevent repeat participation, and they could represent a larger group of customers that did not go through with the application process.

*Figure 5-15 Clarity of Application Instructions and Acceptability of Application Process**



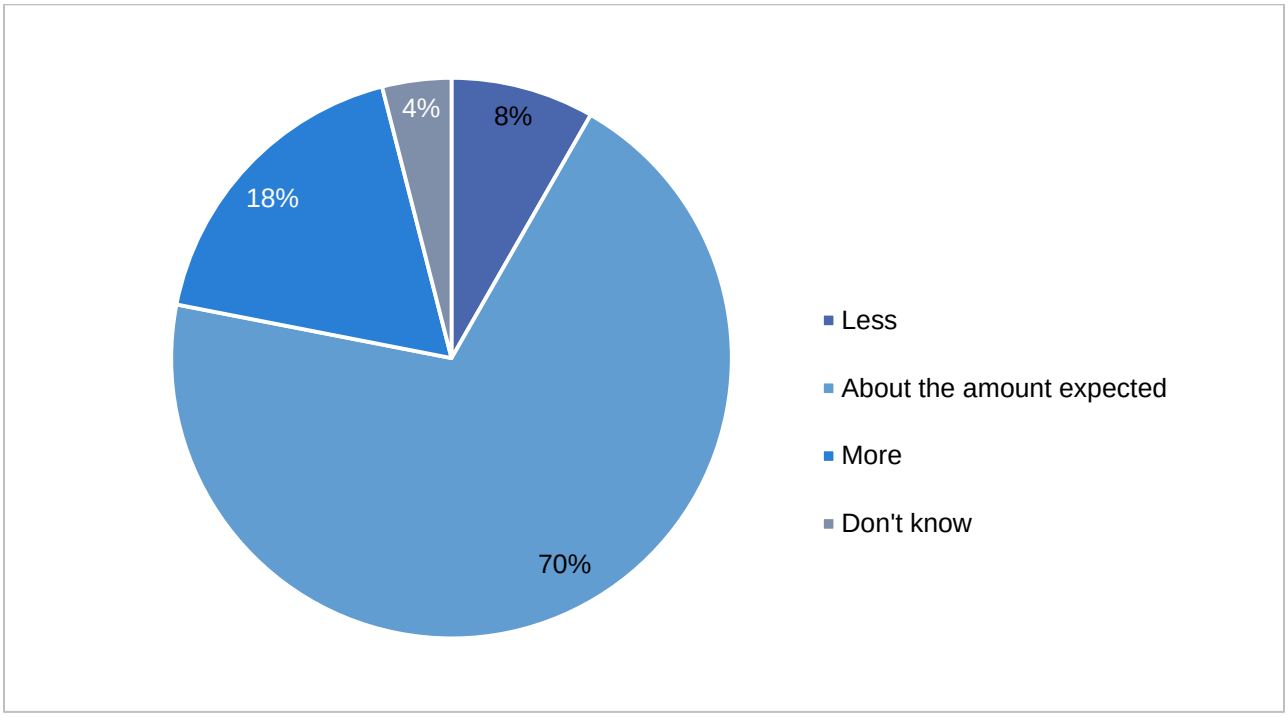
* The percentages shown exclude respondents who indicated that they did not know if they had a clear sense of who to go to for assistance with the application process.

When asked whether they had interacted with program staff during the project, 98 of the 240 respondents (41%) reported such interactions; 122 (51%), reported no interactions; and twenty (8%) were not sure or did not respond. Of the 98 respondents who interacted with program staff, all rated the program staff as "knowledgeable" or "very knowledgeable." Among those respondents, all indicated high satisfaction (a rating of 5 on a 5-point scale) with the amount of time it took program staff to address their questions or concerns and how thoroughly they addressed them.

More than one-fifth (42%) of respondents reported that a program representative had inspected the completed project, 71 (30%) reported that no inspection occurred, and 69 (29%) did not know or did not respond. Of the 100 respondents who reported an inspection, nearly all indicated high agreement (a 4 or 5 on a 5-point scale) that the inspector had been courteous and efficient (94% and 93%, respectively).

When asked how their incentive amount compared to what they had expected to receive, a large majority (70%) of respondents reported that the incentive was at least as much as they had expected (Figure 5-16).

Figure 5-16 How Incentive Compared with Expectations (n=239)



5.4.3. New Construction Participant Interviews

During January 2017, the evaluation team conducted six in-depth interviews with new construction participants. The interviews covered topics including details about the participant's project, how they became aware of the new construction program, their experiences with Ameren Missouri, and how they made decisions about the project.

As of January 2017, the BizSavers database showed 94 new construction projects started by 78 unique participants (companies). The evaluation team identified two primary criteria for interviewing participants: 1) having a project that is completed or near completion, to provide information on as many aspects of program participation as possible; and 2) having a project that included non-lighting measures to provide information on whether and how the program affects measure selection beyond lighting.

Of the 78 participants identified in the database, 28 had a total of 34 projects that were identified as either "committed," "installed," or "completed." Of those 34 projects, 20 had non-lighting measures (of which 3 also had lighting measures) and 14 had only lighting measures. A total of 17 participants had at least one project with non-lighting measures that was at the committed phase or later. Table 5-21 summarizes the counts of projects and participants by project type.

Table 5-21 Projects and Participants, by Project Type

Type	Projects				Participants			
	Commit.	*Installed*	*Compl.*	*Total*	*Commit.*	*Installed*	*Compl.*	*Total*
Non-lighting*	19	0	1	20	16	0	1	17
Lighting only**	1	3	10	14	0	2	9	11
Total	20	3	11	34	16	2	10	28

*Three non-lighting projects also included lighting.

**For participants, the counts represent the number of participants who only had lighting-only projects. That is, excludes participants who had both lighting-only and non-lighting projects.

The team set a target of interviewing ten participants, including at least five with non-lighting projects. The team completed interviews with five lighting-only participants, all of whom had completed their projects. However, after multiple contact attempts, the team was able to reach and interview only one of the 17 non-lighting participants, whose project was at the committed phase. Table 5-22 summarizes the dispositions of the call attempts.

Table 5-22 Call Disposition Summary, by Project Type

Disposition	*Non-Lighting*	*Lighting Only*	*Total*
Completed	1	5	6
Refused	4	2	6
Unable to reach	8	4	12
No longer at company	1	0	1
Bad or missing phone number	3	0	3
Total	17	11	28

Of the four non-lighting contacts who refused to take the survey, two said they were not involved in project decision-making as their contractor or architect handled measure selection. One was going out of town soon and too busy to take the survey, and the other refused because he was angry about the small incentive received (see details in Section 5.4.3.4). Of the other non-lighting contacts, we could not reach eight after leaving multiple voice messages, we had erroneous or no contact information for three, and one was no longer at the company where the new construction project was completed and nobody else knew enough about the project to answer the interview questions.

5.4.3.1. Respondent and Project Characteristics

The sampled participants represented the retail, commercial offices, lodging, and warehouse distribution end uses (Table 5-23).

Table 5-23 Project Characteristics Summary

Resp. ID	Project Characteristics					
	Building End-Use Type	Project Type	Incentive Type	Project Stage	Size (Sq. Ft.)	Intended Occupant
NC1	Retail	New building	Lighting	Completed	8,000	Owner
NC2	Office	Major renovation	Lighting	Completed	14,500	Tenant
NC3	Retail	Major renovation	Lighting	Completed	3,000	Tenant
NC4	Lodging	New building	Non-lighting	Committed	50,000	Owner
NC5	Warehouse	Building addition	Lighting	Completed	33,500	Owner
NC6	Retail	New building	Lighting	Completed	3,640	Owner

Most buildings (5 of 6) were expected to be owner-occupied after completion of the project. Four contacts we spoke with were the owners of the building. The lodging contact was a managing partner of a large hotel chain and the office space contact was a construction manager at a property development company renovating space to lease to tenants.

All six new construction participants reported engaging in practices to monitor or manage energy usage at their buildings, primarily informal or low-tech practices (Table 5-24). Participants said they had programmed thermostats or occupancy sensors or timers on lights so they shut off when not in use. Two respondents said they review their utility bills to better understand their energy usage and, according to one, identify ways to "trim costs." The two participants who rented building space to others said they do not manage energy use at those buildings because the tenant pays the utilities.

Table 5-24 Participants' Reported Energy Management Practices at their Building

Resp. ID	Energy Management Practices			
	Programmable Thermostat	Energy Management System	Occupancy Sensors or Timers	Review Utility Bills
NC1	✓		✓	
NC2		✓		
NC3	✓			✓
NC4	✓	✓		
NC5			✓	
NC6				✓

5.4.3.2. Program and Incentive Awareness

Respondents varied in how they became aware of the new construction program incentives (Table 5-25). Four noted that someone who sells or installs energy-using equipment—such as a distributor or contractor—notified them of the new construction incentives. One was already familiar with the BizSavers' Custom Program incentives from

having done about 14 prior projects; that participant learned about the new construction incentives when he called an Ameren Missouri representative to apply for custom incentives. The representative reportedly told him his project was a better fit for new construction incentives rather than the custom retrofit incentives. The sixth interviewed participant was not quite sure how he heard about the incentives but said it was "most likely talking to people."

Table 5-25 Degree of Program Involvement

Resp. ID	*Building Type*	*Source of Awareness of New Construction Incentives*	*Program Involved in Design Phase*	*Incentive Type*
NC1	Retail	Distributor (TAN member)	No	Lighting
NC2	Office	Ameren Representative	No	Lighting
NC3	Retail	Contractor (TAN member)	Yes	Lighting
NC4	Lodging	Word of Mouth	Yes	Non-lighting
NC5	Warehouse	Contractor (not TAN member)	No	Lighting
NC6	Retail	Contractor (not TAN member)*	No	Lighting

*This respondent also reported having known that the new construction program existed because of "little flyers" in his monthly electric bill. However, it was the contractor who made him aware of the incentives that were available.

Participants' motivations for taking advantage of Ameren's new construction incentives were largely financial. They all wanted to lower the total project cost, and four sought to reduce their energy costs. As one participant said, "The high-efficiency lighting was quite a bit more expensive, but when we looked at the savings that would occur over a period of years, plus the fact the rebate was available, we went with energy-efficient lighting." Another participant said that the durability of the energy-efficient lighting factored into his decision, saying he wanted the lights to last at least five years. Once the vendor gave him statistics on installation costs, how bright the lights were, and how long they would last, he decided to choose the efficient lighting.

Two participants were aware of Ameren Missouri's other incentive programs. One participant (NC2) knew of custom retrofit incentives and another (NC5) described the program he knew as "lighting for existing buildings." In addition, two of the six participants reported they had heard of the new construction program's Whole Building Performance incentive. One was informed by his electrical contractor and the other (NC4) said Ameren informed him of it but suggested that custom incentives would be more appropriate for his new construction project.[12]

[12] To be clear, participant NC2 contacted Ameren regarding custom retrofit incentives and was told to use the new construction incentives. Participant NC4 was interested in the Whole Building Performance incentives, but was told that custom incentives were more appropriate for his new construction project.

5.4.3.3. Program Influence on Project Design and Measure Selection

All but one of the interviewed participants reported that the program incentives induced them to use more efficient lighting than they otherwise would have (Table 5-26). Beyond that, however, the program had little or no effect on most of the new construction projects. In four cases, participants contacted the program after the design was completed or after the equipment was purchased. In two of those cases (NC5, NC6), neither the participant nor their contractors or engineers were aware they needed to contact the program while in the design phase to fully take advantage of the program's offerings. Those two stated that they did not have design meetings with program staff. One participant (NC1) learned about the new construction incentives through high lighting vendor (who presumably was not involved in the earlier phases of project planning). In the fourth case (NC2), the participant started a Custom Program application and reported that a program person said the project should be done through the new construction program.

Table 5-26 Program Influence on Project Design

Resp. ID	*Program Involved in Design Phase*	*Incentive Type*	*Program Influenced Use of Efficient Lighting*	*Reason for Limitation of Program Influence on Other Aspects of Project Design*
NC1	No	Lighting	No	Learned about program from lighting vendor.
NC2	No	Lighting	Yes	Participant had begun project expecting to apply for Custom Program incentives and was directed to the new construction program.
NC3	Yes	Lighting	Yes	Participant had decision-making authority only over lighting. Landlord was planning HVAC work.
NC4	Yes	Non-lighting	Yes	Building was part of a chain, so design had to conform to corporate policies. Incentive influenced use of efficient equipment
NC5	No	Lighting	Yes	Participant and contractors were not aware of requirement to contact program during the design phase.
NC6	No	Lighting	Yes	Participant and contractors were not aware of requirement to contact program during the design phase.

The two participants with program involvement in the design phase reported they installed all or most of the measures recommended by program staff in the design meetings. One of these participants (NC3), a building tenant, had decision-making authority over lighting only. That participant reported that the building owner was planning to install a new HVAC unit and new windows for the tenant. The other participant (NC4) said the program did not influence the design because it was a franchised hotel, but that the program

representatives made them more aware of the energy bill savings that could be captured from installing efficient equipment.

Though five of the six interviewed participants received lighting-only incentives, four of those five reported installing energy efficiency measures beyond lighting as part of their new construction project (Table 5-27). The high-efficiency measures that were not incented through the program were insulation (3 participants), new HVAC equipment (2 participants), a water heater (1 participant), and parking lot lights (1 participant). Participant NC2 reported installing a new HVAC system as part of his project but the energy modeling results indicated it did not qualify for incentives.

Table 5-27 High Efficiency Measures Installed

Resp. ID	*Program Involved in Design Phase*	*Incentive Type*	*Measures Installed Due to Program Involvement*	*High-Efficiency Measures Installed, but Not Incented*
NC1	No	Lighting	Lighting and HVAC	Insulation
NC2	No	Lighting	Lighting	Insulation, windows
NC3	Yes	Lighting	Lighting	None
NC4	Yes	Non-lighting	Smart thermostat and others unspecified	Parking lot lights
NC5	No	Lighting	None	HVAC, insulation
NC6	No	Lighting	None	HVAC, water heater

5.4.3.4. *How Incentives Compared to Expectations*

The interviewed participants reported on how their incentives compared to expectations. Two (NC1, NC3) said their incentive amount was what they were expecting because their contractor was able to calculate exactly what the incentive would be.

Three participants (NC2, NC4, NC6) reported that incentives were less than they expected. One of those (NC2) reported surprise that the energy modeling results indicated a new HVAC system did not qualify for incentives.

Comments by two participants illustrated that they and their contractors had an incomplete understanding of the incentive process when they began their projects, which may have reduced the incentives they were able to receive for their installed energy efficient equipment. Both comments suggest that they had relied on their contractors to know the incentive rules and processes.

Participant (NC6) reported doing a new construction project that included $30,000 worth of lighting, HVAC, and a high-efficiency water heater. However, he received incentives only for the lighting because neither he nor his contractor knew to apply for the non-lighting incentives before purchasing equipment. That participant said that when he first learned about the new construction program from “little flyers” in his monthly electric bill, the program did not seem worthwhile because of “the numbers” on the flyer. However,

based on experience doing projects for another area electric utility, his contractor told him that he should get about 40% of the he spent on high-efficiency equipment and that he could apply after installing the equipment.[13] The participant reported that the program staff told him he should have contacted the program before starting the project. While he said that some incentive was better than no incentive, he said the $800 he received for the lighting did not justify the time it took him to do the application.

Although the other participant (NC5) reported no prior expectations and said that the program had given "as much as they could," that participant also suggested that that reliance on their contractor to know the incentive rules and processes had cost them the opportunity to apply for incentives:

"We installed two times the amount of insulation that was required. We installed a high-efficiency heating and air conditioning system. It cost a ton. ... I didn't know of any incentives other than lighting. The construction engineers didn't mention anything."

Comments by one non-lighting participant who refused to be fully interviewed are relevant here as well. That participant called the program "horrible" and "a sham." He said he sent in "the paperwork" and received an incentive for $2,000 which was much lower than he was anticipating. That participant did not provide any further details on why the incentives were less than expected.

As a result of his experience, participant NC6 recommended that Ameren Missouri's "monthly flyers" contain clearer information about the incentive application process, specifically, that the participant must contact the program prior to construction and prior to the purchase of equipment. He stated:

"I don't know if they send information to the local contractors that start projects and do the work. I would think that's who needs to know. I had my main general contractor and my electrician, but neither one of them knew that you had to do this beforehand [apply for incentives before construction]."

Along these lines, other participants suggested that Ameren Missouri could improve its program by conducting better promotion and outreach. Participant NC2 said that, before being interviewed, he had thought that Ameren Missouri's new construction program offered incentives only for energy-using equipment and suggested Ameren Missouri better promote incentives for other measures, such as insulation. Participant NC5 recommended that the Ameren more heavily promote the incentives for non-lighting equipment.

[13] That contractor is not a member of the Ameren Missouri TAN. This was the only project for which this contractor was identified as the trade ally in the BizSavers database.

The above findings suggest a lack of awareness among the trade allies and other workers involved in the design phase or early in the construction process about the program requirements and processes and underscore the importance of the importance of conducting education and outreach with building design professionals and others involved early in the construction process.

5.4.3.5. The Application Process

Participants said that once they started the application process for their eligible measures, it was relatively easy and straightforward. Two participants completed the application by themselves, three had others help them with the process, and the sixth participant paid his construction manager to complete the incentive application (Table 5-28). The individuals that helped the participant complete the application primarily supplied information to fill in the application or looked it over to make sure no important information was missing from it.

Table 5-28: People Involved with Completing Incentive Application

Resp. ID	*Building Type*	*Who Completed Application*	*Who Helped with Application*
NC1	Retail	Participant only	N/A
NC2	Office	Participant plus others	Development company colleague
NC3	Retail	Participant plus others	Contractor & Ameren
NC4	Lodging	Participant only	N/A
NC5	Warehouse	Someone else only	Construction manager
NC6	Retail	Participant plus others	Contractor & distributor

Four participants had no problems with the application and described their experience completing it as “good” (3) or the application as “pretty simple” (1).

One participant described some technical troubles. He said the online application was “freezing up,” which required him to attempt to submit it several times. He said that there was no “continue” button to move to the next section. That participant called an Ameren Missouri representative for assistance and reported that the Ameren Missouri representative was “very friendly and helpful” and was able to help him to get the application submitted. No participants offered suggestions to improve the incentive application form or process.

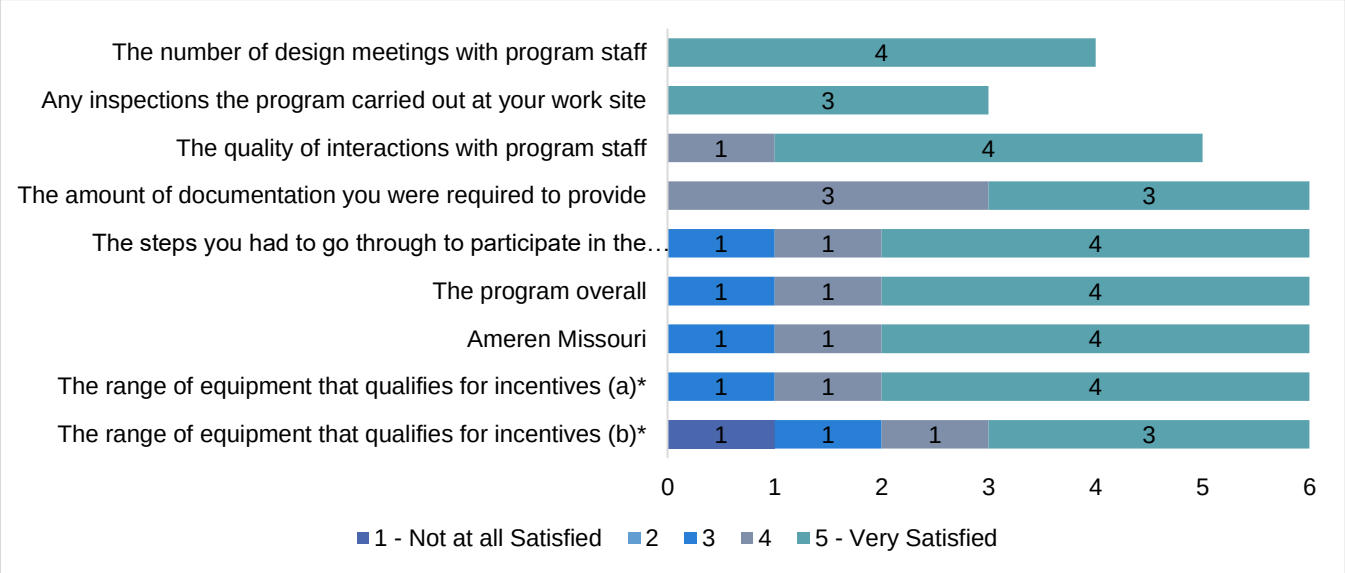
The last participant did not report any challenges in completing the application, but reported that “it took a while to get the credit.”

5.4.3.6. Satisfaction

Participants rated their satisfaction on various aspects of program participation on a scale of 1 (“not at all satisfied”) to 5 (“very satisfied”). Participants were most satisfied with the number of program design meetings and the inspections carried out on their projects,

though not all participants reported experiencing those (Figure 5-17). Participants were least satisfied with the range of equipment incented, although four of the six respondents rated their satisfaction at “4” or “5.”

Figure 5-17 Participant Satisfaction (n = 6)



* One participant provided two ratings – a “5” for lighting equipment and a “1” for non-lighting equipment. The bar labeled (a) relates to satisfaction with incented lighting equipment while the bar labeled (b) relates to satisfaction with rebated non-lighting equipment.

Participants who indicated lower satisfaction with the range of incented equipment were those, discussed above, who did not receive incentives for non-lighting equipment because they applied for the incentives after purchasing the equipment.[14] Thus, their responses more reflect their level of satisfaction with the incentive application process, and/or the information provided about that process, than with the range of equipment for which the program offers incentives.

Four of the five participants who interacted with Ameren Missouri representatives gave the highest satisfaction rating. The one participant who rated the quality of their interactions with Ameren Missouri staff below a 5 (scoring them at a ‘4’) elaborated that his interaction with Ameren Missouri representatives was limited to emails regarding paperwork and that his contractor interacted more with the Ameren Missouri representatives.

[14] One participant (NC2) offered a satisfaction rating of “5” for the range of incented lighting equipment, but offered a rating of zero (interpreted here as “1”) for the range of incented HVAC equipment. As reported earlier, that participant reported installing a new HVAC system and reported surprise that the energy modeling results indicated it did not qualify for incentives.

Participants said they generally turned to their contractor or Ameren Missouri representatives to answer questions and that their experience getting questions answered or obtaining needed information generally went fine. Participants NC5 and NC6, however, said they knew how to get their questions answered after interacting with the program, but noted that they were not fully informed about the program's processes before applying for incentives. These two participants said they wished they had known about incentives other than lighting or that they were supposed to apply for the incentives much earlier in the new construction project.

The three participants with plans for future new construction projects said they would contact Ameren Missouri before the construction began on those projects so that they could adhere to the program's process and capture more incentives than they had on their prior new construction projects.

5.4.4. Non-Participant Feedback

During 2016, the evaluation team completed a survey with 93 Ameren Missouri customers who had not participated in any BizSavers Program. Survey topics covered program awareness, upgrades to energy-using equipment, barriers to participating in BizSavers, and awareness of and interest in Ameren Missouri's New Construction, Small Business Direct Install (SBDI), and Energy Management Systems (EMS) Pilot Program.

The survey revealed a low awareness of Ameren Missouri programs and an interest in making upgrades to their buildings with efficient equipment. Respondents noted that contractors are more influential in making upgrade decisions than utility staff, designers, and retailers/distributors.

Less than one-fifth of respondents indicated they would embark on a new construction or major renovation project in the next couple of years, but most of those expressed interest in Ameren Missouri incentives for their project.

The team describes summarizes the results of the survey below, beginning with a description of the sample.

5.4.4.1. Methods

Following are the methods for collection of the nonparticipant feedback.

5.4.4.2. Sample Design and Development

The evaluation team had multiple goals for the nonparticipant survey sample. An overarching goal was to achieve a representative sample of the general Ameren Missouri nonresidential customer population with at least 90% confidence at 10% precision (90/10) for survey questions that apply to all respondents: general program awareness, equipment upgrades, and barriers to program participation. The other goals were to have subsamples of 2M rate class (small business) customers, non-2M (large business)

customers, and tax-exempt customers, each providing at least 80% confidence at 10% precision (80/10). One purpose of having 80/10 subsamples for 2M and non-2M customers was to allow the team to separately show the 2M and non-2M results for the questions that apply to all respondents, should analyses indicate responses differed for the two groups. In addition, the team sought 80/10 subsamples for 2M and tax-exempt customers to explore awareness of and interest in the new SBDI Program and the EMS pilot, which is a component of the Custom Program.

From Ameren Missouri's database, the evaluation team identified a population of about 146,000 unique nonresidential customer accounts that had not participated in any BizSavers Program in the past three years. The 2M rate class constitutes about 96% of all accounts. Therefore, achieving an adequate subsample of 2M customers was not in itself a challenge. The challenges came from achieving the desired sample sizes for the tax-exempt customers, which make up about 13% of the customer population, and the non-2M customers, which comprise about 4% of the population (Table 5-29).

Table 5-29 Distribution of Nonresidential Customer Population

Strata	*Population*	
	Count	*Percent*
2M Customers, Not Tax-Exempt	122,721	84%
Non-2M Customers, Not Tax-Exempt	4676	3%
2M Customers, Tax-Exempt	17,174	12%
Non-2M Customers, Tax-Exempt	1,570	1%
Total	146,144	100%

To have enough of a sample of tax-exempt customers and non-2M customers required oversampling in those categories. The evaluation team targeted 2M, non-2M, and tax-exempt subsamples of 41 respondents, which would yield 80/10 confidence/ precision in an un-weighted random sample. The actual precision would be slightly lower in a sample weighted to adjust for the oversampling, but the effect on the precision would not be known until after the weights were determined.

The sampling was further complicated by the fact that tax-exempt customers make up different proportions of the 2M and non-2M populations, meaning that increasing the proportional representation of either tax-exempt status or rate class would reduce the proportional representation of the other one. The evaluation team chose the approach that would provide at least 41 responses in each of the planned subsamples with the smallest overall sample (Table 5-30).

Table 5-30 Planned Sample Design

Tax-Exempt Status	*Rate Class*		*Total*
	2M	*Not 2M*	
Tax-Exempt	31	10	41
Not Tax-Exempt	36	31	67
Total	67	41	108

The team planned for initial samples of 15 customers for each survey completion in the non-tax-exempt strata but assumed that tax-exempt customers may be harder to reach, and therefore planned for initial samples of 20 customers for each completion in those strata. The team drew larger random samples from each stratum of approximately 40 records per desired completion to obtain contact information from a third-party supplier.[15] Although the supplier in the past had provided about a 30% success rate at supplying contact information, the success rates for the strata in this sample ranged from a high of 22% to a low of 8% (Table 5-31).

Table 5-31 Total Sample with Contact Information

Strata	*Targeted Number of Completions*	*Sample*	*Number with Contact Information*	*Percent with Contact Information*
2M Customers, Not Tax-Exempt	36	540	267	18%
Non-2M Customers, Not Tax-Exempt	31	465	272	22%
2M Customers, Tax-Exempt	31	622	144	11%
Non-2M Customers, Tax-Exempt	10	198	30	8%
Total	108	1,825	713	16%

5.4.4.3. Data Collection and Sample Disposition

The evaluation conducted the survey during January and February 2017, making up to seven call attempts per record. The team attempted contact with 1,209 records and determined that about 55% of the contact information was non-eligible for the survey because the records were duplicates[16] or had bad phone numbers or the person who answered the phone reported they were not a commercial customer located in Ameren territory. Of the remaining 45% of records, the team ultimately completed interviews with 93 people or 17% of the eligible sample (Table 5-32). After consulting with Ameren

[15] Utility customer contacts often are accounting or other staff who experience indicates may not be the most appropriate contacts to discuss equipment upgrades. Therefore, the evaluation team sought contacts identified as the owner, a chief officer, or a facilities or operations manager.

[16] The team fully expected to encounter some duplicates. The population—and therefore, the sample—consisted of customer *accounts*, not unique customers. That is, some nonresidential customers (e.g., businesses) may have multiple locations, each a different Ameren Missouri account.

Missouri staff and spending more time than expected to complete the survey, the team elected to stop surveying upon completing 86% of the desired completes.

Table 5-32 Disposition Summary

Disposition	*Count*	*Percent of Eligible*	*Percent of All*
Eligible			
Complete	93	17%	8%
Refused	75	14%	6%
Not reached	375	69%	31%
Subtotal	543	100%	45%
Non-Eligible			
Duplicate record	203	n/a	17%
Bad number	206	n/a	17%
Did not pass screening	257	n/a	21%
Subtotal	666	n/a	55%
Total	1,209	n/a	100%

5.4.4.4. Data Weighting and Analysis

The team applied data weights to survey responses to adjust for the oversampling of tax-exempt and non-2M customers. Different sets of weights were required for analyses that included the entire sample, those pertinent only to 2M customers, and those pertinent only to tax-exempt customers. Table 5-33 shows the three weighting schemes.

The team performed descriptive analyses (counts and percentages of respondents) on the weighted nonparticipant survey data. The team examined whether the weighted responses differed by rate class or tax-exempt status, and in no case, did any group differences approach statistical significance. Therefore, the team reports all results for the combined weighted sample.

Note that the weighted counts and percentages of respondents who give a particular response may differ somewhat from the un-weighted count. In all cases, we report the weighted counts and percentages.

Table 5-33 Weighting Schemes

Strata	Population		Sample		
	Count	%	Count	%	Weight
For Survey Questions Applicable to Entire Sample					
2M Customers, Not Tax-Exempt	122,724	84%	29	31%	2.69
Non 2M Customers, Not Tax-Exempt	4,676	3%	25	27%	0.12
2M Customers, Tax-Exempt	17,174	12%	27	29%	0.40
Non 2M Customers, Tax-Exempt	1,570	1%	12	13%	0.08
For SBDI Survey Questions – 2M Rate Class Subsample Only					
Tax-Exempt	17,174	12%	27	48%	0.25
Not Tax-Exempt	122,724	88%	29	52%	1.69
For EMS Survey Questions – Tax-Exempt Subsample Only					
2M Rate Class	17,174	92%	27	69%	1.32
Not 2M Rate Class	1,570	8%	12	31%	0.27

5.4.4.5. Respondent Characteristics

Respondents represented a variety of company types, were typically owners or managers, and owned their property (Table 5-34).

Few respondents had staff responsible for monitoring energy use (6%) and none reported having a formal policy requiring energy efficient purchasing. Respondents represented properties that ranged in size from about 900 to 100,000 square feet with a median of 2,000 and a mean of almost 14,000 square feet.

Table 5-34 Respondent Characteristics (n = 93)

Characteristic	Count	Percent
Company Type		
Retail	23	24.3%
Office	20	21.3%
Manufacturing	9	10.1%
Government	9	9.3%
Lodging	6	6.1%
Auto service	6	5.9%
Construction trades	5	5.8%
Entertainment	5	3.0%
Other	11	11.4%
Role of Respondent		
Owner/President	50	55%
Manager	38	41%
Financial/Administrative	4	5%
Tenancy		

Characteristic	*Count*	*Percent*
Own and occupy	76	82%
Own and occupy part of building	11	12%
Lease space	6	7%
Trusted Groups		
Chamber of Commerce	5	6%
Ameren Missouri	1	1%
Equipment Manufacturers	1	1%
Internal organizations	3	3%
None	83	89%

5.4.4.6. Program Awareness

Awareness of the BizSavers programs is low among nonparticipants. Of the 93 respondents, 20% reported awareness of Ameren Missouri's cash incentives. Two-thirds indicated awareness of the program for more than two years and a third reported becoming aware of the program within the last two years. Fifteen percent were aware that the program was suspended in early 2016.

Most of those who reported awareness were aware of the incentives for existing buildings (86% of those reporting awareness; 18% of the entire sample). Fewer (16% of those aware of BizSavers; 3% of the sample) reported awareness of retro-commissioning.

To gauge the relative role of various sources of program awareness, the survey asked from what sources respondents had gotten information about the program incentives in the past year. Respondents cited four sources: An advertisement, (32%), utility or program representative (29%), word of mouth (22%), an industry event such as a conference or workshop (15%), or a contractor (1%). Sixteen percent did not know how they became aware.

To assess whether the identified sources of program information provided the needed information, the survey asked respondents what additional information they would like about Ameren Missouri incentives that they did not get from their source. None of the eight respondents who had received their information from a program contact or program advertising identified any additional needed information.

Of the 11 respondents who reported a source of awareness other than the program, five identified additional desired information. Four of those five respondents learned of the incentives through word of mouth or an unknown source, and the fifth learned through a contractor. Three of those respondents said only that they wanted general program information and one each said they would like information on lighting incentives and information on new construction incentives.

To the extent that the eight respondents who cited program sources are representative, their reports suggest that the program-generated information provides the information that customers need. The main limitation is in the reach of that information, as the results show a low level of program awareness.

The awareness reported in the current survey is much lower than that reported in the nonparticipant survey done as part of the evaluation of PY5—the 2014 program year.[17] That evaluation reported that 56% of nonparticipants were aware of Ameren Missouri nonresidential energy efficiency programs, a much higher rate than the 21% found in the current survey. Both surveys included large and small customer strata, but the stratification scheme differed somewhat between the two surveys.

To provide a more accurate comparison, the evaluation team calculated awareness levels separately for the large and small customer strata for the two surveys.[18] Table 5-35 shows that in both program years, awareness is similar for both the large and small customer strata, and awareness in both strata is lower for PY2016 than in PY5. The table also shows the mean daily kWh usage for each stratum, which confirms that the large and small customer strata are comparable across the two evaluations.

Table 5-35 Program Awareness: PY5 Compared to PY2016

Stratum	*Awareness*		*Average Daily Usage (kWh)*	
	PY5	*PY2016*	*PY5*	*PY2016*
Small Customers	61%	20%	36	71
Large Customers	52%	22%	1,135	1,391

The team examined whether the difference in program awareness levels could reflect differences in the distribution of customer types or respondent titles between the two surveys. Table 5-36 shows some differences in the distribution of customer types across the two survey samples, most notably that government agencies made up a higher percentage of the current survey sample than of the previous sample. The table also shows that awareness varied somewhat by customer type (although the relatively small counts of respondents of each customer type makes it unlikely that the differences were statistically significant).

[17] *BizSavers Program Evaluation Report: January 2014 - December 2014.* Prepared by ADM Associates and Research Into Action for Ameren Missouri.

[18] Since tax-exempt status did not appear to affect awareness in the current sample, we ignored that status in this comparison.

Table 5-36 Program Awareness by Customer Type and Title

Stratum	Awareness		Percentage of Sample	
	PY5	PY2016	PY5	PY6
Customer Type				
Government	100%	17%	1%	26%
Industrial/Manufacturing	60%	14%	26%	15%
Professional Services	66%	8%	19%	14%
Retail	37%	33%	16%	13%
Other	56%	27%	38%	32%
Title				
Manager (General or Unspecified)	66%	22%	28%	40%
Owner	50%	28%	31%	31%
Administrative	49%	7%	15%	15%
Facility Manager	70%	20%	11%	11%
President/CEO	47%	0%	11%	3%
Other	58%	n/a	4%	0%

The different distributions of customer type cannot account for the overall differences in awareness rate. Weighting the current survey data to reflect the distribution of customer types in the previous survey produced an awareness of 22%, almost identical to the original percentage produced from this survey data. Similarly, weighting the current survey data based on the distribution of titles in the previous survey produced a weighted overall awareness of 19%. Thus, the differences in the distribution of customer titles does not account for the difference in awareness.

It is possible that the difference in program awareness between the two surveys must do with when the surveys were done. The nonparticipant survey for the previous evaluation was done in September of the second year of that program cycle, when the program had been operating without interruption for about 21 months. By comparison, the current survey was completed about nine months after the program restarted following a three-month hiatus. It may seem unlikely that a 12-month difference in duration of program operation (21 months vs. 9 months) might account for such a large difference in awareness, and it is possible that other factors also may have played a role in the difference.

The 1% of current survey respondents who reported learning about the program from a contractor is much lower than the 22% who cited a contractor or equipment vendor as a source of awareness in the previous survey. Part of the difference may reflect differences

in question wording between the two surveys,[19] but it is unlikely that question wording accounts for all of the response differences, especially in light of the fact that in the current and previous surveys found nearly identical levels of awareness from advertisements (32% vs. 31%) and word of mouth (22% vs. 20%). The percentages of respondents who reported that they either had recently upgraded equipment or planned to do so in the near future was nearly identical in the current survey (50%) and previous one (52%), so the respondents to the two surveys likely have had a similar degree of *exposure* to contractors and equipment vendors, on average.

Possibly, then, the fact that so few nonparticipant respondents reported contractors as a source of awareness suggests that fewer contractors are actively promoting the program or doing so in an effective manner. One factor that conceivably could have reduced the effectiveness of contractors' promotion of the program is the movement in the program's marketing efforts, reported by program contacts, away from printed case studies and fact sheets and toward greater use of online distribution of program information (see Section 5.2.3). Contractors who had relied on the printed collateral and have not yet become comfortable with printing online collateral to give to customers might have reduced effectiveness at promoting the program.

The evaluation team will attempt to explore these possibilities in future research.

5.4.4.7. Recent and Future Upgrades

About one quarter of nonparticipants reported upgrading energy related equipment in the last two years, with the most commonly cited upgrade being lighting (18% of all nonparticipants). Far fewer reported making upgrades to HVAC equipment (4%), windows (3%), and motors (2%). The large majority (84%) of those reporting upgrades said they used energy efficient equipment and none reported using incentives.

*Table 5-37*shows that those who installed lighting measures typically used efficient equipment, however far fewer indicated using efficient equipment for other measures.

Slightly fewer than half (47%) indicated they would make upgrades to their building in the next two years, and all of those suggested they were likely to use Ameren Missouri incentives for future upgrades.[20]

[19] The previous survey asked, "How have you learned about the energy efficiency incentives from Ameren Missouri?" while the current survey asked, "*In the past year*, from what sources have you gotten information about the energy efficiency incentives from Ameren Missouri?" Possibly, the previous wording elicited citations of sources from over a longer history: 1% may have gotten information about the program from a contractor or vendor in the past year, but 22% have ever heard about the program from such a source.

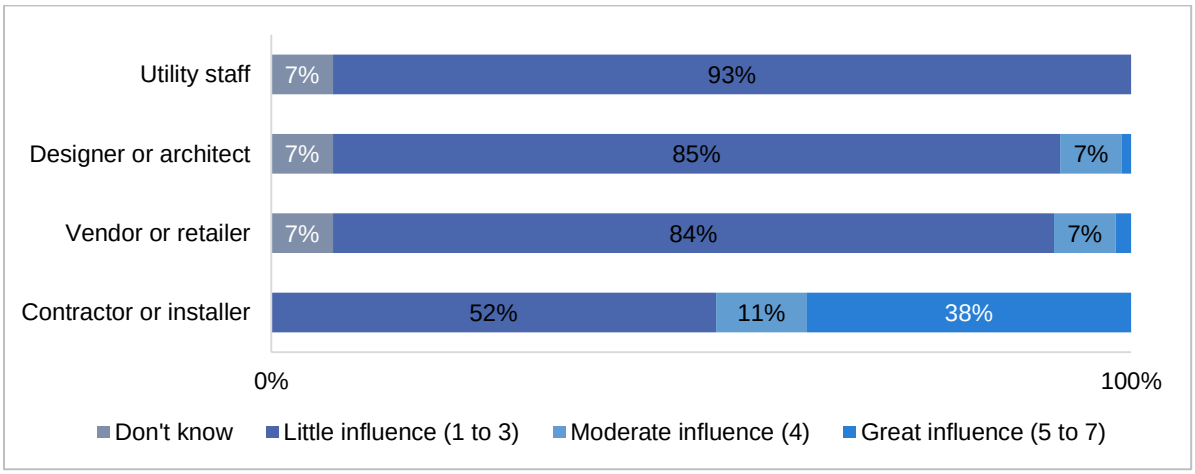
[20] Respondents were asked how likely they would be to use incentives for any future upgrades on a scale of 1 (not at all likely) to 7 (extremely likely). All respondents gave a response of at least five on the scale.

Table 5-37 Past and Future Upgrades

Measure	Past Upgrades		Future Upgrades
	Made (n=93)	Installed with EE (n=20)	Will Make (n=93)
Lighting	18%	82%	37%
HVAC	4%	18%	4%
Windows	3%	0%	0%
Motors	2%	3%	1%
Other	0%	0%	1%
Not sure	0%	0%	14%
Any measure	25%	84%	47%

Contractors are the greatest external source of influence for nonparticipants. Respondents rated utility staff, designers, and vendors as having little influence on their decisions. However, about half indicated contractors were either moderately or greatly influential (Figure 5-18).

Figure 5-18 Influence of Various Groups on Upgrades



5.4.4.8. *Interest in New Construction*

Some respondents (14%), reported considering a major building renovation or new construction project in the next two years and all were 2M customers. Of those, about two-thirds (68%) reported they were in discussions with designers about the project and none indicated that the designers suggested using energy efficiency incentives for the project. When the interviewer briefly explained Ameren Missouri's New Construction program, 79% of the respondents indicated they would be likely to use incentives for their new project and 21% stated they were unlikely.[21]

[21] Likely was defined as a score of five to seven on a seven-point scale where one was not all likely and seven was highly likely.

Despite the large percentage of respondents indicating they would be likely to use incentives, almost all (96%) reported needing to know more about the program to make a commitment.

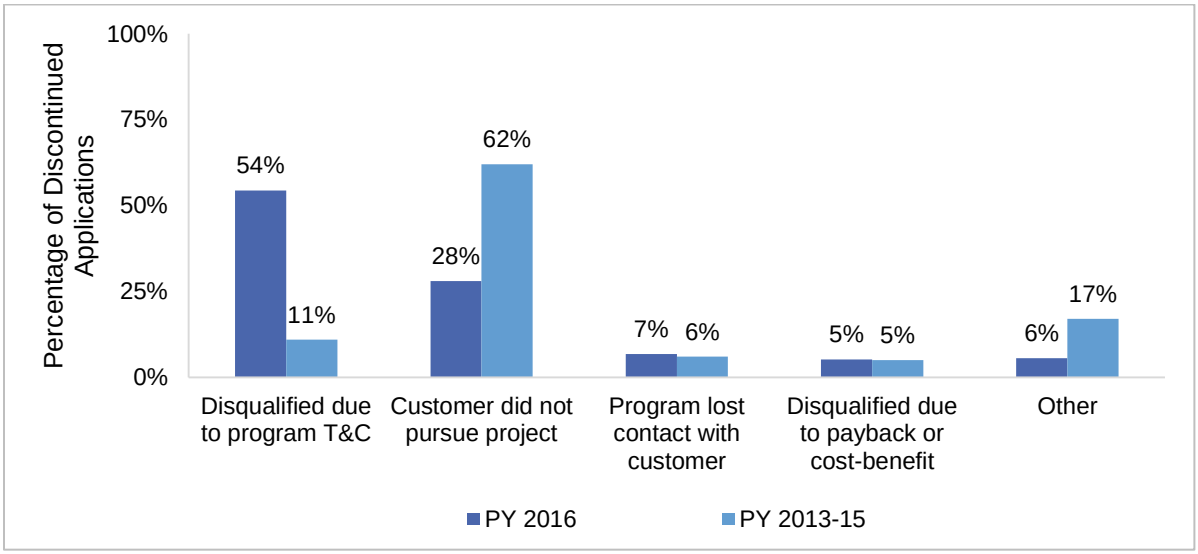
5.4.5. Near Participant Feedback

The evaluation team interviewed ten customers that had discontinued project applications that were disqualified because of program terms and conditions. The purpose of interviewing those customers was to investigate whether the discontinued applications may have been related to: 1) the program's elimination of incentives for exterior lighting; or 2) implementer suggestions to discontinue some applications that do not require pre-approval and restart them as FastTrack applications.

5.4.5.1. Methods

Analysis of the program database showed a much higher percentage of applications discontinued because of program terms and conditions ("program T&C") during PY2016 (PY2016) than in the previous three program years (Figure 5-19).

*Figure 5-19 Reasons for Discontinued Application – PY2016 (PY2016) Compared to PY4-PY6 (PY 2013-15)**



* The evaluation team collapsed several discontinuation reasons recorded in the database into higher-level categories. Customer did not pursue project = customer not interested in project, project postponed indefinitely, contractor not awarded project, or lack of funding for project. Program lost contact with customer = lost communication with client or change in company/site ownership.

When the evaluation team asked a program implementer contact why this might have occurred, the contact suggested two possible explanations. First, some customers may have submitted applications for exterior lighting, not realizing that the program had eliminated such measures in PY2016, and such applications would have been discontinued. Second, some customers may have submitted applications under the belief

that they required pre-approval; if the initial application review indicated the project did not require pre-approval, the implementer may have discontinued the application and asked the customer to resubmit it as a FastTrack application.

The evaluation team identified 90 customers with at least one application that had been discontinued because of program T&C. For 49 of those, the project database showed no ongoing or completed projects. Of those 49 customers, six had multiple (2 to 12) discontinued applications and the rest had only one discontinued application. The evaluation team decided to attempt to interview those with multiple discontinued applications, as having multiple discontinued applications could represent greater lost program opportunity and the team hypothesized that those applicants might better recall the details of their applications and reasons for discontinuation.

In addition, the evaluation team decided to attempt to interview six customers who had applications discontinued due to program T&C as well as ongoing or completed ones. Those six customers either had a large number of discontinued applications relative to the number of ongoing or completed ones or, in three cases, had ongoing FastTrack applications submitted after the discontinued application. The pattern of applications for the latter three customers is consistent with the idea that they were asked to resubmit their applications as FastTrack projects.

The team called contact for all 12 organizations. The interviewer spoke with the contact person listed in the application or the person they were directed to by the applicant contact. The team successfully reached representatives from all 12. Two of the contacts reported that they had little knowledge of the applications and both encouraged the interviewer to contact the same rebate processing firm contact for details. However, the team had interviewed that rebate processing firm contact already as part of the trade ally interviews, and that contact had explicitly asked not to be contacted again in this round of the evaluation. Therefore, the team elected not to attempt to reach out to that contact.

The conversations typically lasted about five minutes and focused on the status of these discontinued projects.

5.4.5.2. Results

Four respondents either explicitly reported discontinuing all their BizSavers projects or, in one case, provided details on reportedly ongoing projects that were somewhat consistent with having discontinued applications.

Three respondents confirmed they had discontinued all their BizSavers projects. Two had filed applications under the mistaken impression that exterior lighting projects qualified for rebates. Once they realized incentives were not available for exterior lighting, the applications became discontinued. The other respondent reported that their organization was ceasing all participation in Ameren Missouri programs so they could cease paying

the Energy Efficiency Investment Charge (EEIC) on their energy bills. According to this respondent, their organization had used the program extensively in the past and decided in the long-term they would be better off not paying into the EEIC and completing efficiency projects without program support in the future. This respondent's organization was in talks with Ameren Missouri to remove the EEIC line item on their bills.

One respondent reported that scheduling LED upgrade projects has been a challenge because the upgrades need to happen when their buildings are not in use. Therefore, that respondent has had to delay projects and restart at different times to accommodate the changing schedules of the building users. That account is consistent with possibly having discontinued and then restarted applications.

Six of those contacted reported their projects were not actually discontinued. When the interviewer asked about any discontinued projects they may have had, all six expressed that, to the best of their knowledge, their projects had been completed or were proceeding. Of those six respondents, three managed large portfolios of properties across the country and three were local decision makers. All six expressed some difficulty recalling the specifics of their projects, but three could provide some details about their projects, which were inconsistent with having discontinued applications:

- One respondent with a nationwide portfolio of properties mentioned that their firm upgraded refrigeration lights in the last year at the two properties identified as having discontinued applications.
- Another respondent with a nationwide portfolio of properties noted that all properties had undergone interior lighting projects in the last two years and the Missouri properties were completed during 2016.
- One local decision maker explained that their lighting upgrades in a parking garage and room remodel project were scheduled to receive incentives.

One respondent was not knowledgeable about the status of the projects because he was relatively new to his position and the applicant on the project paperwork was no longer with the company.

Table 5-38 summarizes the information provided by the ten respondents.

Table 5-38 Near Participants Overview

ID	*Number of Discontinued Applications*	*Decision Making Authority*	*Reported Discontinuing Projects*	*Why Discontinued*
Near1	12	Local	Yes	Ceased all participation in programs
Near3	4	Local	Yes	Exterior Lighting Not Part of Program
Near9	52	National	Yes	Exterior Lighting Not Part of Program
Near2	10	National	No	n/a
Near4	2	National	No	
Near6	2	National	No	
Near10	19	Local	No	
Near12	4	Local	No	
Near8	4	Local	No	
Near5	2	Local	Don't know	

5.4.6. Feedback from Outreach Events

The evaluation team surveyed 47 attendees of two informational trade ally trainings held in 2016: one general informational training on program updates in late June, and one in late August targeted to Small Business Direct Install (SBDI) trade allies. The program implementation team conducted the training in June over three days and the August training over four days in various locations across Missouri. The events covered such topics as energy efficiency upgrade concepts and BizSavers incentives. The Evaluation Team surveyed attendees of all events, asking respondents about their experience at the event, their opinions of the TAN, and what other topics they would like to see at future BizSavers events.

The evaluators sent all attendees email invitations to take a short web-based survey. Of the 156 attendees of the June event and 49 attendees of the August SBDI event, 32 (or 23%) and 15 (or 31%) completed the survey, respectively. The overall response rate was 23%. Throughout this section, we present all analyses in aggregate, pointing out when differences exist between the two groups.

As the following section demonstrates, attendees highly regarded these training events. Attendees reported high satisfaction with the events and found the content informative and the format appropriate.

5.4.6.1. Respondent Characteristics

Nearly all (87%) survey respondents reported being a member of the TAN (Table 6-39). About one-third (34%) of survey respondents reported being distributors, with another one-fifth (17%) reporting being a representative from a manufacture.

Table 5-39 Event Survey Respondent Characteristics (n = 47)

Respondent Type	*Count*	*Percent*
TAN Membership		
TAN member	41	87%
Non-TAN member	2	4%
Not sure/no response	4	9%
Firm Type		
Distributor	16	34%
Manufacturer's representative	8	17%
Electrical contractor	6	13%
Energy Service Company (ESCO)	4	9%
Mechanical contractor	4	9%
Engineering	2	4%
Refrigeration services	1	2%
Sales engineering	1	2%
Other	5	11%
Total	47	100%

5.4.6.2. Value of Trade Ally Network

We asked survey respondents who reported being members of the TAN what features of the network bring the most value to their business. A large majority (80%) of respondents reported that receiving information regarding program changes before the mass-market is of value to their business (Table 5-40). Respondents also found the Excel-based application tool and co-branding opportunities to be valuable aspects of the TAN (61% and 49%, respectively).

Table 5-40 Valuable Features of the TAN (Multiple Responses Allowed; n = 41)

Feature	*Count*	*Percent*
Being informed first of program changes before the mass-market	33	80%
Excel based application tool	25	61%
Co-branding opportunities	18	44%
Online application	14	34%
Business Development visits	20	49%
Program workshops	14	34%
Web-based application walk-through training	12	29%
Website	7	17%
Publicity Toolkit to share with customers	10	24%
Program orientation webinar	12	29%
Technology trainings	9	22%
Newsletters	6	15%
Money-Saving Deals quarterly challenges	8	20%
Other	4	10%

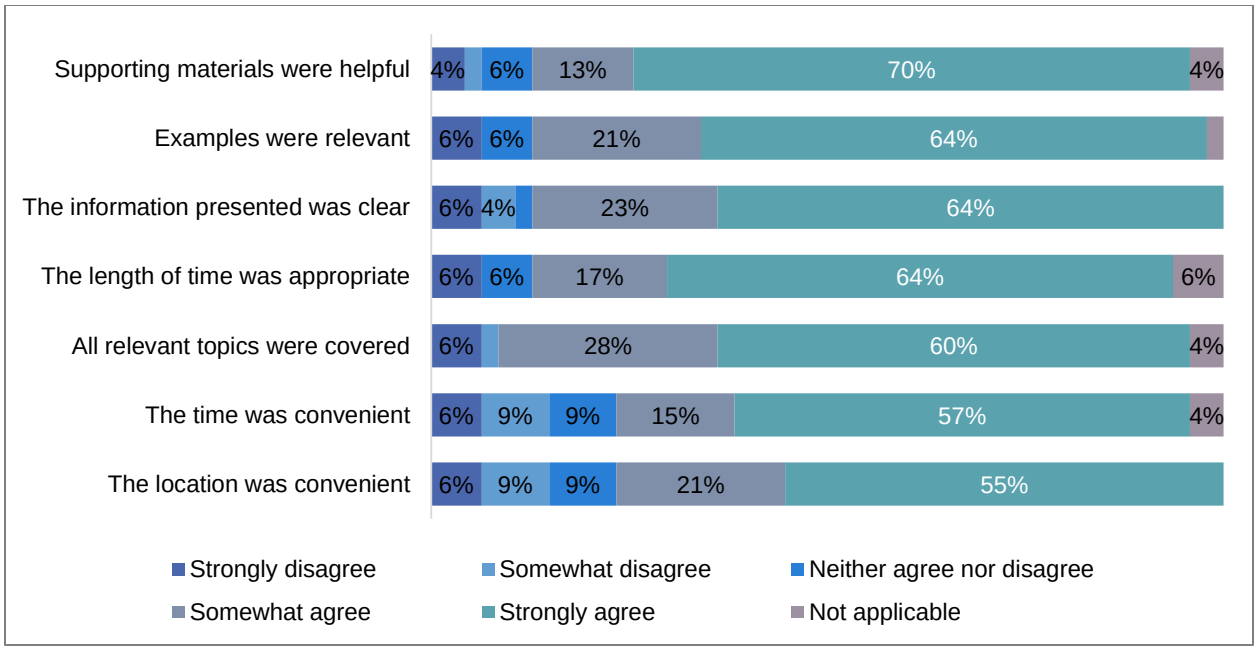
Eight survey respondents provided suggestions of technologies and energy services that the BizSavers Program should be marketing to Ameren Missouri customers. Suggestions included improved marketing for new construction incentives, increased incentives for troffer fixture replacements, LED T5 high-output tubes, smart networked luminaires, energy monitoring systems, solar PV, and providing incentives for site and exterior night lighting (one mention each).

5.4.6.3. Event Satisfaction

Overall, attendees were satisfied with the events. All but two respondents reported that the event met or exceeded their expectations, with 10 reporting that it somewhat exceeded or far exceeded expectations. Additionally, all but one respondents rated the event as either good (20), very good (14), or excellent (12).

Further demonstrating high levels of satisfaction with the event, attendees largely reported the supporting materials were helpful, examples provided were relevant, information presented was clear and the length of time was appropriate (Figure 5-20). And while attendees still generally agreed that relevant topics were covered and the training was conveniently timed and placed, those three areas received the fewest "strongly agree" ratings, suggesting three areas that have potential room for improvement.

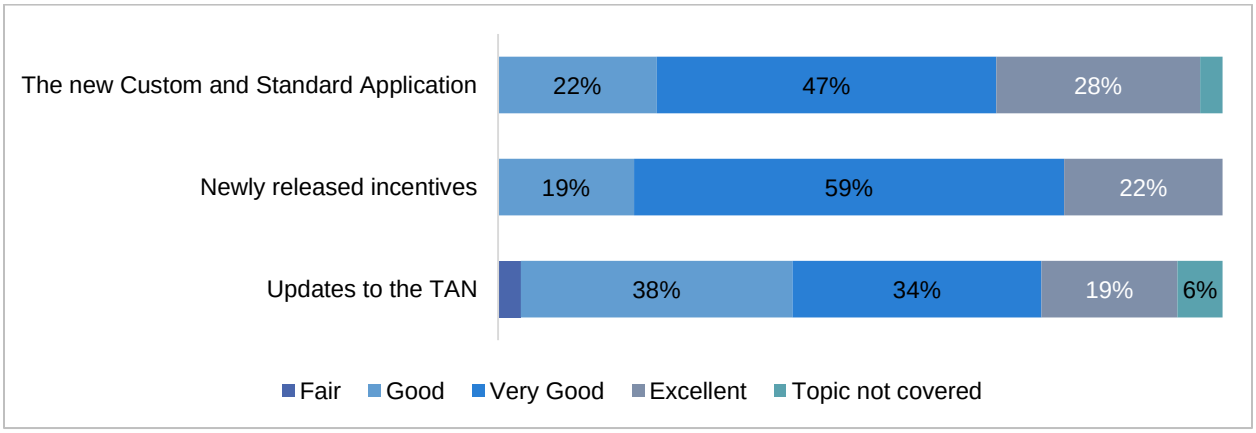
*Figure 5-20 Satisfaction with Specific Event Elements (n = 47)**



*To enhance legibility, percentages less than 4% are not shown.

Most attendees of the June program-update event reported that it provided high-quality information on the new custom and standard application and new incentives (Figure 5-21). Respondents were less pleased with the information presented on updates to the TAN.

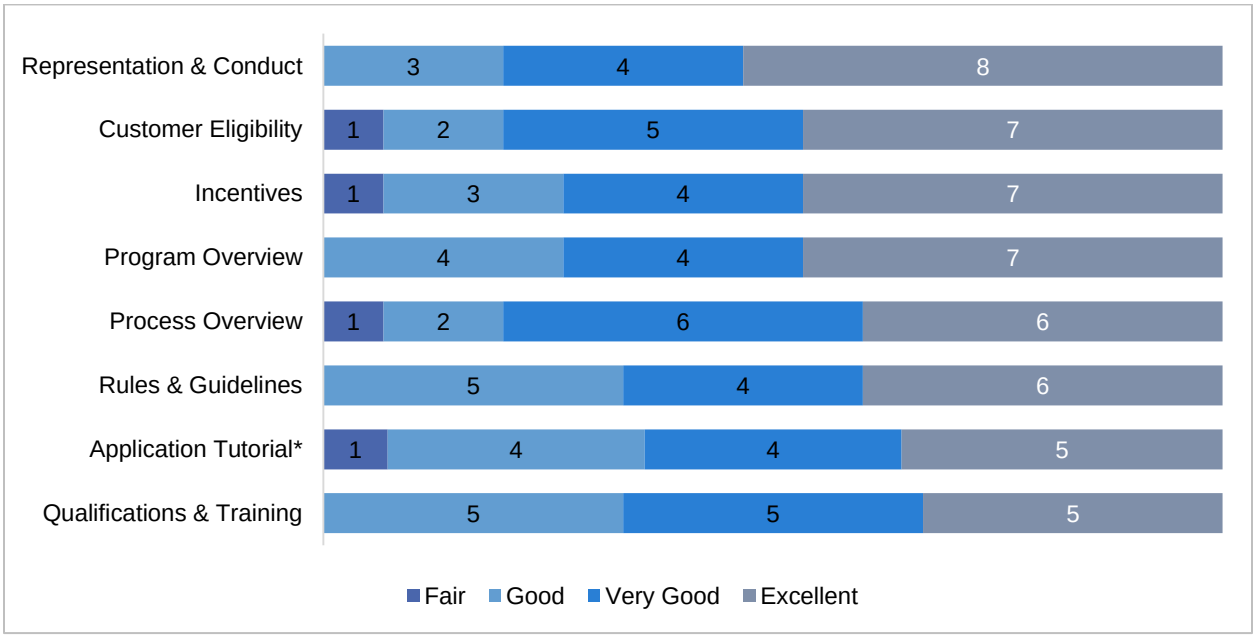
*Figure 5-21 Rated Quality of Information Provided at June Event (n=32)**



*To enhance legibility, percentages less than 4% are not shown.

Similarly, attendees of the August SBDI training reported that the event provided high-quality information (Figure 5-22). Respondents reported being less pleased with the information presented on how to use the application and topics related to qualifications and training.

Figure 5-22 Rated Quality of Information Provided at August Event (n=15)



* One respondent did not provide a response for this item.

Eleven survey respondents provided additional comments about the events, with five providing positive comments including the event being well organized (two mentions), appreciating the event location, the variety of speakers, the presentations (one mention each). Among those respondents who did not provide positive feedback, three who attended the June 29th event in St. Charles reported having difficulty navigating the venue. Additionally, two respondents reported experiencing audio and visual issues during the presentations and one respondent reported wanting additional networking time during or after the event.

5.4.6.4. Suggestions for Future Training Events

When asked what topics they would like covered in future BizSavers events, seven respondents provided suggestions including: demonstration of how load programs integrate with application (i.e., Trane Trace 700), demonstration of custom applications, demonstration of SBDI applications, custom incentives, information on SBDI Program, solar PV incentives, and having a separate event targeted to manufacturer representatives, engineers, and business owners regarding new construction incentives (one mention each).

5.5. Energy Management System Pilot

5.5.1. Staff Feedback

The EMS pilot, which was developed in response to stakeholder comments, aims to reduce the high initial cost of EMS equipment and software specifically for state-certified private and/or public K-12 schools and tax-exempt organizations. While these customers are also eligible to receive incentives for EMS equipment and software under the Custom program, staff contacts stated that the EMS Pilot's incentive structure is designed to be particularly attractive to K-12 schools and tax-exempt organizations by helping eligible customers surmount the high first-cost barrier. Table 5-41 shows the differences in the program rules for the EMS Pilot and the Custom program.

Table 5-41. Comparison of EMS Pilot and Custom Program Energy Management System

Program	*EMS Pilot*	*Custom Program*
Eligible customers	Certified K-12 schools and other tax-exempt entities	All nonresidential electric customers
Maximum incentive ($)	Lower of $35,000 or 50% of total cost	50% of the total project cost (early replacement) or 100% of incremental cost (end-of-life replacement)
Cost-effectiveness requirement	TRC ≥ 1.25	TRC ≥ 1.00

At the time of the staff interviews, two EMS projects had been submitted through the pilot.

Program contacts reported they are getting the support they need from both Lockheed Martin and Ameren Missouri to implement the pilot. Contacts also stated that the pilot's rollout was well implemented. One commented, that everything on the project launch checklist, including soliciting feedback from the TAs ahead of time, sending the marketing email blast, and deploying the application, was executed on time.

Contacts provided possible explanations about why the pilot had gotten off to a slow start. First, while the EMS Pilot technically covers both full EMS system installations and EMS upgrades, one contact suggested that full installations are unlikely to pass the pilot's 1.25 TRC test threshold because of the high initial infrastructure costs typically required for full EMS system installations. Projects might, instead, be submitted to the Custom program where the cost-effectiveness threshold is 1.0 and where there is no set incentive cap other than the percentage of cost.

Another factor that might have contributed to the slow start of the pilot is that the definition of what constitutes EMS—that is, it must control and monitor either the whole building or HVAC components—may be open to some interpretation. Taken together with uncertainty about whether a project will pass the TRC test, the uncertainty may deter some customers from participating. To help reduce that uncertainty, the Engineering Lead estimated the minimum dollars per kWh saved that would result in a passing TRC. Thus, if customers can estimate their expected savings and project cost, program staff can inform them whether the project is likely to pass the program's cost-effectiveness test. To confirm a project's cost-effectiveness, customers can enter their projected savings and estimated project cost into the EMS application spreadsheet. The spreadsheet shows the total expected incentive for projects that are cost-effective, and message suggesting the customer submit the project for review if the project does not appear to be cost-effective.

Contacts identified two other related factors that might have contributed to the slow startup. The pilot's slow uptake may be due to the time it takes for the target market to recognize the existence of this program and, due to the complexity of EMS equipment, decide to participate. In particular, the EMS pilot targets a niche market. Its success depends in part on Lockheed Martin's ability to identify the trade allies that likely would participate and hold events to educate them about the program. Staff are monitoring the program to see if participation picks up in the coming months.

One contact put a positive spin on the slow uptake in EMS, explaining that staff can carefully review the specifics of the submitted projects, conduct due diligence on the program, and assess if and how the program should move forward.

5.5.2. Trade Ally Feedback on EMS Pilot

To assess the potential for increasing the number projects in the EMS pilot program, the evaluation team asked 19 of the 20 interviewed trade allies (see Section 5.4.1) about their knowledge of and interest in the EMS pilot, the degree to which they work with tax-exempts entities, and how many program-incented EMS projects they thought their company might do with tax-exempt entities in the coming year.[22]

The percentage of the interviewees' work done with tax-exempt entities ranged from zero to 75%, with a mean of about 20%. However, four interviewees reported they do not install whole building systems or sell EMS, leaving 15 who do work pertinent to the pilot program.

Five of the 19 interviewees reported having heard of the EMS pilot program, which was unrelated to the amount of work they reported doing with tax-exempt entities. However, three of those five were among the trade allies who reported not doing EMS-related work, meaning that just two of the trade allies knew of the pilot program and did relevant work.

Ten of the 15 interviewees said they would likely do program-incented EMS projects in the coming year, with most of those saying they would do five or fewer such projects; three interviewees said they would like to learn about the pilot. Table 5-42 summarizes the above.

Table 5-42 Summary of Interview Responses on EMS Pilot Program (n = 19)

Amount of Work with Tax-Exempt Entities	*Total*	*Do EMS Work*	*Aware of EMS Pilot*	*Aware and Do EMS Work*	*Expected Number of Pilot Program-Incented EMS Projects in the Next Year (Range)*			
					0	*1 to 5*	*Up to 10*	*DK*
None or very little	6	6	1	0	4	1	0	1
10% to 25%	8	6	2	1	3	4	1	0
40% to 50%	3	2	1	1	1	2	0	0
75%	1	1	0	0	0	0	0	1
No response	1	0	1	0	1	0	0	0
Total	19	15	5	2	9	7	1	2

5.5.3. Nonparticipant Awareness of and Interest in EMS

Thirty-nine surveyed nonparticipants answered questions about awareness of EMS and interest in the EMS Pilot program. As explained in Section 5.4.4.1, the evaluation team weighted the responses of those 39 customers by their rate class status (2M or not 2M).

[22] These questions were skipped in one trade ally's interview because of time constraints. That trade ally did primarily lighting work, and therefore likely would not have had much input to offer on this topic.

Of the 39 respondents, 85% reported they knew little or nothing about EMS; the other 15% said they knew a moderate amount about EMS. One customer (non-2M) indicated having an EMS and one customer (2M) reported considering installing one.

Even after being given specifics about the Ameren incentives for an EMS, about two-thirds of respondents (65%) could not report how likely they would be to participate in the Ameren EMS pilot program. Of the remaining respondents, fewer than half said they were likely to participate, and one-third said they were not likely to do so.

5.6. Small Business Direct Install (SBDI) Program

5.6.1. Staff Feedback on SBDI

The SBDI Program is available to Ameren Missouri business customers in the 2M rate class. It offers a Level 1 (walk-through) audit to identify opportunities to save energy through lighting upgrades, with up to $2,500 in incentives per account (typically a single site), covering up to 100% of installed costs. The SBDI Program is designed to make it easy for small businesses – which may not have the knowledge or resources to plan and pay for lighting upgrades – to save energy, and offers a higher per- kWh incentive than small business customers can receive through the Standard program.[23]

The audits and upgrades[24] must be conducted by a program-qualified SBDI Service Provider (SP), who must be a member of the Ameren Missouri Trade Ally Network (TAN). At the time of the staff interviews, Lockheed Martin had enrolled at least 30 SBDI SPs. All of the enrolled SBDI SPs completed the full RFQ process in the summer of 2016 and attended SBDI trainings in September 2016. In addition to the PowerPoint training slide deck used for the trainings, staff developed a service provider handbook that covers program guidelines, expectations, and other program details for reference.

The SBDI SPs may identify eligible customers through their own outreach or customers may contact the program to participate. Lockheed Martin has provided training to the SBDI SPs about the types of facilities that are typically 2M customers and how to confirm a customer's 2M status from information on the customer's electricity bill.

Staff reported that the SPs are becoming well versed in the program, grasping the differences between SBDI and other programs. When an SBDI SP submits an application, Lockheed Martin checks the Ameren Missouri customer account files to verify that the customer is in the 2M rate class. At the time of the staff interviews, there had been only one case in which the customer was not in the 2M rate class (the customer was in the 3M

[23] Lockheed Martin uses the type of equipment and the SP's cost to determine the percentage of the upgrade cost covered by the incentive. 2M participants who want to pursue upgrades that would result in incentives greater than $2,500 can apply for incentives through the Standard program.

[24] Alternatively, the installation may be performed by a program-approved third-party installer working with the SP.

rate class). However, Lockheed Martin determined that the customer in question had been misclassified and worked with Ameren Missouri to get the rate class changed to 2M. Lockheed Martin then approved the customer for participation in the SBDI Program.

To simplify the process and minimize participants' up-front costs, the program issues the incentive payment to the SP, not to the customer. The customer pays the SP the difference between the incentive amount and the actual installed cost.

Customers wishing to install equipment that would exceed the program's $2,500 incentive cap may apply for additional incentives through the Standard program. It can be challenging for TAs to explain to customers why a portion of their total incentive is coming from the SBDI Program, while another portion is from the Standard program. To help simplify the process as much as possible, Lockheed Martin created a SBDI application form that includes SBDI as well as Standard program measures.

At the time of the interviews, staff reported the number of project applications were "a little bit on the light side," compared to their projections. Staff noted that Lockheed Martin may remove SPs that have not generated any projects and are not likely to do so. Staff also noted they may add four or more new SPs. Staff are examining the list of SPs to ensure there are enough in each area to cover the area's demand. When consider adding new SPs to SBDI, staff are considering whether the SPs: are active in the Standard program and could be a good fit for SBDI; and are easy to work with, provide good customer service, and have minimal application or other issues (based on prior experience). While interested in opening the program up to additional SPs, staff are also aware that a larger SP list will result in higher administrative costs (for example, to ensure that all SPs are installing the efficient lighting equipment correctly).

In response to telephone feedback gathered by Lockheed Martin staff (see Section 5.6), Lockheed Martin staff edited language in its marketing materials to more clearly describe the program's incentives and developed email communications that are tailored for the SBDI Program.

Finally, staff reported they are considering revising the assessment output that SBDI customers receive to make these reports more customer-friendly.

5.6.2. Database Analysis of SBDI Projects

Thirteen SBDI service providers completed 326 projects, resulting in 2.4 million kWh in savings. Projects varied in energy savings generated, from a low of 469 kWh to a high of 44,738 kWh, with a median of 5,706 kWh. The distribution of projects varied greatly by service provider, with one (the "1st highest-activity provider") completing 76% of all SBDI projects, two others together completing 16%, and the remaining ten active providers completing 7% of projects (Table 5-43).

Table 5-43 Summary of SBDI Service Provider Completed Projects

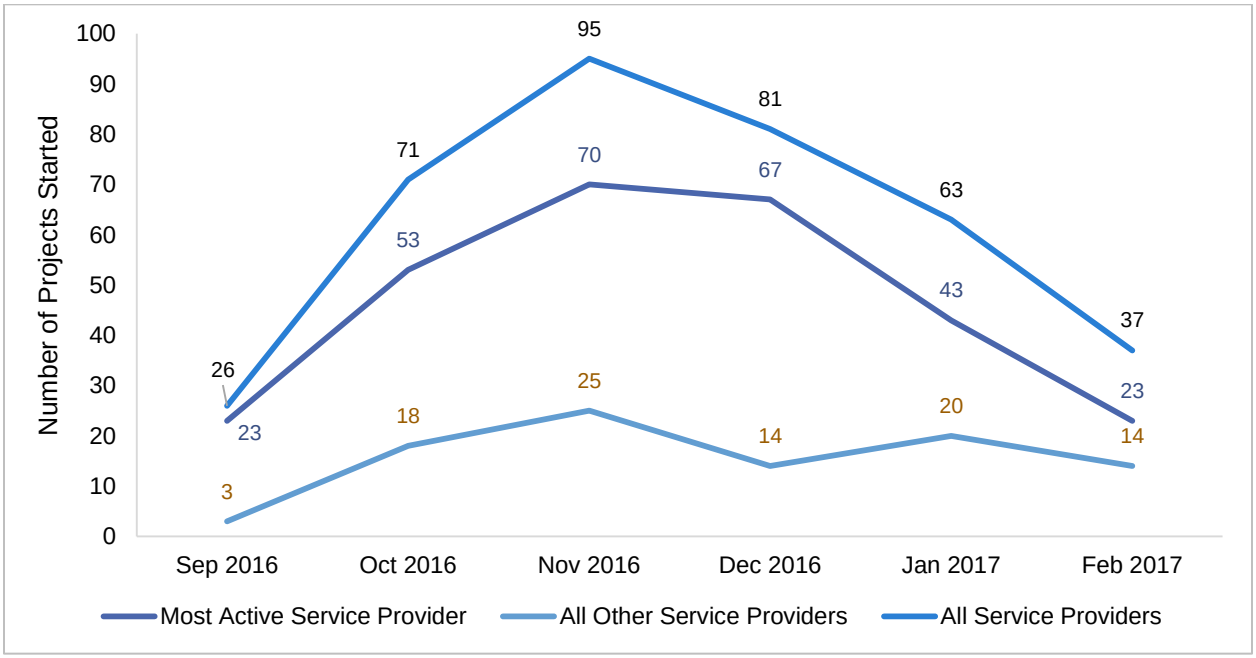
Service Provider	Completed Projects		Energy Savings (kWh)			Project Mean Square Feet
	Count	Percent	Total	Per Project	Per Square Foot	
1st highest activity provider	249	76%	1,838,364	7,383	2.9	2,881
2nd highest activity provider	34	10%	142,076	4,179	1.9	2,255
3rd highest activity provider	19	6%	98,000	5,158	1.6	3,406
Low-activity providers	24	7%	287,101	11,963	1.5	15,846
Total	326	100%	2,365,541	7,256	2.62	7,779

The 1st highest-activity provider had the highest per-project savings of all high-activity service providers. The ten low-activity providers as a group, however, had considerably higher per-project savings than the high-activity providers. One possible explanation the high savings per-project for low-activity service providers could because these providers worked on larger buildings. The mean building size for the 1st highest activity provider is 2,881 square feet, a bit larger than for the 2nd highest provider, but smaller than the 3rd highest and less than half that for all others.

With its greater production and greater savings per square foot, the highest-activity provider achieved more than eight times more total savings than all ten low-activity services providers together. The 24 projects completed by the low-activity service providers, however, achieved approximately 50% more savings than the 34 completed by the second-highest-activity service provider, and more than twice as much savings as the 19 projects done by the 3rd highest activity provider. Our analysis suggests that the SBDI Program benefits from having a mix of both high-activity service providers who pursue mainly smaller projects and low-activity providers that pursue mainly larger projects.

The evaluation team found that SBDI project starts rose from September 2016, when the program kicked off, to November 2016, and then began declining through February 2017 (Figure 5-23). When the team asked Lockheed Martin's Program Manager about this trend, the Program Manager reported that the pipeline had "bounced back to a healthy level" and that the program expected additional positive changes as a result of recent incentive updates. The evaluation team will continue to monitor trends in SBDI participation and to seek explanations for declines.

Figure 5-23 Number of SBDI Projects Started September 2016 through February 2017



5.6.3. SBDI Service Provider Feedback

Small Business Direct Install (SBDI) service providers are contractors or distributors who work with small businesses to encourage them to make energy efficient lighting upgrades to their businesses. Service providers assess small businesses space for energy savings, make lighting recommendations, and install lighting equipment.

5.6.3.1. Methods

As of early February 2017, the SBDI Program had 31 approved service providers.[25] The evaluation team removed four of those service providers from the contact list—three because the team had selected three of them for the interviews covering the other BizSavers programs, and one because it had not done any SBDI projects and had informed the program implementer that it would not be participating in the future. We removed the first three from the SBDI call list to avoid contacting them twice. Since there were several service providers that had not yet done any SBDI projects, the team determined there was not need to interview the fourth provider.

The team completed interviews with 10 of the remaining 27 service providers in the first two weeks of February 2017. To get a sense of the experiences of all service providers,

[25] As of 3/7/17, there were a total of 31 service providers. Source: https://q9u5x5a2.ssl.hwcdn.net/-/Media/Missouri-Site/Files/energy-efficiency/SBDI-approved-Service-Providers.pdf?la=en

the team interviewed contractors at all activity levels—from those that had not completed any projects yet to those that completed dozens of projects (Table 5-44).

Table 5-44 Population and Sample Summary

	Most active (6 to 218 projects)	*Less Active (1 to 2 projects)*	*Not Active (0 projects)*	*Total*
Population	3	5	19	27
Target Complete	3	3	4	10
Complete	2	3	5	10

Interviews with service providers focused on how the respondents learned about the program, why they decided to become a service provider, including the expected benefits of doing so, their assessment of program rules and processes, and their reactions to the suspension of the BizSavers Program in late 2015 and early 2016.

The interviewer obtained permission from all respondents to record the interviews and took notes during the interview. The team used MS Excel to code responses and analyze interview data.

5.6.3.2. Service Provider Respondent Characteristics

Most respondents described their firm as an electrical or lighting distributor or contractor; two said they worked for an energy efficiency service firm and one was an HVAC contractor. Most respondents were trade allies prior to the SBDI Program and represented firms. They varied in number of locations, in staff, and the number of projects they completed (Table 5-45).

Table 5-45 Respondent Characteristics

ID	*Activity level*	*Firm Type*	*Trade Ally prior to 2016*	*Locations in Ameren Area*	*Full-Time Equivalent (FTE) Staff*
SP8	Most Active	EE Services	Yes	2	8.5
SP9	Most Active	Electrical Distributor	Yes	2	10
SP1	Less Active	Electrical Distributor	Yes	6	57.5
SP4	Less Active	Lighting Distributor	Yes	1	1
SP6	Less Active	Electrical Contractor	Yes	1	20
SP2	Not Active	Electrical Contractor	Yes	1	2
SP3	Not Active	Electrical Contractor	Yes	1	35
SP10	Not Active	Electrical Distributor	Yes	28	140
SP5	Not Active	HVAC Contractor	No	1	8
SP7	Not Active	EE Services	Yes	5	13

5.6.3.3. Awareness of the Program

Respondents typically became aware of the SBDI Program via recruitment from a program representative (5) or an email from program staff announcing the SBDI Program (4). One respondent became aware of the program via their interest in the Community

Savers program; they enrolled as an SBDI service provider only because they incorrectly thought they had to be an SBDI service provider to be a Community Savers provider.

Respondents largely reported that becoming a provider was a simple process. All attended a program orientation training, and all but one said the orientation was adequate and helpful. One respondent indicated that the orientation was "not overly productive" because the content could have been "covered in an email" and the program was not fully designed at the time of the orientation, resulting in program changes post orientation. All respondents noted positive experiences with program staff throughout the life of the program.

5.6.3.4. Expected Program Impact on Sales

All nine who were recruited to the program reported what led them to enroll as an SBDI provider and shared their expectations regarding the program. Eight of the nine anticipated that program participation would help boost their sales, most of whom specifically anticipated that the program would help them serve small businesses, a new or underserved market for their business. Others referred more generally to increased sales, of whom, one said liked the idea that being part of a small group of contractors would contribute to more sales. Another was attracted by the quick incentive payments to the contractor that would minimize tying up their capital (Table 5-46).

Table 5-46 Expectations for Program Involvement

ID	*Attract small businesses*	*Increase overall sales*	*Be part of an exclusive group*	*Quick incentive payments to contractor*	*Met Expectations?*
SP8		✓			Yes
SP4	✓				Yes
SP9		✓			Too soon to tell
SP6	✓	✓	✓		Too soon to tell
SP3	✓				Too soon to tell
SP1	✓	✓			No
SP2				✓	No
SP10	✓				No
SP7	✓				No

The expected sales improvements did not always materialize according to respondents. Of the nine recruited respondents, two explicitly said the program met expectations. One of those who said the program met their expectations said it "opened up a lot of opportunities… and… allowed me to close more projects" because of the increased incentives and the lowered up-front cost to the customer, who does not have to wait for their incentive check.

Three said the program was too new to tell whether it would meet expectations and four said the program had not met their sales expectations. Details about what did not meet expectations are provided in the following sections.

5.6.3.5. Project Costs and Incentive Caps

The five providers that had completed SBDI projects reported that the reality of customer's situations often does not align with the current program marketing. While the marketing brochure for the SBDI Program states "Incentives may cover up to 50-100% of the total install project costs,"[26] the reality, according to these providers, is that most projects see only about a third of their costs covered by SBDI incentives. Additionally, about half or more of customers have upgrade needs that would exceed the SBDI Program incentive cap, which would require using the Standard Program with lower incentive levels (Table 5-47).

Table 5-47: Adequacy of SBDI Incentives

ID	*Activity Level*	*Percentage of Project Costs Covered by SBDI Incentives*	*Percentage of Projects that Would Exceed Cap*
SP8	Most Active	30%	45%
SP9	Most Active	25%	50%
SP1	Less Active	30%	100%
SP4	Less Active	33%	50%
SP6	Less Active	55%	Don't know

Those five respondents noted that they do not provide advice or guidance about what the customer could do beyond lighting savings. All five tell the customer to contact Ameren Missouri if they have questions about saving energy via HVAC, process, or other equipment upgrades.

Seven service providers, all five who completed projects and two who did not, recommended increasing the cap to above $2,500. According to six respondents, caps limit the amount of work a customer will do, and two of those respondents said the cap limits the type of work that can be done for customers. Things like de-lamping and installing different fixtures cannot be done in a meaningful way under the cap.

One service provider gave a different reason for increasing the cap, saying that most 2M customers would have paid into the Energy Efficiency Investment Charge (EEIC) for at least eight years, since program inception, and most had not yet participated in the program. Therefore, according to that respondent, small businesses likely paid at least $2,500 into the SBC and should therefore receive at least that amount in incentives.

[26] Guide to Energy Efficiency Incentives for Small Business. Ameren Missouri's BizSavers Energy Efficiency program 2016-2019.

One service provider did not suggest increasing the cap but recommended allowing contractors to claim the full $2,500 in incentives on projects that exceed the cap. Under current program rules, the contractors may claim an amount equal to the per-unit incentive times a whole number of units. If that amount for n units is below the cap but the amount for n + 1 units is above the cap, the contractor cannot claim any of the cost of the nth +1 unit. As the contractor explained:

> "Replacing 400W metal high bay with a retrofit LED corn light that pays $180 per instance. You can do 13 of those under the cap but that adds to $2,340 so you lose some money if the customer needs more than 13. The 14th light has to go on the standard line. I lose $160 in the application. This adds up when you are doing a lot of projects like we are even with small measures."

5.6.3.6. Incented Equipment

Half of the interviewed service providers indicated that the program should review the incented equipment and work to expand program offerings.

The most common suggestion, given by four, was to add exterior lighting incentives to the program to attract more participants. The program has decided to offer exterior dawn-to-dusk lighting in the coming program year.

Two suggested that the program should incent services like de-lamping and fixture installation in addition to changing lamps. One of those respondents described the program as a natural fit for their business because the program incented lighting and they sold lighting services. However, this respondent described the program as a "simple lamp change program" that does not allow them to do things like de-lamp and install fixtures, which is a key aspect of their traditional work.

Two suggested increasing incentives for linear-fluorescent-to-LED changeouts. One of those suggested increasing the incentive on the T8-to-LED incentive to be more in line with the more generous incentives offered for going from T12-to-LED. However, the other said that the T12 incentive was not generous enough. According to that respondent, "The closer you get the price to free for small business, the better chance we have to sell."

One suggested that the program should ensure that the program incents high-quality American made equipment. This respondent suggested that the program can encourage some installers to purchase inexpensive, but unproven, equipment and that can lead to unhappy customers and contractors. The program should take the long-view and ensure that equipment being installed through the program is durable.

5.6.3.7. Program Outreach

Four of the interviewed service providers suggested ways in which the program could better support their efforts to promote it. Responses by two suggested that marketing

collateral may be lacking, or at least that they were not aware of the customer brochure and the email and direct mail campaigns the program has conducted. Specifically, one said simply that "marketing materials I guess could help" and the other, speaking as a small business, said that "When we get our electric bills, I don't recall seeing a flyer."[27]

Two service providers suggested that it would be helpful if the program provided leads, such as a listing of all 2M customers within areas they serve so they can target small businesses.

Outreach efforts should accurately describe how much of their projects are likely to be covered by incentives. According to one respondent, program marketing promises customers unrealistic project cost estimates. This respondent said the contractor needs to drive the conversation with the customer because currently customers have unrealistic expectations about how much of the project costs will be covered by the program.

5.6.3.8. Program Processes

Three respondents had anticipated an improvement in program processes compared to traditional efficiency projects. They understood that the program would have an expedited participation process that would help them find a customer and complete a project in a shorter time span and require less paperwork and inspections than traditional BizSavers projects. All three of those said that their expectations regarding process improvement had not been met. One of those respondents anticipated being able to spend more time installing equipment and less time completing paperwork, compared to the Standard Program. However, that respondent also reported that the assessment paperwork and program-required inspection and verification take additional time.

5.6.3.9. BizSavers Program Interruption

Respondents provided feedback about the interruption of the program between December 2015 and March 2016 and how it affected their membership in the trade ally network, the effects on their business, and the effects on their customers.

Rejoining the TAN after the program interruption was largely invisible to the service providers. Most reported that when the program came back online, they were re-enrolled as a TAN with no or minimal effort. One respondent did report some frustration that they lost their platinum trade ally status once the program restarted. According to this respondent, their firm meets the platinum status qualifications but the program does not list them as platinum and they have not received a proper explanation.

[27] Program marketing efforts included an email of the SBDI RFQ to contractors in July 2016, and email campaign to small businesses in October 2016, and marketing collateral creation in September 2016 and updating in February 2017.

Four providers noted that the program interruption negatively affected their sales, three of whom said customers cancelled projects as a result of the program interruption. Two of those tied the adverse effect of the interruption of the program to the removal of exterior lighting incentives, which caused delays and then cancellations of exterior lighting projects, which hurt their business and potentially soured customer's perception of the program. One provider explicitly tied the sales slow-down during the program suspension to customers' intentional decisions to wait out the suspension, and said this was a "killer problem" because of the cash flow problem it caused. Another, a provider with multiple locations, also noted a sales slowdown but reported a large uptick in sales when the program came back.

5.6.4. Trade Ally Awareness of and Interest in the SBDI Program

To assess the potential for increasing the number of SBDI service providers, the evaluation team asked the 20 interviewed trade allies (see Section 5.4.1) about their knowledge of and interest in the SBDI Program, the degree to which they work with small businesses, and whether they offer onsite assessments.

More than half (13 of 20) of interviewed trade allies reported having heard about the SBDI. When asked whether they work with small business customers, more than half reported either they *did not* work with small businesses or less than half of their work was with small business customers (Table 5-48). Awareness of the program was unrelated to the amount of work they reported doing with small businesses.

Table 5-48 Involvement with Small Business (n=20)

Amount of Work with Small Businesses	*Count*
None of their work is with small businesses	4
Less than half of their work is with small businesses	8
About half of their work is with small businesses	2
More than half of their work is with small businesses	3
No response or Don't Know	3

Since SBDI includes an onsite assessment or audit component, we also inquired whether trade allies offer audit services. Of the nine interviewed trade allies who reported working with small businesses, seven indicated they offer audit services.

When asked why they had not worked with the SBDI Program, the interviewed trade allies most commonly said it was because they were not familiar with the program (6 responses), they do not focus on small businesses (5 responses), or they do not do installations (5 responses).

Two trade allies reported they do only non-lighting work, and so the SBDI Program is not useful to them.

Two of the trade ally contacts indicated interest in learning more about the SBDI Program, one of whom reported that she had attempted to become an SBDI service provider but was told there were no more openings for the SBDI-affiliated contractor.

One respondent indicated a concern that the program would allow a participant to hire someone else to do the installation of a job that he had scoped.

5.6.5. SBDI Participant Feedback

The evaluation team interviewed ten SBDI Program participants to learn about their experiences with the program. The interview covered reasons for participating, energy-related decision making and practices, and program experience and satisfaction.

5.6.5.1. Methods

The evaluation team used two sets of criteria in determining completion targets for SBDI participant interviews. First, the team sought to complete interviews with five participants who achieved energy savings above the median of 5,706 kWh and five who had lower savings to ensure that the interviews covered the range of sizes of SBDI projects. Second, the team sought to interview participants who had worked with a range of service providers. given that the highest-activity service provider had completed three-quarters of the projects, the team set a goal of interviewing four participants who had completed projects with the highest-activity provider and six participants from the 12 other service providers with projects.

The evaluation team stratified the participants by the above criteria and randomized the list within each stratum, then called through the lists until the targets were achieved (Table 5-49).

Table 5-49 Summary of Completed Interviews, by Service Provider and Energy Savings

Service Provider	*Completed Interviews*		
	High Savings	*Low Savings*	*Total*
1st highest activity provider	2	2	4
2nd highest activity provider	2	0	2
3rd highest activity provider	0	0	0
Low-activity providers	1	3	4
Total	5	5	10

The interviewer obtained permission from all respondents to record the interviews and took notes during the interview. The team used MS Excel to code responses and analyze interview data.

5.6.5.2. Results

Small Business Direct Install (SBDI) participants are small business customers who installed lighting measures in their facilities through a group of pre-approved service providers. The SBDI Program includes a free walk-through during which business owners are encouraged to accompany the service provider around the facility to determine needed upgrades. The evaluation team contacted and interviewed ten individuals that the project data identified as SBDI pilot participants. Interviews focused on respondents' reasons for participating in the program, satisfaction with the service provider's walk-through assessment, the pilot's ability to address the types of measures and projects the participants are interested in pursuing, barriers to making additional energy-savings upgrades, and satisfaction with program elements.

5.6.5.3. Respondent Characteristics

Eight of the ten interviewed SBDI participants reported being either the owner or president of the company. The two remaining participants reported having a managerial role at the company. All ten respondents reported their business had a single location, of which six reported leasing and four reported owing the space where the SBDI work was completed. The interviewed participants represented a range of business types and sizes (Table 5-50).

Table 5-50 Respondent Characteristics

ID	*Business Type*	*Square Feet*	*Number of Employees*
SBDI148	Professional services	2,400	8
SBDI170	Professional services	2,800	2
SBDI4	Professional services	3,000	7
SBDI145	Professional services	3,700	5
SBDI138	Retail	1,000	1
SBDI183	Retail	1,600	1
SBDI34	Retail	1,700	25
SBDI31	Retail	3,000	4
SBDI18	Industrial/manufacturing	6,500	8
SBDI25	Warehouse	15,000	5

5.6.5.4. Proactivity in Saving Energy

Overall, interviewed SBDI participants are energy conscious but report engaging in low-effort energy saving actions. All but three interviewed SBDI participants reported their organizations take steps to monitor or manage energy use in the building it occupies. Four of the seven respondents reported monitoring their electric bill, two reported adjusting the HVAC thermostat based on operating conditions, and one reported making it a point to turn off the lights when not in use.

Equipment upgrades were not common among interviewed SBDI participants and were completed for reasons other than saving energy. Three of the ten interviewed participants reporting replacing or upgrading energy-using equipment in the past two years, of which two reported replacing the air conditioning unit; one due to equipment failure and one due to a need for additional cooling capacity. The other participant reported replacing halogen lighting with LEDs as the bulbs burnt out. No interviewed participants who replaced equipment in the past two years reported receiving Ameren Missouri incentives for the replacements.

5.6.5.5. Reasons for Participation and Decision Making

All interviewed SBDI participants reported not being aware of the SBDI Program prior to learning about it through a service provider or Ameren Missouri. Two participants reported being aware that Ameren Missouri offered incentives to small businesses for making upgrades, but not through the SBDI Program specifically.

Five of the ten interviewed participants reported receiving unsolicited contact with a SBDI service provider. Interestingly, three of the four participants who received services through the first highest activity service provider, reported unsolicited contact. An additional three participants reported a non-program contractor they had a previous working relationship with referred them to an SBDI service provider. The remaining two participants reported first learning about the program through Ameren Missouri.

Four of the eight interviewed SBDI participants who reported either being approached by or referred to a SBDI service provider, reported the service provider discussed cost savings as a benefit of program participation (Table 5-51). All participants who reported cost savings being discussed during the initial contact with their service provider completed projects with the first highest activity service provider. Additional program benefits participants reported their service provider discussing with them included: decreased energy usage, low-cost and/or no-cost replacement (three mentions each), the ability to upgrade without replacing fixtures, improved lighting quality (two mentions each), and longer lasting bulbs (one mention each; multiple mentions allowed).

Table 5-51 Benefits of Program Participation Discussed with Service Provider (n=8; Multiple Responses Allowed)

Benefit	*Count*
Cost savings	4
Decreased energy usage	3
Low-cost and/or no-cost replacement	3
Ability to upgrade without replacing fixtures	2
Improved lighting quality / working conditions	2
Longer lasting	1

Seven of the ten interviewed SBDI participants reported considering replacing or upgrading equipment at their business prior to learning about the SBDI Program. All seven participants reported considering replacing lighting at their business, with one participant reporting also considering replacing the lighting fixtures. This participant went on to say that they were happy to have been able to upgrade the lighting without replacing the fixtures. Of the seven interviewed participants who reported considering replacing their lighting prior to learning about the program, two reported wanted to do so to replace burnt out light bulbs. Additional reasons for lighting replacement included the lighting being part of a remodeling project, to save energy/money, and wanting to add more lighting to the building (one mention each). Two participants did not provide a specific reason for wanting to upgrade the lighting at their business.

Upon learning about the SBDI Program, seven of the ten interviewed participants reported having questions or concerns. Four participants—all of whom reported unsolicited contact with the SBDI service provider—reported being generally skeptical about the program or the legitimacy of the SBDI service providers' claims. For example, one participant commented, *"[The program] seemed like such a good deal, a great opportunity, that there must be some type of catch."* Another participant commented, *"I was just concerned about the accuracy of the energy savings."* This participant went onto say that the actual energy savings was considerably higher than what their service provider initially quoted. The remaining three interviewed participants reported initially being either concerned about the cost of the lighting (two mentions) or concerned with the quality of the LED lighting (one mention). The seven interviewed participants who indicated having initial concerns about participating in the SBDI program reported their service provider addressed their concerns through general explanation of the SBDI Program process (five mentions), providing a detailed quote for costs above the inventive cap, or providing a demonstration of the lighting (one mention each).

Only one interviewed SBDI participant reported consulting someone other than their service provider before deciding to complete the upgrades—an electrician that they had previously worked with. When asked if there were any professional, community, or cultural associations whose opinions they trust when making decisions about equipment upgrades, three participants provided affirmative responses. Trusted sources included Ameren Missouri, a product distribution organization specific to a respondent's profession, and electricians (one mention each).

5.6.5.6. Program Sufficiency and Barriers to Participation

The measures offered through the SBDI Program and incentive level appear to be in line with the types of projects participants are interested in pursuing. Nine of the ten interviewed participants reported completing all recommended upgrades made by their service provider at the time of the walkthrough assessment. The one remaining

participant reported declining to upgrade their HVAC system (a measure outside of the SBDI Program's offerings), but indicated they would complete the upgrade in the future.

To gain a sense of the effort that the SBDI service providers must make to get the most savings from each project, the evaluation team asked the participants if there were any contractor-recommended equipment replacements or upgrades that that they were reluctant to do but ultimately chose to do. None of the interviewed participants reported completion of any upgrades that they initially were reluctant to do.

Additionally, the evaluation team asked interviewed participants if the maximum incentive amount of $2,500 per account prevented them from replacing or upgrading any equipment that they wanted to upgrade. No participants reported having any issues with the incentive cap, although one participant said they would have been unwilling to spend anything above what the incentive covered.

There may be opportunities for additional energy saving upgrades if service providers are encouraged to be more proactive in making upgrade recommendations outside of the prescribed SBDI measures. Eight of the ten interviewed participants reported their service provider did not mention additional Ameren Missouri incentives that were available to them during their interactions. The two remaining participants reported their service provider mentioned incentives for upgrading their HVAC equipment. Of those two, one reported not knowing that the incentive was available prior to hearing about it through the service provider and the other said they were familiar with HVAC incentives through Ameren Missouri's residential programs.

5.6.5.7. SBDI Participant Satisfaction

Overall, interviewed SBDI participants reported the walkthrough assessment was helpful in making decisions on what equipment to upgrade and found their service providers' recommendations to be appropriate. All ten SBDI participants reported their service provider performed a walkthrough of their business to determine upgrade needs, all of whom reported finding the walkthrough to be helpful in making decisions about the recommended equipment upgrades. Two representative participant comments are:

> "I really didn't know about how energy efficient my equipment was. We mainly talked about the lighting, but my electric bills are very high and we talked about any way to get my electric bill down."
>
> "[The walkthrough assessment] was helpful, but it also was when I started to get concerned [about the cost] because he was pointing out everything. Being very thorough to make sure we wouldn't miss out on any of the program benefits."

All but one interviewed participant reported that the equipment upgrade recommendations that their service provider made were appropriate for their businesses' operating conditions. The one participant who expressed dissatisfaction with the appropriateness

of equipment recommendations reported that some of the lighting installed by the service provider had the incorrect wattage, which led to the participant's having to replace the some of the bulbs.

Interviewed participants also reported high satisfaction with program participation requirements, including steps they had to go through to get the equipment and how well their service provider explained the program process and rules. Three representative participant comments are:

> "It's a great program. It's a good way to encourage people to upgrade their lighting and be a little more efficient."
>
> "[The program rules were] pretty clear. Once you spent x amount, you qualified for the maximum incentive. [The service provider] broke it down so that we could see if we didn't do one thing or another what the effect on the rebate would be."
>
> "[The program] was great. I would not have made the upgrades without the program."

All participants reported the amount of required paperwork was minimal and not overly cumbersome. Additionally, all but two participants expressed satisfaction with the incentive level and, if applicable, any out-of-pocket costs associated with the installed equipment. Of the two participants who expressed dissatisfaction, one said that the costs seemed high for lighting and the other explained that, although the costs were reasonable, they would have liked to see higher incentive levels. Finally, no interviewed participants reported issues with the time it took to have the equipment installed.

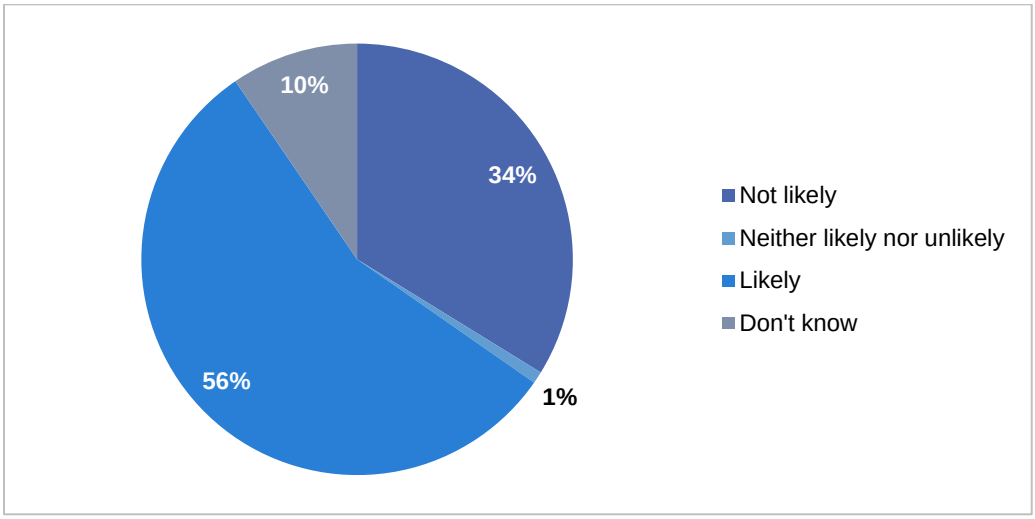
5.6.6. Nonparticipant Feedback on SBDI

Questions about interest in the SBDI Program were only relevant to the 56, 2M rate class respondents in the nonparticipant survey (see Section 6.6.1). Therefore, the sample used in this analysis includes only the responses of those 56 customers, weighted by their tax-exempt status so they match the population. Twenty-nine of those customers were tax-exempt, and the other 27 were non-tax-exempt.

Almost all of those 56 respondents (97%) reported they were responsible for purchasing lighting at their location, and 90% of those reported their lighting was at least three years old. A small majority (56%) indicated they would be likely to participate[28] in the program if approached by an SBDI contractor.

[28] Respondents rated their likelihood of participating in the SBDI Program on a scale from 1 (not at all likely) to 7 (extremely likely). For this analysis, the evaluation team counted anyone who gave a rating of 4 or higher as likely to participate.

Figure 5-24 Likelihood of Participating in SBDI (n=56)



A higher percentage of the tax-exempt respondents than the non-tax-exempt ones said they were likely to participate if approached (85% vs. 52%).[29]

Anyone who indicated being anything less than extremely likely to participate in the program was asked what might keep them from participating. Slightly more than 60% reported not knowing enough or were not knowledgeable about how an energy assessment would be beneficial to their firm. However, this reason was given much more frequently by tax-exempt respondents than their non-tax-exempt counterparts (86% vs. 31%).[30]

Ten of the 29 *non-tax-exempt* respondents gave other reasons for not participating in the program. Four suggested a lack of certainty in continuing business operations—two each said they may sell the property in the next couple of years or they would not have any money to make any of the suggested recommendations. Four indicated there was no need to do any upgrades because they had recently made upgrades to their building or the building was new. One said they would not do upgrades because they leased their space.

[29] $p < .008$, chi-square.
[30] $p < .0002$, chi-square.

6. Cost Effectiveness Evaluation

This chapter summarizes the results of the cost effectiveness evaluation of the Ameren Missouri BizSavers Program.

For each program, the following cost effectiveness tests were performed: Total Resource Cost (TRC) test, Utility Cost test (UCT), Ratepayer Impact Measure test (RIM), Societal test and Participant test, as defined by the California Standard Practice Manual. The analysis was completed utilizing DSMore software, the leading cost benefit analysis model in the country and the same model that was utilized by Ameren Missouri for program development. Developed and licensed by Integral Analytics based in Cincinnati Ohio, the DSMore cost-effectiveness modeling tool takes hourly prices and hourly energy savings from the specific measures/technologies being used in the Ameren Missouri programs, and correlates both price and savings to weather. The software references over 30 years of historic weather variability to appropriately model weather variances. In turn, this allows the model to account for low probability, high impact weather events and apply appropriate values to them. Thus, a more accurate view of the value of the efficiency measure can be captured in comparison to other alternative supply options. Report Volume II provides detailed information on the cost effectiveness evaluation test formulas, inputs, data sources, and methodology.

Table 6-1 shows the resulting cost benefit scores for each program and for the overall portfolio. Any score above one signifies cost effectiveness. The following table also summarizes the present values of the UCT net lifetime benefits (net avoided costs minus program costs). Most programs pass the UCT and TRC tests. New Construction does not pass the TRC test, and Retro-commissioning does not pass UCT and TRC tests.

Table 6-1 Results of Cost Effectiveness Evaluation (expressed in 2016 dollars)

Variable	*Portfolio*	*Custom*	*Standard*	*New Construction*	*Retro-Commissioning*	*SBDI*
UCT	4.95	5.18	5.30	2.78	0.06	2.43
TRC	2.42	2.27	3.19	0.84	0.06	2.08
RIM	0.70	0.78	0.61	0.56	0.06	0.53
PCT	4.23	3.52	6.62	1.59	2.60	5.57
SCT	3.12	2.94	4.03	1.08	0.07	2.53
UCT Net Lifetime Benefits	$44,707,416	$27,240,745	$16,267,313	$627,625	$-157,723	$729,456

7. Conclusions and Recommendations

The following section summarizes conclusions and recommendations that resulted from the evaluation activities. They are organized to present impact and process findings separately. Below is a list of conclusions that characterize key trends from the impact and cost effectiveness analyses.

7.1. Impact Conclusions

Below is a summary of conclusions from the impact evaluation.

- The first year offering of the SBDI Program achieved 326 completed projects, even though the program start date was not until August 1, 2016. Although the SBDI Program had the highest gross realization rate of the BizSavers Portfolio, it also had the highest variability in project-level realization rates. A primary reason for the lower project-level realization rates is the applicant's pre-existing screw-in lamp designation differing from the data collected during SBDI site visits. Figure 4-16 and Figure 4-19 compare ex ante wattage to ex post wattage, showing the lowest base watt correlation of all the high impact measures. During site visits, the field engineer asked the small business owners' representative a few questions regarding their knowledge of the existing lamps, reviewed the non-retrofitted fixtures, and completed a walkthrough of the storage location for spare lighting. From these activities, the evaluator determined that a significant portion of the newly-installed lamps associated with projects with low realization rates replaced compact fluorescent lamps rather than incandescent lamps, as documented in the project materials. A second issue identified was that lighting hours of use reported for some projects were greater than the facility operating hours listed on program application materials. Both issues were discussed with program staff during the program year and corrective training was provided to the trade ally associated with the errors.
- The Custom Program was much closer to achieving its peak demand kW goal than its kWh savings goal. The program performed better at meeting the kW goal as compared to the kWh goal because a large share of Custom Program kWh savings resulted from cooling and HVAC projects. The coincident factor for these end uses is larger than other end uses such as lighting. Consequently, the HVAC and cooling projects accounted for 21% of the program kWh savings and 51% of the kW savings.
- The 86% realization rate for the New Construction Program was largely associated with a single project with an error in the ex ante savings estimate. Specifically, the savings estimate was incorrectly based on the full square footage of the facility,

rather than the square footage of the newly-constructed addition that qualified for the new construction incentives.

- Hours of use and application of HCIFs were the primary factor that accounted for differences between ex ante and ex post savings for high impact measures. Regarding hours of use, the analysis of high impact measures found that for most measures, the difference between ex ante and ex post savings were primarily due to differences in applicant-reported hours of operation and monitored lighting of hours of operation. Ex ante hours of use are estimated using a well-structured protocol and the evaluator does not have a recommendation for improving that approach. Regarding the application of HCIFs in the estimation of lighting savings, the program applied a factor of 1.0 for most of the program year, but is currently applying HCIFs for lighting projects implemented in conditioned spaces.
- A small proportion of sampled measures associated with the interior lighting end use in program tracking data were installed in an outdoor area and operated on a dusk to dawn schedule. These measures account for approximately 2.4% of M&V sample ex post gross kW savings. In the ex post analysis, these misclassified measures were reclassified from the lighting end use category to the exterior lighting end use category, with the incremental impact of the reclassification extrapolated to account for the non-sampled measures.
- Review of program applications found that several applicants selected “not applicable” for space conditioning type in completed applications. Without information on space heating type, lighting ex ante savings cannot appropriately account for heating and cooling interactive effects.
- Hours of use were over-estimated for some lighting installed in guest rooms. During PY2016, the evaluator found that the ex ante savings estimates did not distinguish between hours of operation for guest room and common area lighting projects. This resulted in an overestimate of energy savings for guest room lighting.
- EISA adjustments for baseline wattage were incorrectly applied to some lamp types. The evaluation found that the baseline adjustment factor of 0.7 was applied to some EISA-exempt lamps (BR30/40 65W).
- There is a negative correlation between the number of application rows of measure data and the variability in the realization rate of measures within projects. Applicant provision of more rows of data for a single project measure is associated with lower variability in measure-level, project-level gross realization rates. Applicant provision of multiple rows of application data for a single measure typically is associated with differences in the application data fields for one or more of the energy savings calculation algorithm input variables. The most significant variables

impacting variation in gross realization rates of lighting measures are the existing lighting wattage and the annual lighting hours of operation.

7.2. Impact Recommendations

Based on the above conclusions, the evaluation team offers the following impact recommendations for consideration in planning future program cycles.

- To allow for more accurate estimation of energy savings of lighting implemented in lodging facilities, ADM recommends that the program application allow applicants to distinguish between guest rooms and lodging common areas.
- ADM recommends that the program implementer review the use of the EISA adjustment factor and ensure that the adjustment factor is not erroneously applied to EISA-exempt incandescent reflector lamps. These lamps are both EISA 2007 exempt and also DOE 2009 exempt: (ER/BR 30/40 50W or less; BR 30/40 65W and R20 45W or less).
- ADM recommends that ex ante savings estimation for projects with multiple HVAC measures rely upon calibrated energy simulation. Calibrated energy simulation accounts for actual building conditions and HVAC interactive effects. For such projects, uncalibrated energy simulation and bin analyses that do not rely upon actual metered/trended data will tend to generate relatively inaccurate energy savings estimates.
- For small projects with a single HVAC measure and/or one or more non-HVAC, non-lighting measure, ADM recommends that ex ante energy savings estimation rely upon algorithms in secondary literature (e.g. Missouri Statewide TRM), with energy savings equation variable values determined by facility-specific and equipment-specific information, where appropriate. The utilization of such algorithms may provide more accurate energy savings estimates compared with those provided by deemed estimates such as those found in the Ameren Missouri TRM or those provided by building energy simulation premised upon assumed values rather than facility-specific and project-specific data.
- The Custom and Standard Incentive Application form should be revised to further direct applicants to provide unique lighting operating hours, where applicable. Currently, the application form prompts entry of annual lighting hours of operation, and provides a tool referred to as the "Facility Operating Hours Calculator," which presents narrative stating: "Each measure could have unique operating hours depending on the technology and use. Use this calculator to record the specific operating hours for each measure as required." In fact, a single measure may be installed in multiple areas with unique lighting hours of operation. ADM recommends that the application form prompt applicants to disaggregate single

measures, where appropriate, such that quantities of measures are associated with the applicable annual hours of operation.

- Additionally, during the program year, ADM recommended the removal of the space conditioning type option of “N/A” from the program application. A number of applicants were selecting the “N/A” option, rather than identifying the space conditioning type or absence of space conditioning, resulting in unavailability of data with which lighting heating and cooling interactive effects could be estimated. Prior to the conclusion of the program year, the program application was revised to remove the “N/A” option.

7.3. Regulator Research Questions – Process Findings and Recommendations

The results of the process evaluation research are largely positive. Program participant satisfaction was high across all program facets, and the introduction of the new SBDI Program appears to be serving a market segment that has been underserved in the past. However, the evaluation also identified some threats to program success in the current cycle. This report provides not only the verified energy savings associated with the BizSavers Program during PY2016, but also an overview of program operations and suggests recommendations to be considered as the program evolves.

Below, conclusions and recommendations are organized according to the five regulatory research questions specified in 4 CSR 240-22.070(8). The conclusions address the first four questions; the fifth question speaks to recommendations.

Research Question 1: What are the primary market imperfections common to target market segment?

Findings from previous evaluations pointed to three types of “market imperfections” or structural factors that may affect the ability of Ameren Missouri customers to undertake energy efficiency upgrades on their own or through the BizSavers programs: cost, lack of program awareness, business size, and geography. The current evaluation suggest that low program awareness may constitute the primary market imperfection, or barrier, while business size and geography do not appear to be major barriers.

Awareness. The level of program awareness among nonparticipants is less than half the level identified three years ago, a finding that cannot be attributed to differences in the make-up of the surveyed nonparticipants. One possible factor is that awareness previously was assessed in the middle of the program cycle while the current evaluation assessed it nine months after the program started up again following a three-month suspension. Another possible factor is that fewer customers are learning about the program from contractors and vendors, which conceivably could be related to a reduction

in the size of the trade ally network and the program's movement away from distribution of printed collateral to trade allies and toward downloadable online material.

Awareness of the new EMS pilot program was low among interviewed trade allies who reported doing relevant work and among surveyed program-eligible nonparticipants.

Cost. Even though energy efficient equipment pays for itself in the long term, the first cost must compete with other priorities and so the higher upfront cost of energy efficient equipment may be a barrier. The high NTG ratios for the BizSavers Program, together with feedback from participants about the value of the incentives, emphasized the importance of incentives in driving the efficiency upgrades.

Business size. While businesses in the small rate class comprise a lower percentage of program participants and projects than of Ameren Missouri business customers as a whole, their share of energy savings is slightly higher than their share of annual kWh usage.

Geography. Similarly, the St. Louis metro area and outer suburban areas comprise a higher percentage of BizSavers participants and projects than of business customers, but the share of energy savings across parts of the Ameren Missouri service territory is consistent with the distribution of total energy consumption across those areas. This reflects a greater concentration of larger businesses in the St. Louis metro areas and suburban areas compared to the rest of the service territory.

Research Question 2: Is target market segment appropriately defined, or does it need further subdivision or merging with other segments?

For most building end uses, the distribution of program participants matches relatively well with the distribution of businesses in the population. The offices and healthcare segments appear to be somewhat underrepresented in the program population, while the retail, food & beverage service, and lodging segments appear to be overrepresented, but this may in part be a function of the method used to estimate the population proportions.

Evaluation findings support the establishment of the SBDI Program to serve small businesses. Feedback from program participants indicated that they would do relatively few energy efficiency upgrades without the program, and just more than half of nonparticipants indicated they likely would participate in the program if approached by an SBDI contractor.

So far, the evaluation findings do not strongly support the need for special EMS incentives targeting tax-exempt entities. Even after being told about the Ameren EMS incentives, fewer than one in six program-eligible nonparticipants said they were likely to apply for the incentives. However, this pilot program is still young and awareness is still low. Two-third of interviewed trade allies who do pertinent work said they would likely do program-incented EMS projects in the coming year, generally five or fewer such projects.

Research Question 3: Do program measures reflect the diversity of end-use needs and available technologies for target segment?

Participant surveys and interviews showed satisfaction with the range of program-eligible equipment, delivery time for ordered equipment, and the quality of the equipment and the installation. The standard incentive application covered the equipment needs of most participants who used that option, although a notable minority of interviewed trade allies suggested the program did not provide a wide enough range of standard incentive options.

The primary concern with measures related to the elimination of incentives for exterior lighting, which reportedly had a largely adverse impact on trade allies. The adverse effects came not just from the loss of the exterior lighting sales themselves, but because inability to include exterior lighting in projects affected overall project cost-effectiveness, resulting in the loss of entire projects. The evaluation team understands that Ameren Missouri and the program implementer have decided to re-introduce exterior lighting to the list of incented measures for the new program year.

Research Question 4: Are communication and delivery channels/mechanisms appropriate for the target market segment?

The program implementer reported using a wide range of marketing outreach channels and methods to reach end-use customers and service providers (e.g., contractors, vendors, and distributors). The implementer continued to conduct targeted outreach to decision makers representing customer account aggregates or “towers.” This appears to be an effective approach, as one-third of projects were completed by customer accounts identified as “towers,” who completed twice as many projects per customer, on average, as those not in towers.

As indicated above, there is evidence of decreased awareness of BizSavers incentives in general. There is a low level of awareness of the EMS incentives among program-eligible non-participants. Moreover, there continues to be poor awareness of the new construction program requirement to apply for incentives before incorporating equipment into a project’s plan.

While surveyed program participants were largely satisfied with program processes, a large minority of interviewed trade allies suggested the application process was overly burdensome, requiring information that sometimes was hard to obtain, and more than one-quarter of surveyed participants with custom projects either had to provide supporting documentation, such as invoices, for their applications, or resubmit them for other reasons, largely to correct errors in calculating incentives. In addition, nearly half of the low-activity trade allies seemed to be unaware of the availability of standard incentives.

One potential program delivery concern is the fact that the new SBDI Program has relied so far on a single contractor to deliver three-quarters of the projects. This may be

particularly a concern given a significant decline in the number of project starts from December to February, although program staff have reported that project starts have since increased again, partly as a result of increased program incentives.

Research Question 5: Are there better ways to address market imperfections to increase adoption of each program measure?

The program implementer should work to increase awareness of the new construction program rules among contractors and vendors. In particular, increasing the awareness of the importance of involving the program staff early in the design phase is important for maximizing savings. One thing to consider may be to include providing some form of recognition to contractors who attend specific training on, and demonstrate knowledge of, new construction program rules and processes—for example, identifying such contractors as "new construction program specialists" on the trade ally website and providing special new construction program co-branding.

The program implementer should more strongly emphasize the requirement to provide supporting documentation, including invoices, with applications. The evaluation team recommends placing a statement about that requirement on the "Welcome" tab of the standard/custom incentive application, together with a reference to the section of the application that spells out the details of the requirement. This may also help draw attention to the availability of standard incentives.

If it does not already do so, the program implementer should track applications that have errors in calculating incentive amounts and record the errors made in the initial application. Then the implementer, or perhaps the evaluation team, can review the calculation errors to identify patterns, allowing the implementer to provide more detailed instructions to prevent such errors.

The program implementer should consider increasing the size of the trade ally network and re-introduce distribution of printed collateral to trade allies for use in marketing the program to customers. As part of that effort, the implementer should emphasize the availability of both standard and custom incentives.

The program implementer should continue to monitor the project delivery of all SBDI service providers and, if necessary, attempt to recruit more SBDI service providers capable of delivering reasonably large numbers of projects and/or work with existing service providers to increase the number of projects they deliver to decrease the risk of relying on a single provider to deliver most program savings.

Ameren Missouri should consider adding customer type information to its customer database to make it easier for programs to identify any under-served segments and improve reach into those segments and improve assessments of program reach to various business and building types.

7.4. Update to 2015 EM&V Recommendations

Throughout program year 2016 (PY2016), the evaluation team followed up with program staff and monitored the program tracking system, LM Captures, to monitor how the program responded to past EM&V recommendations. The following section provides an update regarding the program's response.

EM&V Recommendation: To improve the ex ante savings calculation for lighting control measures the program implementer should consider the cost and benefits associated with collecting additional information. Exact controlled wattage and the existing lighting hours-of-use are two parameters that could further improve the realization rate of lighting control measures.

- Program Response: The recommendation was partially implemented. A redesigned PY2016 program application provides for added data collection for specific types of Custom Program daylighting control systems. During PY6, lighting controls accounted for approximately 3.4% of ex ante kWh energy savings for the lighting end use, while during PY2016, lighting controls accounted for approximately 0.7% of ex ante kWh energy savings for the lighting end use.

EM&V Recommendation: ADM suggests that program staff apply heating and cooling interaction factors (HCIF) by building type, as mentioned in the TRM, to more accurately estimate lighting project savings. As project documentation already requires the customer to indicate the building type and space heating fuel source, applying the appropriate HCIF should not require the collection of additional information. For purposes of performing ex post evaluation of lighting project savings, ADM developed HCIFs based on energy simulation of DEER eQUEST prototypical buildings, referencing Ameren Missouri service territory weather data. These HCIFs are presented in Volume II of this report.

- Program Response: This recommendation was implemented during PY2016. During the latter part of the program year, the ex ante kWh savings of a small number of lighting projects reviewed by the evaluation team accounted for heating and cooling interactive effects. As Standard/Custom application version 4.3.1 and SBDI application version 1.2.0 are increasingly used by program applicants, heating and cooling interactive effects will increasingly be accounted for in lighting measure ex ante savings.

EM&V Recommendation: To improve the ex ante calculation for ENERGY STAR® ice machines, the program implementer should consider collecting information on the efficiency of the replaced ice machine and baseline data.

Program Response: The recommendation is no longer applicable, since ENERGY STAR® ice machine incentives are not offered under the Standard Program during PY2016.