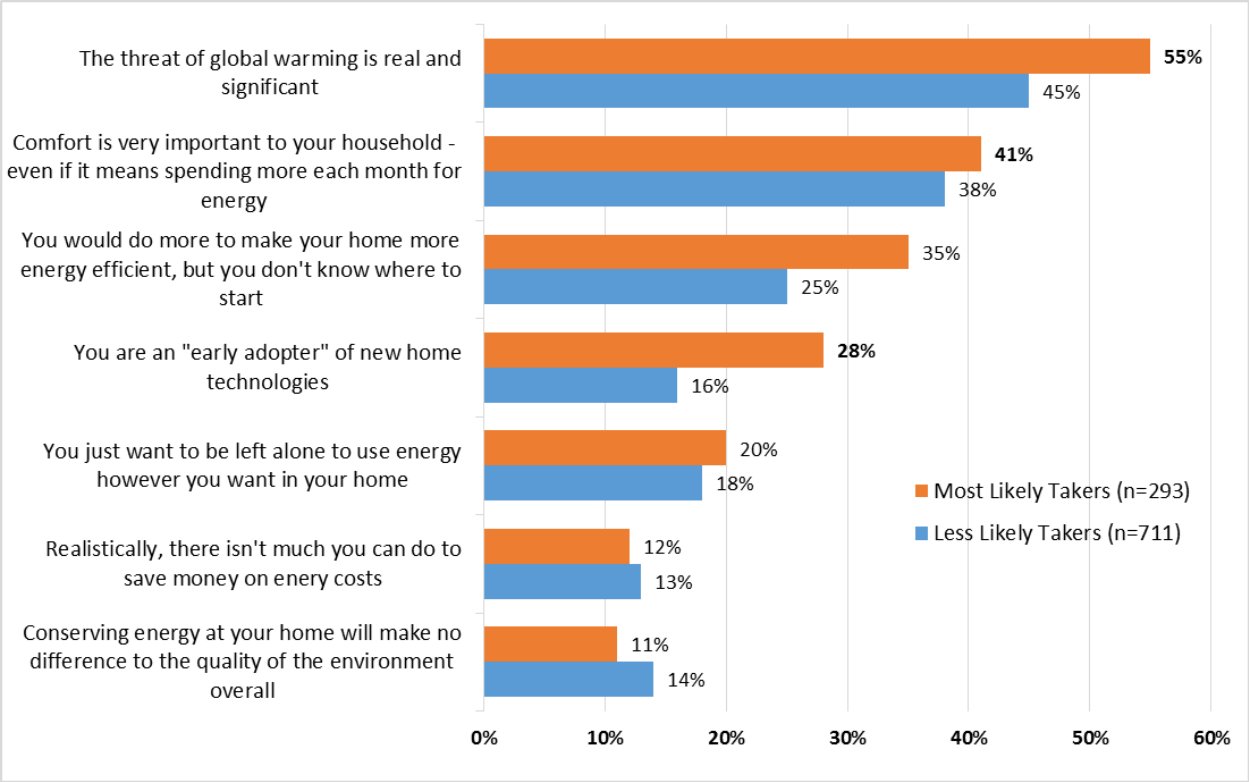
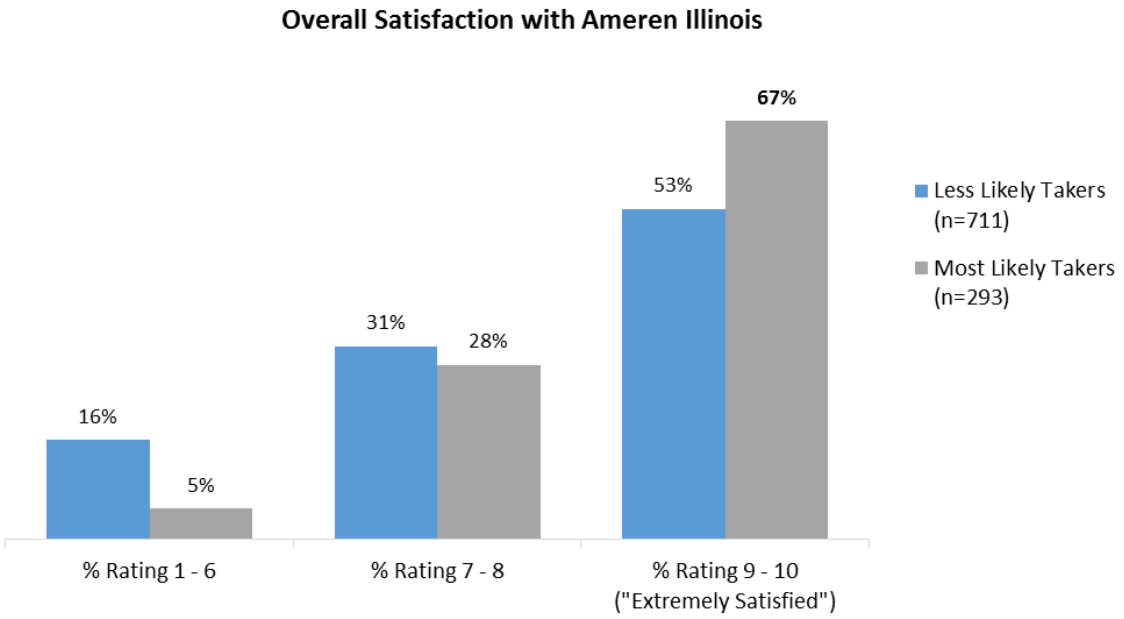
Figure 5-2 Likely Takers by General Attitudinal Differences (% Top Box, 8 -10)

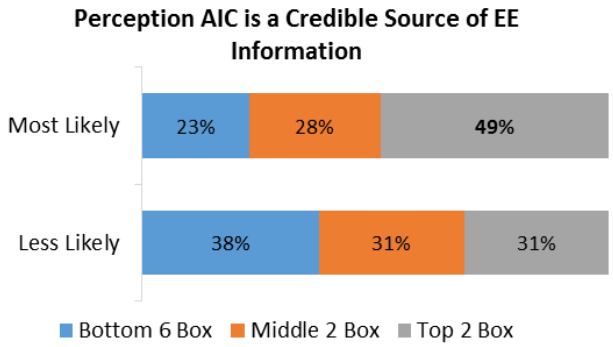


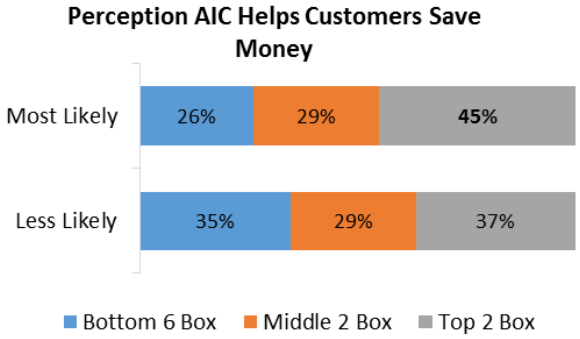
Another key factor in likelihood to adopt energy efficiency measures appears to be the degree to which customers have favorable opinions of Ameren Illinois.

- "Most likely takers" are more satisfied than are less likely takers (67% compared to 53%).
- "Most likely takers" are also more likely to agree that Ameren Illinois is a credible source for energy efficiency information, and that the company helps customers save money.

Figure 5-3 Likely Takers by Attitudinal Differences about Ameren Illinois







SECTION | 6

C&I Analysis Approach and Methodology

This section outlines the approach and methodology implemented for the C&I market research effort, including sample design, questionnaire development and data analysis.

Survey Approach

The sample design process started by drawing an extract of all of the non-residential accounts from the Ameren Illinois billing data for calendar year 2014. The Ameren Illinois customer list included detailed information for each customer record, including name, address, annual kWh usage, annual therm usage, division, account number, etc. The AEG Team then processed and analyzed the data in order to represent program-eligible business premises directly billed by Ameren Illinois. The steps executed are documented in Table 6-1.

The AEG Team isolated the very largest businesses and targeted them for separate onsite surveys. The remaining customers in the sample frame were stratified by building segment and industry as well as usage (using the Dalenius-Hodges technique for determining size strata breakpoints), resulting in 124 separate sample cells. The target sample size of 900 responses for the online survey was allocated to the strata using Neymann Allocation. Survey responses were targeted and monitored at the individual stratum level. The full sample design at the segment level is presented in Appendix A.

Table 6-1 Ameren Illinois C&I Survey Population

	Accounts	% of Original Accts	Premises	Annual GWh	% of Original GWh	Annual MMtherm	% of Original MMtherm
Original Ameren database	**178,219**	**100.0%**	**n/a**	**24,896**	**100.0%**	**1,098**	**100%**
Removed accounts with less than 9 months of data	8,210	4.6%	n/a	72	0.3%	5	0.4%
Removed gas usage of natural gas Opt-Out customers	0*	0.0%	n/a	0	0.0%	541	49.3%
Combined accounts during premise-level aggregation	*31,834***	*17.7%***	n/a	-	0.0%	-	0.0%
Premise-level sample frame (normalized)	**169,919**	**95.3%**	**138,175**	**24,506**	**98.4%**	**540**	**49.2%**
Removed premises below energy use cutoff ***			65,654	258	1.0%	-3	-0.3%
Removed non-building and other excluded premises			8,568	2,981	11.9%	39	3.5%
Sample Frame			**63,953**	**21,267**	**85.4%**	**504**	**45.9%**

** This step removed the gas usage but the accounts were not cleared until the energy cutoff step.*
*** 31,834 accounts were determined to be co-located. These accounts were combined, not eliminated.*
**** Energy cutoff was to remove any customer with both <10 MWh and <800 therms per year.*

For each stratum, the AEG Team pulled a random sample equal to 15 times the target sample size, up to the number of available sample points in each stratum. Postcard survey invitations with instructions on how to complete the online survey were mailed to each sampled business.

- Customers were originally offered a $25 check for completing the survey, but that amount was increased to $50 approximately halfway through fielding in order to increase response rates.
- Due to the limited size of the sample list, postcards were mailed to all respondents at one time, and the mailing was followed by several rounds of reminder emails and phone calls.

In order to qualify to complete the survey, responding companies had to meet the following criteria:

- The respondent had to report that they were knowledgeable about decision-making for energy issues for the business at the specified location.
- The company had to be responsible for the cost of their electricity or natural gas and Ameren Illinois had to provide the facility with either electricity and/or natural gas.
- The location had to include at least some enclosed space (i.e. could not be solely an outdoor structure or facility).

A total of 798 Ameren Illinois business customers completed the mail-to-web survey. In addition, 50 onsite surveys with the very largest businesses were completed. This total sample of 848 yields a 95% confidence interval of + / - 3.5%.

- Approximately 53% of those who attempted to complete the survey qualified to do so.
- The overall net response rate was approximately 3.71%. The response rate was reasonable, but slightly low at the beginning, which resulted in the need to increase incentive payments halfway through the fielding.
- Approximately 47% of those who started the survey abandoned it before completion.
- Average online survey length was about 36 minutes.

The data were weighted on the basis of the original sample design, in order to ensure that the weighted respondent sample mapped back to the underlying C&I population on electric usage, gas usage, and business type.

Questionnaires

As with the residential survey, a single questionnaire was used for the business survey in this study. The C&I questionnaire covered the following content areas:

1. Screening questions
2. Description of facility / structure
3. Description of major end uses in the facility
4. Description of heating and cooling equipment
5. Description of lighting (bulbs and fixtures / interior and exterior)
6. Attitudes toward Ameren Illinois
7. Attitudes toward using energy
8. Attitudes toward appliance purchasing
9. Awareness of EE-related energy programs
10. EE measures implemented to-date (with a focus on lighting)

A copy of the questionnaire is provided in Volume 4, Appendix.

SECTION | 7

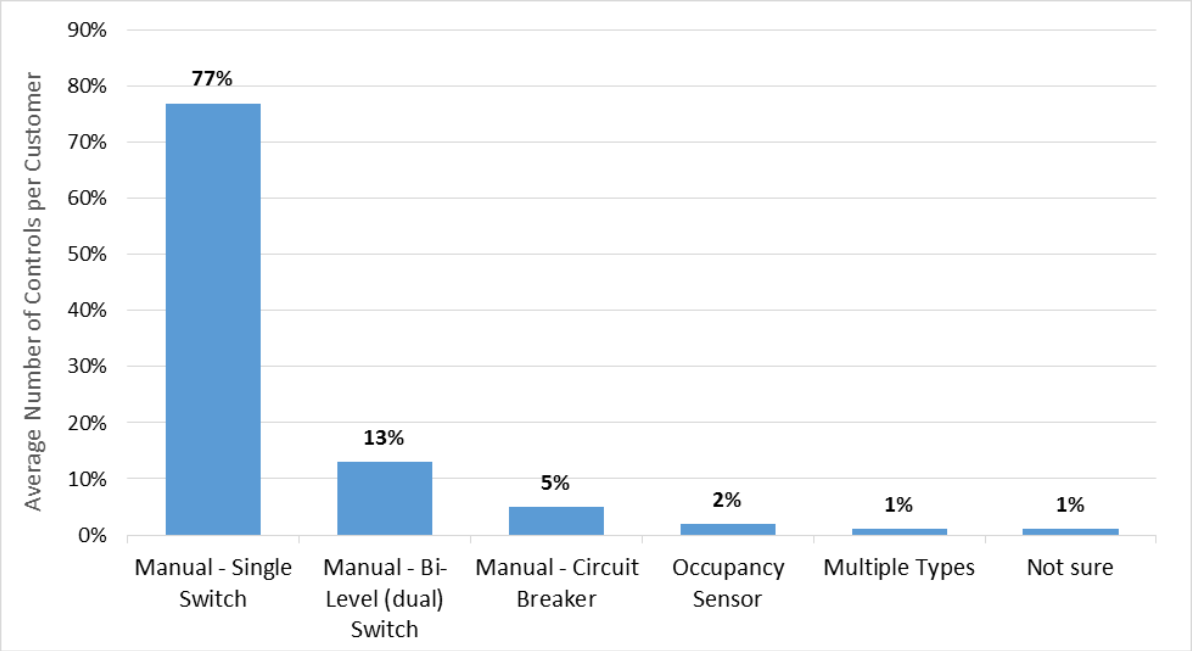
C&I Saturation Survey Results

The C&I survey provided insight into new / emerging technologies and those results are provided in this section. Detailed findings describing key energy characteristics of AIC's C&I customers are provided in the market profiles in Volume 4 Appendix A.

Lighting Controls

The most common device used to control lighting in C&I facilities is a manual single switch (77%). Only 13% of businesses say they have bi-level (or dual) switches installed and only 2% report using occupancy sensors. No businesses report using timers or an energy management system for lighting controls.

Figure 7-1 C&I Customer Controlled Lighting Device Usage

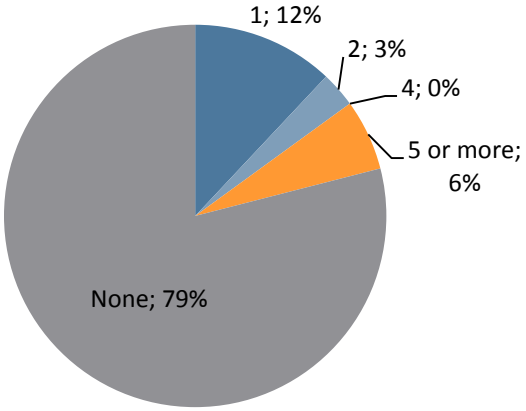


Electric Vehicles and Solar PV

Approximately 4% of businesses say that there is at least one EV charging station at their facility, although this seemed high to the research team. Only a half of one percent report more than one charging station. Those facilities with charging stations typically say that their company pays for the stations (82%).

While charging stations are relatively rare, 21% of businesses report using electric vehicles for business purposes.

Figure 7-2 C&I Number of Electric Vehicles for Business Purposes



Regarding solar power and alternative methods of energy generation, 2% of businesses say they have installed a solar photovoltaic system. Small wind turbines, on the other hand, are nonexistent within this population, with no reports of operating them onsite at their businesses.

Thermostat Usage and Smart Technology

Businesses are roughly split between the use of a programmable thermostat (50%) and the use of a standard / manual thermostat (41%). Only 3% of businesses say they have a Smart thermostat.

Table 7-1 C&I Type of Thermostats Usage

Type of Thermostat	Percentage
Programmable thermostat	50%
Manual thermostat	41%
Manual on/off	3%
Energy management system	3%
Smart thermostat (interactive and web-enabled)	3%
Always on	1%
None of these	1%

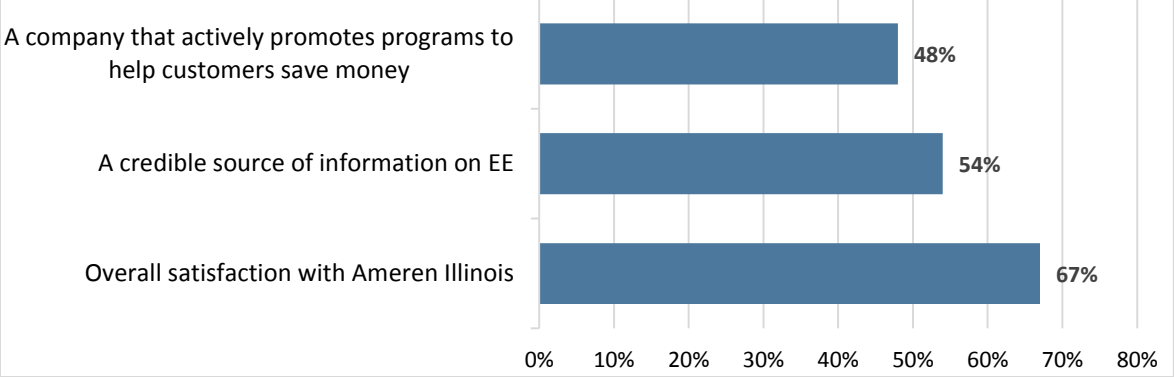
SECTION | 8

Understanding Business Customer Perspectives on Energy Issues

In order to better understand customer reactions to new EE options, the surveys also captured information about overall customer perspectives, both toward AIC and toward energy issues as a whole.

In terms of their overall opinion toward the company, and as shown in Figure 8-1, over two-thirds (67%) of businesses give the company a top-three box rating (8-10 on a 10-point scale) on overall satisfaction. Ameren scores slightly lower on more specific attributes relating to the company's promotion of EE programs and credibility as a source of information about EE. However, more than half of respondents give the company top-three box ratings on these attributes.

Figure 8-1 Overall Ratings of Ameren Illinois (ratings of 8-10 on 10 pt. scale)



In Table 8-1 below, businesses report a varied pattern regarding energy efficiency levels for new equipment they may have purchased recently. For HVAC and water heating equipment replacements, customers are slightly more likely to say they have installed a high efficiency model than a standard efficiency model in the last two years. For refrigeration equipment, and even more so, for office equipment, that trend is reversed, with more standard efficiency models reported as having been installed.

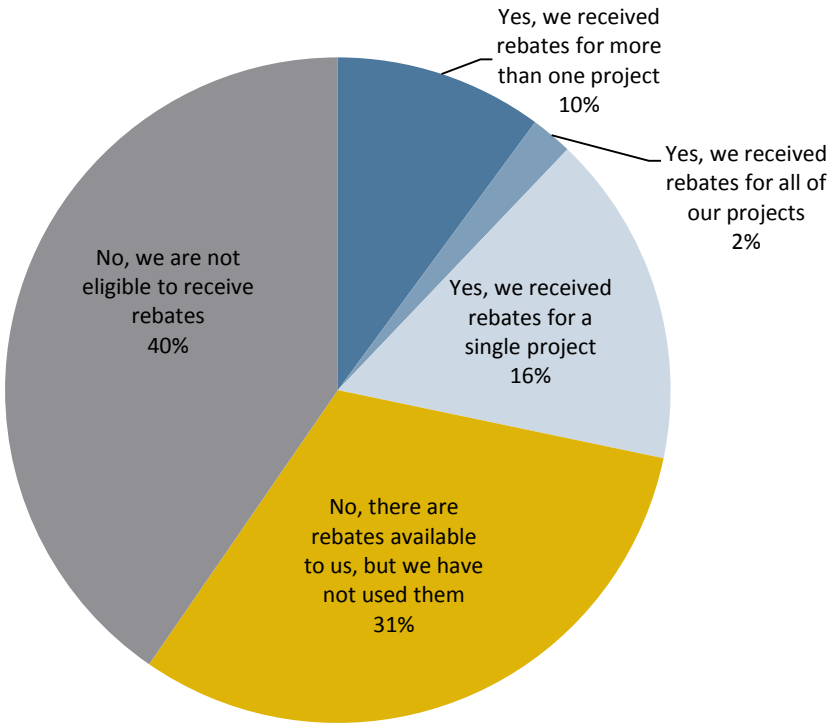
A significant proportion of customers (37%) say they have upgraded or renovated their fluorescent lighting system in the last three years and another quarter (24%) say they plan to do this in the near future. Fewer customers (18-28%) say they have recently, or expect to, eliminate some fluorescent fixtures, upgrade windows, or upgrade insulation within the next two years.

Table 8-1 C&I Customers Purchasing Behaviors of EE Products within 2 Years

Appliance	Purchased Highly Energy Efficient	Purchased "Standard Efficiency"	Did not Purchase
New heating system	14%	9%	76%
New air conditioning equipment	15%	11%	74%
New water heating equipment	14%	11%	75%
New refrigeration equipment	12%	15%	74%
New motors / drives	6%	8%	85%
New office equipment	21%	36%	43%
New ventilation equipment	4%	6%	90%
Measure	**Implemented in Last 3 Years**	**Plan to Implement in the Next 2 Years**	**Neither**
Upgrading or renovating fluorescent lighting system(s)	37%	24%	39%
Eliminating some fluorescent fixtures and adding reflectors to others to reduce the total number of lighting fixtures	15%	13%	73%
Replacing windows with windows designated as "low-e" glass	11%	6%	83%
Adding or upgrading insulation on exterior doors, walls, ceilings, or roofs	13%	14%	74%

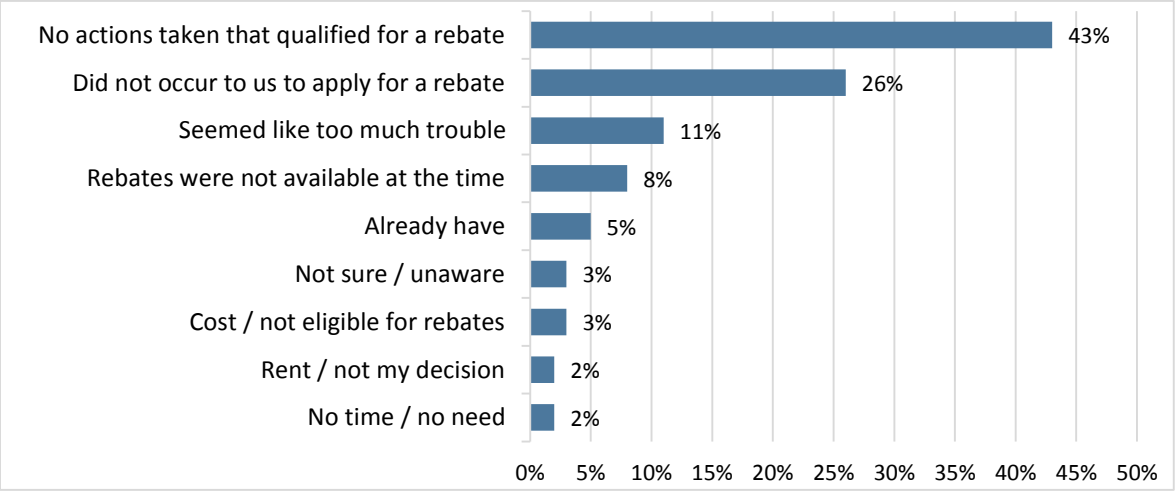
Just over one-third (38%) of C&I customers are aware that Ameren Illinois provides EE-related rebates or incentives. The remaining 52% were not sure if Ameren offered rebates / incentives and 10% were unaware. As is reported in Figure 8-2, for those that are aware of Ameren providing rebates and incentive offers, 28% say they have utilized them for one or more projects. Close to half said they were not eligible to receive the rebates (40%).

Figure 8-2 Utilization of Rebates / Incentives from Ameren Illinois



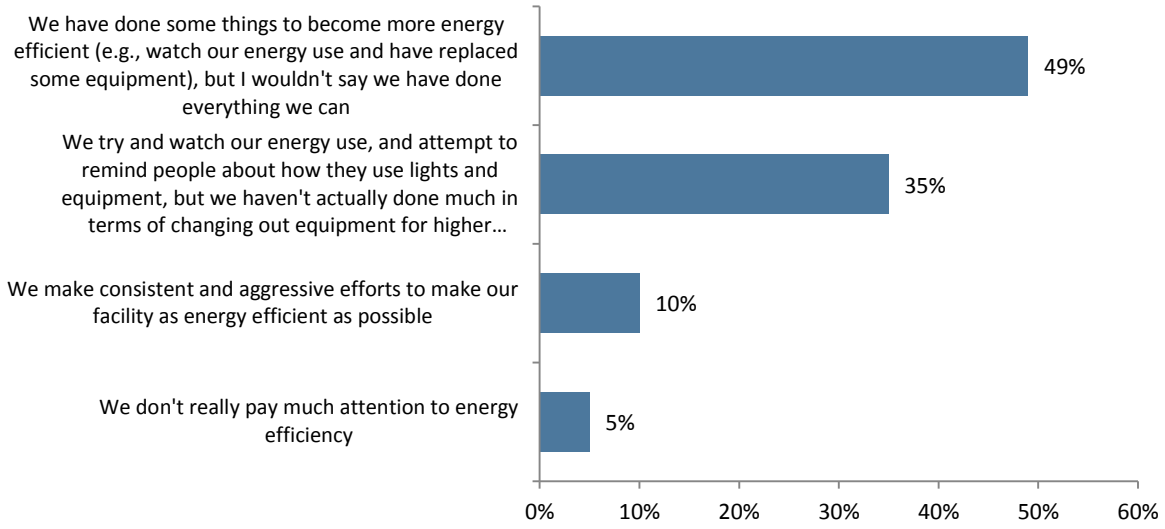
For those that have not used rebates, the biggest reported barrier to doing so is not taking actions that would have qualified for a rebate (43%). Second most commonly, businesses say that rebates simply do not come to mind (26%).

Figure 8-3 Barriers to Using Rebates / Incentives from Ameren Illinois



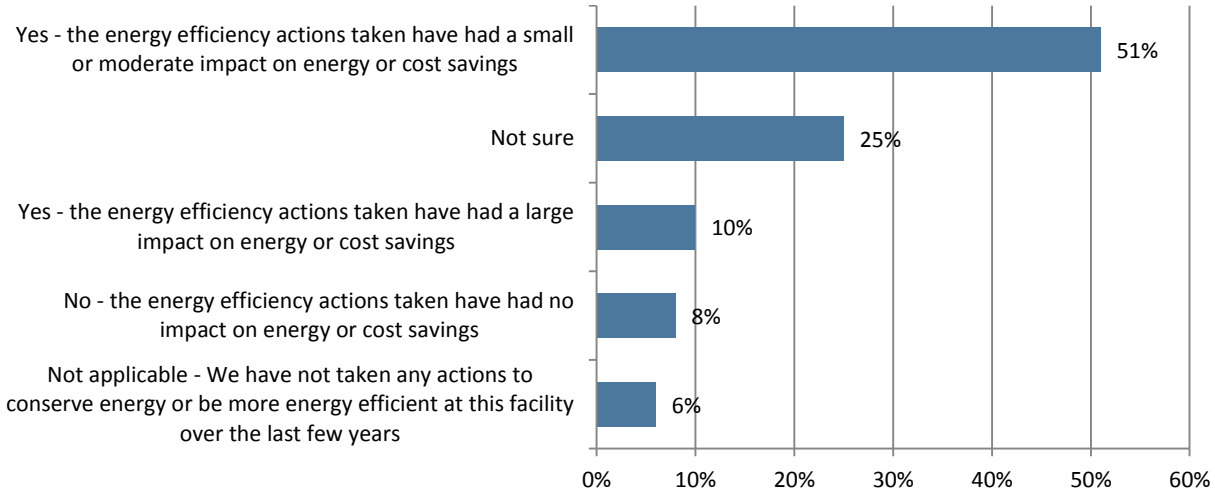
In terms of their overall efforts to implement energy efficiency actions at their facilities, Figure 8-4 shows that almost half (49%) of respondents say that some actions have been taken at their facility, but that more can be done. Another third (35%) report that they monitor their energy use but have not "actually done much" to change out equipment to more energy efficient options. Only 10% say that they make "consistent and aggressive" efforts to make their facilities as efficient as possible.

Figure 8-4 C&I Customer Approach to Implementing Energy Efficiency Actions



About half of those that reporting taking action in conserving energy also reported seeing a small to moderate impact on cost savings (51%) and another 10% report a "large impact" on cost savings. However, a quarter (25%) are unsure if their energy efficiency actions have actually translated into cost savings.

Figure 8-5 C&I Customer Costs Savings as a Result of Energy Efficient Actions



SECTION | 9

C&I Customer Take Rates

As with residential customers, one of the important outcomes of the market research among C&I customers was the development of customer "take rates" (the proportion of customers estimated to be likely to adopt a new higher efficiency appliance or other measure given the presence of an incentive or rebate). As was noted in the earlier chapter on residential customers, the challenge in developing take rates is that survey respondents tend to over-estimate their true likelihood to participate in programs and services within the context of a market research study. Research and real world experience tell us that stated intent does not translate simply into likely downstream behavior, with customers tending to overstate the true likelihood that they will take a future action.

Methodology

The methodology used to make the necessary "say/do" adjustments was the same as that used for residential customers and consisted of two steps:

1. Calculate an "unadjusted take rate" for each measure at each payback period by treating survey responses at face value. Therefore, if a respondent rated their likelihood to adopt a given measure as a "10" on the 10-point scale, then they were treated as 100% likely to adopt. The resulting average was interpreted as an "unadjusted" take rate because it takes respondents' answers at face value.
2. Use a say / do calibration based on actual AIC program experience. Customers were asked about the likelihood that they would acquire a higher-than-standard efficiency option for a total of eight end use measures (CFLs, HVAC, refrigerators, server, motor, advanced thermostats, energy management system and occupancy sensors) at multiple payback periods (1, 3 and 5 year payback levels for all eight measures as well as 0 year paybacks for CFLs, HVAC and advanced thermostats).[5]

   The AEG team developed an "anchor question" for the AIC lighting program which attempted to, as closely as possible, describe the current program. Since the team could calculate actual historical program participation, it was possible to compare the "say" responses (what people said they would do in the survey) to the actual "do" behavior (how customers have responded to the program in real life). By comparing these two numbers, the team was able to calculate a say / do adjustment based on the real experience of Ameren Illinois. This calibration factor was used to generate more accurate representations of how customers are likely to act in the real world. The reality-based say / do adjustment values were then applied to each of the unadjusted take rates values generated for each measure and payback period within each customer class.

In order to provide insight about the impact that varying payback periods might have on customer response to the programs tested, the survey explored responses to each program at 1, 3 and 5 year payback levels as well as 0 year payback period for some measures. The survey used a method developed by the economist von Westendorp to capture customer responses. The technique begins by asking respondents to assess their likelihood of adopting a program at a 3 year payback, and then (a) if they respond positively to this option, asks them to respond to a 5 year payback, or (b) if they respond negatively to this option, asks them to respond to a 1 year payback period. In order to deal with issues of survey length, the tested program measures were sorted into different categories that

[5] A 0-year payback here corresponds to a DSM program incentive of 100% of the incremental measure cost, meaning the incremental cost to the consumer is instantly removed.

were similar in terms of scale of investment and type of measure. The full 1, 3, and 5 year payback assessment was then conducted for a single program within each category. The remaining programs within each category were asked about in the survey at the 3 year payback level only. Regression analysis was then used to develop the 1 and 5 year payback values for each measure using the slopes observed for the example program in each category. Zero year payback questions were asked separately for all respondents for a subset of measures.

It is important to note that take rates are calculated for all customers eligible to adopt each technology, and therefore, do not take program awareness or program availability into account. Since we know that program awareness is not likely to be at 100%, the actual program adoption rates that would be experienced by Ameren Illinois would also be affected by program awareness.

Estimated Take Rates

The unadjusted take rate of 59% for the lighting was compared to the calculated estimate of 32% for actual program participation. As a result, the AEG team determined that a correction factor of 0.542 should be applied to the unadjusted take rates to create adjusted take rates to estimate Realistic Achievable Potential customer program response for each measure at each payback period.

The range of take rates across the full range of programs / measures tested appear in Table 9-1 and range from a low of around one-third of all eligible customers to a high of just under one-half of all eligible customers. It is again worth noting in these results that the improvement from a 1 year payback to a 0 year payback creates little or no improvement in adjusted take rates.

Table 9-1 C&I Adjusted Take Rates by Payback Period and Measure

Nonresidential Measure	Payback Period	Adjusted Take Rate
HVAC	0	43%
HVAC	1	43%
HVAC	3	39%
HVAC	5	36%
Refrigerator	3	37%
Server	3	35%
Motor	3	39%
AP Thermostat	0	46%
AP Thermostat	1	45%
AP Thermostat	3	44%
AP Thermostat	5	40%
Energy Management System	3	32%
Occupancy Sensors	3	45%
CFL	0	48%
CFL	1	46%
CFL	3	43%
CFL	5	36%
CFL	5	37%

To develop estimates of Maximum Achievable levels of program response, the AEG team included questions in the survey which explored the potential impact that different conditional market elements might have on customer response to programs. The survey included questions to determine how much more likely customers were to say they would use a rebate program if:

- Their business's economic situation were much improved
- Several different ancillary product features were described positively

- Customers could be educated to be as informed about energy efficiency as are those who say they are currently well informed
- Programs were delivered using the method most preferred by customers

The independent impact of each of these factors on likely take rates, along with the impact of moving from a base 3 year payback period to a 0 or 1 year payback period, is outlined in Table 9-2 below.

Table 9-2 Maximum Achievable Take Rates Lift

Factors Affecting Take Rate	Take Rate "Lift"
Lift from Fastest Payback (0 or 1-year) vs. 3-year	8.2%
Lift from Best Delivery Mechanism vs Avg.	13.8%
Lift from Best Features vs Avg.	3.3%
Lift from Best Customer Financial Situation vs Avg.	20.2%
Lift from Best Informed vs Avg.	8.9%
Maximum Lift with All Factors Stacked	**54.4%**

Adding each of these independent impacts together yields a "stacked" adjustment value of 54.4%, meaning that if everything was as good as it could be (if paybacks were short, if the best delivery mechanism was used, if customer overall economic situations were better, etc.), then the Realistic Achievable Potential customer response to rebate programs could be increased by 54.4%, yielding the results in Table 9-3 below (which were generated by applying the 54.4% increase to the results in Table 9-1).

Table 9-3 Maximum Achievable Potential Take Rates

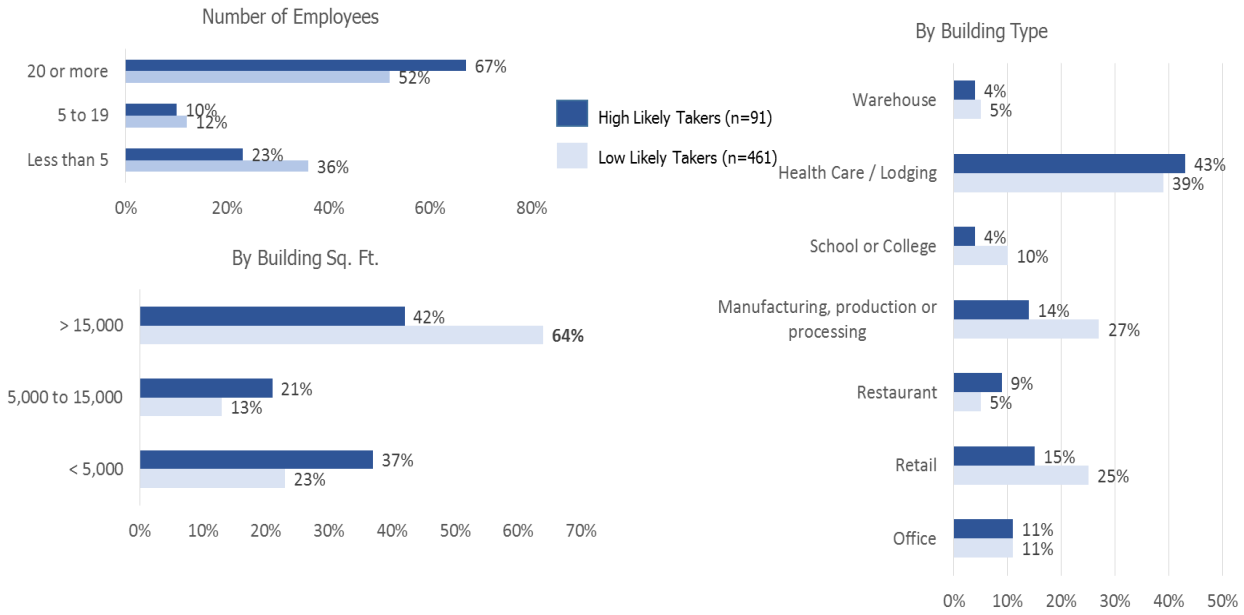
Nonresidential Measure	Payback Period	Maximum Achievable Take Rate
HVAC	0	66%
HVAC	1	66%
HVAC	3	60%
HVAC	5	56%
Refrigerator	3	57%
Server	3	54%
Motor	3	60%
AP Thermostat	0	71%
AP Thermostat	1	69%
AP Thermostat	3	68%
AP Thermostat	5	62%
Energy Management System	3	49%
Occupancy Sensors	3	69%
CFL	0	74%
CFL	1	71%
CFL	3	66%
CFL	5	56%

Profiling Likely Takers

As we saw with residential customers, it is also the case for business customers that some firmographic differences are associated with the likelihood to adopt new EE rebate options. Groups more likely than others to be defined as "high likely takers" include

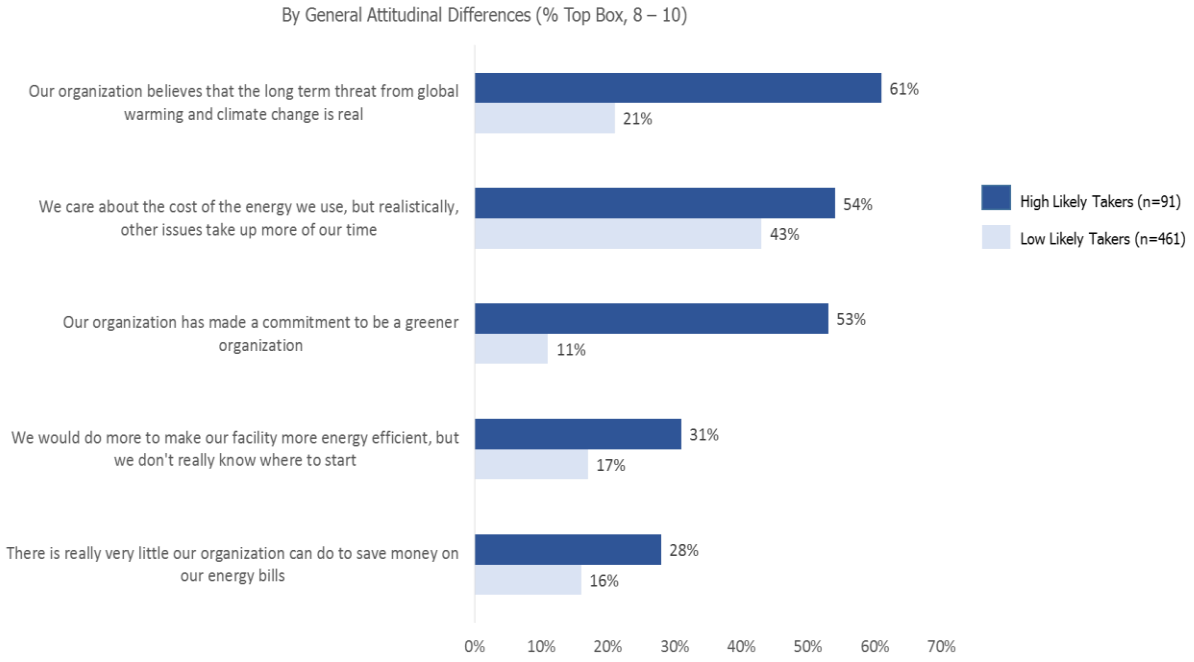
- Facilities with 20 or more employees
- Facilities with less than 15,000 sq. ft.
- Facilities described as healthcare / lodging

Figure 9-1 Likely Takers by Firmographics



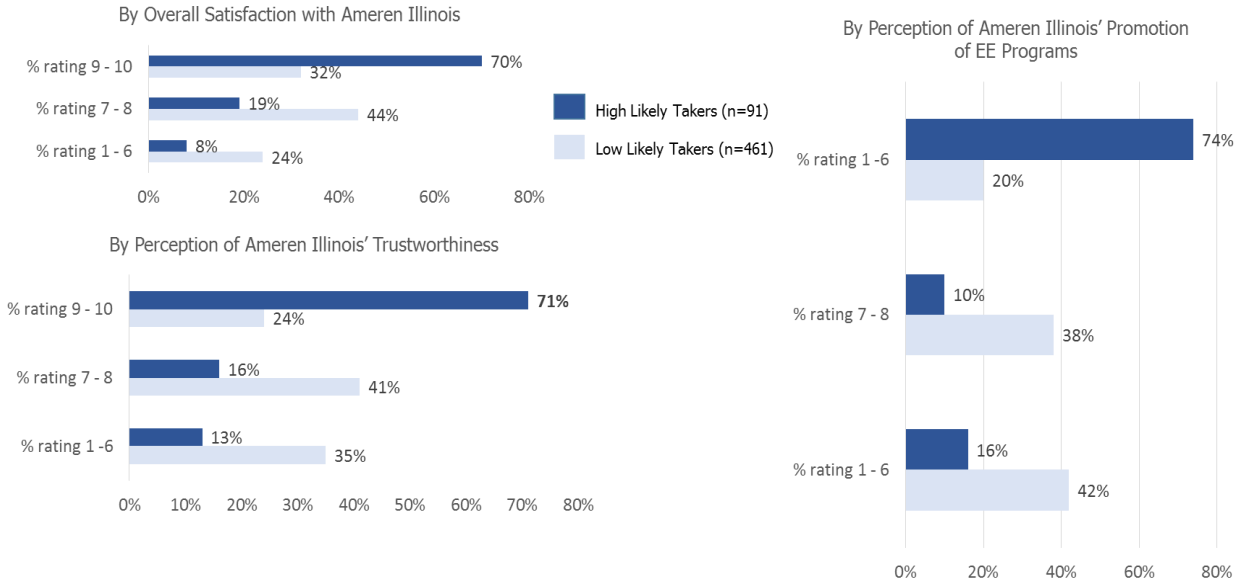
More striking differences in the take rates, however, again relate to attitudinal differences. Unsurprisingly, customers who exhibit highly "green" and/or highly cost-savings-focused attitudes consistently show much higher likelihood to adopt energy efficiency measures.

Figure 9-2 Likely Takers by General Attitudinal Differences



Another factor that affects likelihood to adopt energy efficiency measures appears to be the degree to which customers have favorable opinions of Ameren Illinois. Customers who have more favorable opinions about Ameren Illinois consistently show significantly higher likelihood to adopt energy efficiency measures.

Figure 9-3 Likely Takers by Attitudinal Differences about Ameren Illinois



APPENDIX | A

Sample Design Matrices

The sample design as generated by AEG from the AIC residential customer database is detailed below, showing the various cells that were identified as targets for survey recruitment and eventual tracking of completions.

Residential Sample Design Matrix

Usage Stratum	Single Family or Multi Family	Region	Stratum ID	Completed Interviews by Stratum	Completed Interviews As a Percentage of Targeted Completes by Stratum
SF-Z2-E-1-G-0	SF	Zone 2	strat ID 001	21	90%
SF-Z2-E-2-G-0	SF	Zone 2	strat ID 002	25	116%
MF-Z2-E-1-G-0	MF	Zone 2	strat ID 003	4	67%
MF-Z2-E-2-G-0	MF	Zone 2	strat ID 004	5	100%
SF-Z2-E-1-G-1	SF	Zone 2	strat ID 005	32	129%
SF-Z2-E-1-G-2	SF	Zone 2	strat ID 006	51	139%
SF-Z2-E-2-G-1	SF	Zone 2	strat ID 007	22	147%
SF-Z2-E-2-G-2	SF	Zone 2	strat ID 008	37	146%
MF-Z2-E-1-G-1	MF	Zone 2	strat ID 009	3	150%
MF-Z2-E-1-G-2	MF	Zone 2	strat ID 010	1	50%
MF-Z2-E-2-G-1	MF	Zone 2	strat ID 011	2	100%
MF-Z2-E-2-G-2	MF	Zone 2	strat ID 012	4	100%
SF-Z2-E-0-G-1	SF	Zone 2	strat ID 013	8	140%
SF-Z2-E-0-G-2	SF	Zone 2	strat ID 014	7	88%
MF-Z2-E-0-G-1	MF	Zone 2	strat ID 015		0%
MF-Z2-E-0-G-2	MF	Zone 2	strat ID 016	4	150%
SF-Z3-E-1-G-0	SF	Zone 3	strat ID 017	44	105%
SF-Z3-E-2-G-0	SF	Zone 3	strat ID 018	42	114%
MF-Z3-E-1-G-0	MF	Zone 3	strat ID 019	6	36%
MF-Z3-E-2-G-0	MF	Zone 3	strat ID 020	6	50%
SF-Z3-E-1-G-1	SF	Zone 3	strat ID 021	52	147%
SF-Z3-E-1-G-2	SF	Zone 3	strat ID 022	64	120%
SF-Z3-E-2-G-1	SF	Zone 3	strat ID 023	40	138%
SF-Z3-E-2-G-2	SF	Zone 3	strat ID 024	53	141%
MF-Z3-E-1-G-1	MF	Zone 3	strat ID 025	7	233%
MF-Z3-E-1-G-2	MF	Zone 3	strat ID 026	4	200%
MF-Z3-E-2-G-1	MF	Zone 3	strat ID 027	2	100%
MF-Z3-E-2-G-2	MF	Zone 3	strat ID 028	3	150%
SF-Z3-E-0-G-1	SF	Zone 3	strat ID 029	24	110%
SF-Z3-E-0-G-2	SF	Zone 3	strat ID 030	45	141%
MF-Z3-E-0-G-1	MF	Zone 3	strat ID 031	5	200%
MF-Z3-E-0-G-2	MF	Zone 3	strat ID 032	3	150%
SF-Z4-E-1-G-0	SF	Zone 4	strat ID 033	45	118%
SF-Z4-E-2-G-0	SF	Zone 4	strat ID 034	51	74%
MF-Z4-E-1-G-0	MF	Zone 4	strat ID 035	2	29%
MF-Z4-E-2-G-0	MF	Zone 4	strat ID 036	5	50%
SF-Z4-E-1-G-1	SF	Zone 4	strat ID 037	61	119%

Usage Stratum	Single Family or Multi Family	Region	Stratum ID	Completed Interviews by Stratum	Completed Interviews As a Percentage of Targeted Completes by Stratum
SF-Z4-E-1-G-2	SF	Zone 4	strat ID 038	34	103%
SF-Z4-E-2-G-1	SF	Zone 4	strat ID 039	53	102%
SF-Z2-E-1-G-0	SF	Zone 2	strat ID 040	50	158%
SF-Z2-E-2-G-0	MF	Zone 2	strat ID 041	2	100%
MF-Z2-E-1-G-0	MF	Zone 2	strat ID 042	2	100%
MF-Z2-E-2-G-0	MF	Zone 2	strat ID 043	4	200%
SF-Z2-E-1-G-1	MF	Zone 2	strat ID 044	3	100%
SF-Z2-E-1-G-2	SF	Zone 2	strat ID 045	20	113%
SF-Z2-E-2-G-1	SF	Zone 2	strat ID 046	17	136%
SF-Z2-E-2-G-2	MF	Zone 2	strat ID 047	1	50%
MF-Z2-E-1-G-1	MF	Zone 2	strat ID 048	3	150%
MF-Z2-E-1-G-2	SF	Zone 2	strat ID 049	3	33%
MF-Z2-E-2-G-1	SF	Zone 2	strat ID 050	7	63%
MF-Z2-E-2-G-2	MF	Zone 2	strat ID 051	2	50%
SF-Z2-E-0-G-1	MF	Zone 2	strat ID 052	1	0%
SF-Z2-E-0-G-2	SF	Zone 2	strat ID 053	1	50%
MF-Z2-E-0-G-1	SF	Zone 2	strat ID 054	2	100%
MF-Z2-E-0-G-2	SF	Zone 2	strat ID 055	3	150%
SF-Z3-E-1-G-0	SF	Zone 3	strat ID 056	3	150%
SF-Z3-E-2-G-0	MF	Zone 3	strat ID 057	1	50%
MF-Z3-E-1-G-0	MF	Zone 3	strat ID 058	1	50%
MF-Z3-E-2-G-0	MF	Zone 3	strat ID 059		0%
SF-Z3-E-1-G-1	MF	Zone 3	strat ID 060		0%
SF-Z3-E-1-G-2	SF	Zone 3	strat ID 061	1	50%
SF-Z3-E-2-G-1	SF	Zone 3	strat ID 062		0%
SF-Z3-E-2-G-2	MF	Zone 3	strat ID 063		0%
MF-Z3-E-1-G-1	MF	Zone 3	strat ID 064		0%

C&I Sample Design Matrix

Sector	Segment	Electricity (GWh)	% Total GWh	Gas (MMtherm)	% Total MMtherm	Total Premises (N)	Target Sample Size (n)	Target % of Sample
Commercial	Office	1,009	4.7%	25	5.0%	919	51	5.7%
Commercial	Retail	1,261	5.9%	26	5.2%	12,068	53	5.9%
Commercial	Restaurant	519	2.4%	16	3.2%	3,972	22	2.4%
Commercial	Grocery	500	2.4%	4	0.7%	1,434	19	2.1%
Commercial	College	2,447	11.5%	31	6.1%	441	39	4.3%
Commercial	Schools	651	3.1%	24	4.8%	1,896	30	3.3%
Commercial	Health	1,624	7.6%	28	5.5%	2,840	51	5.7%
Commercial	Lodging	216	1.0%	6	1.2%	706	18	2.0%
Commercial	Warehouse	679	3.2%	22	4.3%	3,676	40	4.4%
Commercial	Miscellaneous	617	2.9%	27	5.4%	6,765	44	4.9%
Commercial Total		**9,523**	**44.8%**	**208**	**41.3%**	**41,717**	**367**	**40.8%**
Industrial	Industrial Machinery	628	3.0%	28	5.5%	470	27	3.0%
Industrial	Petroleum	705	3.3%	1	0.3%	224	23	2.6%
Industrial	Chemicals	1,420	6.7%	87	17.2%	135	33	3.7%
Industrial	Food Production	1,544	7.3%	28	5.6%	3,135	68	7.6%
Industrial	Primary Metal	1,224	5.8%	2	0.5%	100	28	3.1%
Industrial	Misc. Manufacturing	3,465	16.3%	45	8.8%	4,394	99	11.0%
Industrial Total		**8,985**	**42.3%**	**191**	**37.9%**	**8,458**	**278**	**30.9%**
Unknown		**2,758**	**13.0%**	**105**	**20.8%**	**13,778**	**255**	**28.3%**
Total		**21,267**	**100.0%**	**504**	**100.0%**	**63,953**	**900**	**100.0%**

APPENDIX | **B**

Take Rate Development Detail

A key element of the say / do adjustment methodology was to compare the proportion of households in the survey who say they would take part in an AIC lighting rebate program described as closely as possible to the one that actually exists with the proportion of households who have actually participated in the "real life" program which maps to that description.

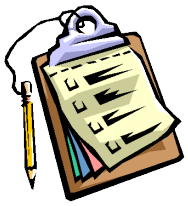
In order to generate the estimate of the actual proportion of households that have participated, the AEG team developed residential take rates (also known as adoption rates or participation rates) based on responses to the surveys completed by 1,004 Ameren residential customers in the summer of 2015. Take rates are defined here as the percentage of people who, given the opportunity to complete an action under circumstances similar to those described in the survey, would actually follow through with that action; which in this case is to accept an incentive and adopt the corresponding DSM measure.

We will first describe the raw survey results, then explain the adjustments made to translate the responses offered in the survey into likely real-life actions.

Raw Survey Results

The questionnaire posed a battery questions like that described in the figure below, in which respondents were asked to consider a specific DSM measure and rate their likelihood to adopt it on a scale of 1 to 10.

Example Survey Question on Take Rates



EXAMPLE QUESTION FORMAT:
Suppose you need to replace your HVAC system…

<Describe the specific DSM measure and the energy, financial, or contextual factors here>

What is your likelihood of taking the rebate and purchasing the high efficiency unit instead of the standard efficiency unit?

Not At All Likely To Do This									Extremely Likely To Do This
1	2	3	4	5	6	7	8	9	10

The values between "1" and "10" are aggregated for all survey respondents and initially mapped to a raw, weighted average score representing the unadjusted likelihood of adopting each measure. The table below shows this mapping as a straight, linear mapping to the probability of adoption, where an indicated likelihood of "10" corresponds to a 100% probability of adoption and "1" corresponds to a 10% probability of adoption.

Raw Mapping of Stated Intent to Probability of Adoption

Stated Intent of Adoption	Raw Mapping to Probability of Adoption
1	10%
2	20%
3	30%
4	40%
5	50%
6	60%
7	70%
8	80%
9	90%
10	100%

Adjusting Stated Likelihood to Likely Actions

Copious research and real world experience tells us that stated intent does not translate simply into likely downstream behavior, however, with customers tending to overstate their actual likelihood of taking a future action. As a result, we know that we need to apply an adjustment to the unadjusted results derived from the approach outlined above in order to generate more accurate estimates of future behavior. In the past, this adjustment was made using information generated from historical research with other customers. Responding to feedback from AIC stakeholders, however, the AEG team moved to a different approach in which the "say / do" adjustment uses actual participation rates observed by AIC customers as a benchmark.

The revised method for determining the say / do adjustment (which the AEG team believes is best practice for this analysis) was to link to actual program participation levels using an "anchor" question that could be associated with existing program outcomes. Specifically, survey respondents were presented with a description of a lighting program which was described as closely as possible to the existing Ameren Illinois lighting program (as it has been delivered in the market place) and asked how likely they would be to participate in that program. Since historical program participation levels are available for the actual program, customer statements about their likelihood to participate in the "hypothesized" program (which is effectively the real program) can be compared directly to those historical participation levels. Comparing customer claims about how likely they would be to participate in a "hypothetical" program with their likelihood to participate in an actual program of that type gives us a "say / do" adjustment grounded in real-life Ameren Illinois experience. The residential "anchor" question used in the survey is presented below.

Residential "Anchor" Question – Tied to Actual Ameren Program, Incentives, & Take Rates

Q73. Although the purchase price of high efficiency light bulbs (CFLs or LEDs) is slightly higher than for standard incandescent bulbs, the real cost of a bulb is not just what it costs to buy, but also what it costs to use. Since high efficiency bulbs use a fraction of the electricity used by incandescent bulbs to produce the same amount of light, your electricity savings will pay back the initial price difference over time. And, with discounts that Ameren Illinois could provide, it would cost you even less to start using less and spending less on energy.

Two examples of discounts that Ameren Illinois could provide would be:

Purchase a High Efficiency Bulb that Produces the Same Amount of Light as a Standard 60 watt Incandescent bulb	Instead of a Standard Bulb
An 8 watt dimmable **LED** bulb, regularly $8, reduced to $3 with an Ameren discount	60 watt incandescent bulb at $1
A 15 watt dimmable **CFL** bulb, regularly $3, reduced to $2 with an Ameren discount	60 watt incandescent bulb at $1

If Ameren Illinois were to offer you discounts like this right now, how likely would you be to install at least some of these new LED or CFL bulbs in your home?

Not At All Likely To Do This									Extremely Likely to Do This
1	2	3	4	5	6	7	8	9	10

Calculating the actual program take rate for this program from historic data required finding the total number of takers/purchasers/adopters in a given year and dividing that number by the total number of possible opportunities for completing that measure. There are multiple ways to calculate this value, so the analysis team used two approaches and averaged them.

AIC provided evaluated program data showing that the number of residential lamps incented by the programs was 4,154,672 in PY4 and 2,682,057 in PY5. The majority of AIC efficient lamps moved by programs was done by means of 6-packs, so the first method is simply to assume that each participating household received one 6-pack. This assumption results in an average take rate (that is, the percentage of households adopting the measure) of 53% (see the table below).

First Calculation of Actual Take Rate: Assume Incented Lamps Allocated as One 6-pack per Household

	PY4	PY5	Total
Total lamps Incented	4,154,672	2,682,057	6,836,729
Total 6-packs Incented (1 participating Home/pack)	692,445	447,009	1,139,455
Total Homes in AIC service territory	1,069,054	1,070,300	2,139,354
Take Rate	**65%**	**42%**	**53%**

The second method of calculation considers the stock turnover of lamps and how many individual lamp purchase decisions are made, rather than considering the question on a per-household basis. Using the ODC PY4 evaluation report as well as the 2012 AIC DSM potential study, the team calculated the saturation of lamps in that particular year (2011) and could infer the turnover rate from the weighted average lifetime per lamp of 2.69 years (see table below).

Weighted Average Expected Useful Life of Screw-in Lamps

Lamp Type	Screw-in Socket Saturation		Expected Useful Life from DSMore Batch Tools PY4 and PY5
	ODC PY4 Evaluation	2012 Potential Study Surveys	
Incandescent	60%	55%	1
CFL	36%	36%	5
Halogen	1%	3%	3
LED	0%	1%	27
Other	2%	5%	3
Weighted Avg EUL = 2.69	**2.49**	**2.89**	

Considering the total number of screw-in sockets available in the two respective studies, and dividing it by the weighted average bulb life, yields the expected number of sockets turning over in that year and available for a purchase decision. This number is around 16 million, as shown in the table below.

Expected Screw-in Socket Turnover

	ODC PY4 Evaluation	2012 Potential Study Surveys	Average
Total # of Screw-in Sockets	45,747,879	41,993,716	**43,870,798**
Weighted Avg Bulb Life	2.49	2.89	**2.69**
Expected Socket Turnover (Total # Sockets / Wtd Avg Bulb Life)	18,372,642	14,555,591	**16,323,843**

Dividing the total number of incented, PY4 bulbs by the total socket turnover in that year results in an inferred take rate of sockets of 25%, as shown in the table below (though note that this is the percentage of sockets, and not the percentage of households).

Second Calculation of Actual Take Rate: Incented Lamps divided by Turnover Based on Weighted Average Bulb Life

	PY4
Total lamps incented	4,154,672
Total sockets turning over	16,323,843
Take Rate	25%

Averaging the two above methods of 53% and 25% yields an actual AIC Lighting Program Take Rate of 39%, meaning that 39% of all households have participated in the program. This value of 39% was then compared with the 79% unadjusted take rate that was generated from the survey anchor question to yield a say / do adjustment factor of 0.499 (the value which adjusts 79% to 39%) which was then applied to other measures as well.

Note that a similar process was used to generate equivalent values for the C&I sector, though since the calculations are fairly involved, they are not included here, but are included in other project documentation.

Information Used to Adjust Residential Results for MAP

The questions (and survey results) used to drive the adjustments of take rates for residential customers from RAP to MAP are outlined below.

	Unadjusted Take Rates
Q50: Likelihood to use rebate for new EE lighting based on rebate method	
1: Mail	67%
2: Online / Check	73%
3: Online / Bill Credit	71%
4: At point-of-sale	81%
5: Direct Install	55%
Implied base (average of other responses)	79%
Ratio of high to base	102.5%
Q51: Likelihood to use rebate for new EE lighting based on economic situation	
1: You have more money than usual	67%
2: You have less money than usual	51%
Q52: Likelihood to use rebate for new EE lighting based on light quality	
1: Color rendering is unfamiliar	61%
2: Lighting is “sleek” and communicates “green”	62%

Information Used to Adjust C&I Results for MAP

The questions (and survey results) used to drive the adjustments of take rates for C&I customers from RAP to MAP are outlined below.

	Unadjusted Take Rates
Q50: Likelihood to use rebate for new EE lighting based on rebate method	
1: Mail	60%
2: Online / Check	63%
3: Online / Bill Credit	64%
4: At point-of-sale	75%
5: Direct Install	67%
Implied base (average of other responses)	66%
Ratio of high to base	113.8%
Q51: Likelihood to use rebate for new EE lighting based on economic situation	
1: Your business does better than expected for several months in a row	60%
2: Your business does worse than expected for several months in a row	40%
Q52: Likelihood to use rebate for new EE lighting based on light quality	
1: Color rendering is unfamiliar	53%
2: Lighting is “sleek” and communicates “green”	60%
Q53: Likelihood to use rebate for new programmable thermostat depending on thermostat features	
1: Programming can over-ride individual settings	56%
2: Comes with companion website that offers enhanced features	55%
Q54: Likelihood to use rebate for new PC depending on auto-sleep functions	
1: Auto-sleep can over-ride “push” upgrades	44%
2: Auto-sleep can actually enhance security	47%

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