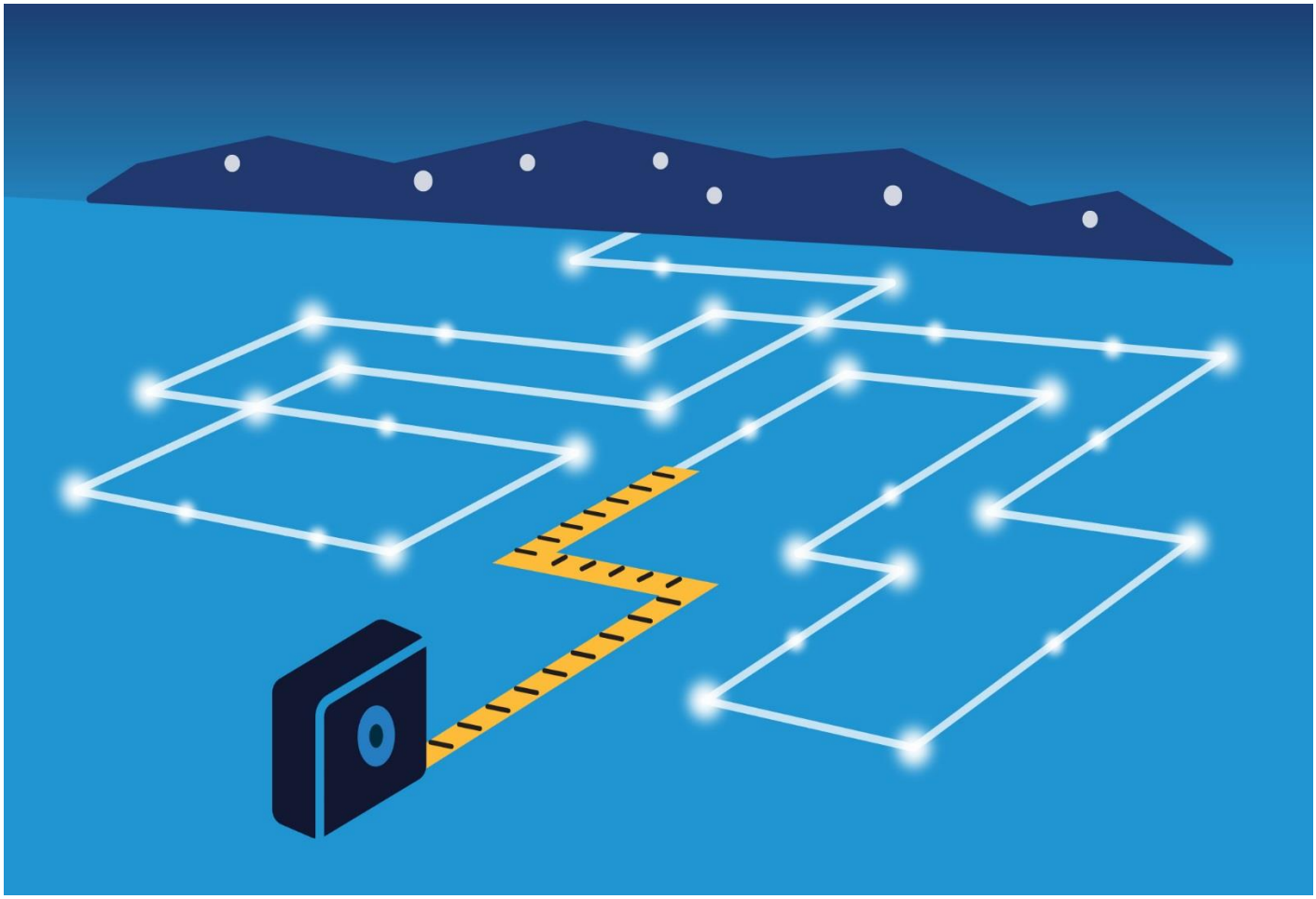
Opinion Dynamics

Boston | Headquarters

617 492 1400 tel
617 497 7944 fax
800 966 1254 toll free

1000 Winter St
Waltham, MA 02451



Impact and Process Evaluation of 2014 (PY7) Illinois Power Agency Rural Kits Program

Final

April 19, 2016

CADMUS

NAVIGANT

MichaelsEnergy

Opinion Dynamics

Contributors

Jane Colby
Principal, Cadmus

Johna Roth
Senior Associate, Cadmus

Jeana Swedenburg
Associate, Cadmus

Bitsy Broughton
Associate, Cadmus

Andrew Carollo
Senior Analyst, Cadmus

Opinion Dynamics

Table of Contents

Opinion Dynamics

Tables

Figures

1. Executive Summary

This report presents results from the program year seven (PY7) Residential Rural Efficiency Kits (Rural Kits) Program, which is one of five stand-alone Illinois Power Agency (IPA) energy efficiency programs implemented from June 2014 to May 2015. PY7 represents the second full year of the Rural Kits Program's operation.

CLEAResult (formerly Conservation Services Group [CSG]) implemented the Rural Kits Program for the first time in PY6 (June 1, 2013–May 31, 2014). During PY6, CLEAResult offered the Rural Kits Program as a component of the Residential Energy Efficiency Kits Program (EEKits), which included a school-based delivery channel and a direct mail delivery channel. At the conclusion of PY6, Ameren Illinois Company (AIC) launched the School Kits Program as part of its ActOnEnergy portfolio of energy efficiency programs (referred to as 8-103 (electric) and 8-104 (gas) programs per Order 13-0498). The direct mail delivery channel (Rural Kits Program) remains an IPA program.

CLEAResult, distributes kits containing energy-efficient items via direct mail to qualified residential customers living in rural areas The program goal is to increase sales and awareness of ENERGY STAR®-qualified lighting products, along with other IPA energy efficiency offerings that reduce energy consumption.

The kits contained CFLs, faucet aerators, and showerheads, along with instruction materials to help customers properly set water heater temperature.

Program Impacts

Table 1 summarizes the net electricity and demand savings from the PY7 Rural Kits Program, which includes 2,105 MWh, 0.228 MW and 7,790 therms. To determine gross savings and net realization rates, the evaluation team applied the Illinois Statewide TRM V2.0 deemed per-unit gross savings methods in combination with participant survey results for program measures as well as the application of the Stakeholder Advisory Group's (SAG's) approved net-to-gross ratio (NTGR) for this program from AIC's IPA filing from Docket 12-0544. As a result, the program achieved the gross and net realization rates shown in Table 1.

Table 1. PY7 Net Rural Kits Program Impacts

	Ex-Ante Gross	Realization Rate	Ex-Post Gross	NTGR	Ex-Post Net
Energy Savings (MWh)					
Total MWh	3,522	70%	2,494	0.84	2,105
Demand Savings (MW)					
Total MW	0.464	59%	0.275	0.83	0.228
Energy Savings (therms)*					
Total therms	19,264	49%	9,471	0.82	7,790

* While the purpose of this report is to summarize the IPA program electric savings, the program achieved some gas savings due to participants with natural gas water heat. Those savings are presented in Appendix B of this report.

Program Participation

The Rural Kits Program provided energy efficiency kits to 10,011 customers in PY7 (June 1, 2014 through May 31, 2015), an increase from 6,005 from PY6 (June 1, 2014 through May 31, 2014).

Process Results

During the evaluation team's process review, utility and implementation staff reported high satisfaction with program performance in PY7. Stakeholders reported the program was successful and they are not planning to change the program for PY8. The program met the PY7 kit-distribution goal on schedule and within budget. Stakeholders also reported that operations ran smoothly, with no significant issues.

Conclusions and Recommendations

The PY7 Rural Kits Program delivered 10,011 kits to rural customers. In the second year of operation, program staff attempted to hone the methodology to screen customers with high-energy use. Although the utility and implementation staff reported satisfaction with the program, the evaluation team has identified opportunities for improvement and recommends the following actions for CLEAResult to consider in future program years.

- **Conclusion #1:** CLEAResult can measure the effectiveness of the program marketing to increase participation in other programs or traffic to the AIC web site.
  - **Recommendation:** Work with CLEAResult to implement a method for gauging if kits influence recipients to participate in other energy efficiency programs. For example, include a customer-specific URL on the marketing materials.
- **Conclusion #2:** The majority of surveyed customers (96% [n=68]) did not visit AIC's ActOnEnergy website or call the number provided to learn more about AIC's energy efficiency programs.
  - **Recommendation:** Develop messaging that focuses on a broad range of benefits from other AIC energy efficiency programs.
- **Conclusion #3:** Additional customer education may increase showerhead installation rates and reduce improper disposal of CFLs.
  - **Recommendation:** CLEAResult could include educational materials in the kits that provide the following:
    - Instructions for proper disposal of CFLs and locations of CFL collection and recycling centers.
    - Information and testimonials on how high-efficiency showerheads have improved over older versions.

2. Evaluation Approach

2.1 Research Objectives

The PY7 Rural Kits impact evaluation sought to provide estimates of gross and net electricity savings associated with the program. The impact evaluation answered the following questions:

- How many kits did the program distribute?
- What installation rate did each measure achieve?
- What were the estimated gross energy and demand impacts from this program?
- What were the estimated net energy and demand impacts from this program?

A process evaluation investigated how the program performed in its second year and answered the following questions:

- What, if any, implementation challenges occurred in PY7?
- Did the program operate effectively?
- How was the program marketed?
- What program changes could improve program effectiveness?

2.2 Evaluation Tasks

Table 2 summarizes the tasks the evaluation team conducted for the PY7 evaluation of the Rural Kits Program.

Table 2. Summary of Evaluation Activities for PY7

Activity	PY7 Impact	PY7 Process	Forward Looking	Details
Program Staff In-Depth Interviews		✓		Interviewed three program and implementation staff members to gain insights into the program's design and delivery
Review of Program Materials and Data		✓		Reviewed implementation plan, program materials, and instructional materials
Process Analysis: Participant Surveys		✓		Conducted participant survey to assess customer satisfaction and NTGR.
Impact Analysis: Database Analysis	✓	✓		Summarized database information to determine participation, key program statistics, and savings
Impact Analysis: Participant Surveys	✓	✓	✓	Reviewed participant survey data to assess installation rates and NTGR.

2.2.1 Program Staff Interviews

The evaluation team conducted three interviews with AIC and implementation staff who were responsible for managing, marketing, and delivering the program. Table 3 lists the program stakeholders we interviewed to assess program design, implementation, communications, strengths, and weaknesses.

Table 3. Program Staff Interviews

Company	Number of Staff Interviewed
CLEAResult	1
Ameren Illinois Company (AIC)	1
Energy Federation Inc. (EFI)	1

2.2.2 Review of Program Materials and Data

The evaluation team reviewed the following program data:

- Program database
- Program marketing and outreach collateral
- Implementation plans

2.2.3 Participant Surveys

The evaluation team surveyed 70 randomly selected participants in September 2015 from a population of 9,781 participating customers[1]. Table 4 provides the survey dispositions.

Table 4. Participant Survey Disposition

Survey Disposition	Number
Completed Surveys (I)	70
Partial (P)	2
Eligible Non-Surveys (E)	218
Refusal (R)	56
Mid-Survey Terminate (R)	5
Respondents Never Available (NC)	64
Answering Device (NC)	93
Not Eligible (NE)	131
Duplicate Number	1
Fax/data Line	3

[1] After customers refusing to be contacted were removed.

Survey Disposition	Number
Non-working/disconnect	97
Wrong Number	22
Other organization	8
Unknown Eligibility Non-Survey (UH)	30
Not attempted	7
Always Busy	8
No Answer	13
Call Blocking	2
Total Phone Numbers Used	**451**

Table 5 provides the response and cooperation rates. Survey Response Rate Methodology provides information on the methodology used to calculate response rates for telephone surveys.

Table 5. Response and Cooperation Rates.

AAPOR Rate	Percent
Response Rate #3	23%
Cooperation Rate #1	53%

2.2.4 Impact Analysis

Gross Impact Analysis Approach

The evaluation team used the program-tracking database to verify the reported distribution of kits and to apply the Illinois Statewide TRM V2.0 deemed per-unit gross savings methods in combination with participant survey results to estimate gross electric savings values for program measures. In addition, the evaluation team applied measure-specific in-service rates (ISR) developed from the PY7 participant survey data. The evaluation team used home type information from the participant survey to estimate single-family and multi-family weighted average for ex-post gross per-unit savings parameters in conjunction with the parameter values prescribed for single-family and multi-family in Illinois Statewide TRM V2.[2] The number of people per household (2.26) reported through participant survey was also used in the ex-post gross per-unit savings calculations. To estimate the electric energy savings associated with the program, the evaluation team applied the electric water heater saturation of 87% (determined through the participant survey) to the verified installation of energy kit measures to determine the electric energy savings associate with the program (Table 6).

[2] 97% of participants surveyed lived in single-family homes and 3% in multi-family homes.

Table 6. PY7 Rural Kits Ex-Post Electric Savings — Per Unit

Measure	Gross kWh	Gross kW	NTGR	Net kWh	Net kW
14-watt CFL	28.8	0.003	0.88	25.4	0.003
23-watt CFL	48.7	0.005	0.88	42.8	0.005
1.0 GPM Bath Faucet Aerator	23.1	0.024	0.73	16.9	0.017
2.0 GPM Dual Kitchen Faucet Aerator	99.2	0.019	0.73	72.4	0.014
1.75 GPM Chrome High-Efficiency Showerhead	333.7	0.025	0.82	273.6	0.020
Hot Water Temperature Card Thermometer	86.4	0.010	1.0	86.4	0.010

The evaluation team applied the deemed gas water heating saturation of 13% (determined through the participant survey) to the Rural Kits verified installations to estimate the gas energy savings associated with the program (Table 7). The evaluation team used Illinois Statewide TRM V2.0 deemed per-unit gross gas savings values for program measures (Table 7). Table 7 also lists the deemed SAG-approved NTGR and deemed net savings values. Gas savings are presented in Appendix B of this report.

Table 7. PY7 Rural Kits Ex-Post Gas Savings — Per Unit

Measure	Gross Therms	NTGR	Net Therms
1.0 GPM Bath Faucet Aerator	0.9	0.73	0.6
2.0 GPM Dual Kitchen Faucet Aerator	4.6	0.73	3.4
1.75 GPM Chrome High Efficiency Showerhead	14.3	0.82	11.7
Hot Water Temperature Card Thermometer	6.4	1.0	6.4

Net Impact Analysis Approach

The evaluation team used the program-tracking database to verify reported distribution of kits and to apply the SAG-approved deemed NTGR values for program measures.

2.3 Sources and Mitigation of Error

Table 8 summarizes possible error sources associated with data collection conducted for the Rural Kits Program.

Table 8. Possible Sources of Error

Analytical Task	Survey Error		Non-Survey Error
	Sampling Error	Non-Sampling Survey Error	
Participant Surveys	Yes	N/A	N/A
Gross Impact Calculations	N/A	N/A	Data processing error
Net Impact Calculations	N/A	N/A	Data processing error

The evaluation team took a number of steps to mitigate potential error sources throughout the planning and implementation of the PY7 Rural Kits Program evaluation, described in detail below.

Survey Errors

- Sampling Errors
  - **Phone-Based Participant** Surveys**:** The evaluation team designed the survey sample to achieve a maximum error of ±10% precision with 90% confidence.
- Non-Sampling Errors

  Non-Response: There was potential for nonresponse bias given the response rate of 23%. Non-respondent data was not available to assess whether evidence of non-response bias exists. However, the team attempted to mitigate possible bias by calling on different days of the week and at different times of the day.

Non-Survey Error

- Data Processing Errors
  - **Gross Impact Calculations:** The evaluation team applied deemed savings values to participant data in the tracking database to calculate gross impacts. To minimize data processing errors, the evaluation team had different team members review all calculations, verifying the accuracy of calculations.
  - **Net Impact Calculations:** The evaluation team applied the deemed NTGRs to estimate the net impacts of the program. To minimize data processing errors, the evaluation team had different team members review all calculations, verifying the accuracy of calculations.

3. Evaluation Findings

3.1 Program Description

The Rural Kits Program first became available to customers in PY6. The program provides unsolicited direct mail energy efficiency kits to rural residential customers selected through a screening process developed by CLEAResult. The program objective is to serve AIC's rural customers who may not have access to energy-efficient products typically found in larger markets and big box stores.

As shown in Table 9, program kits included an array of efficient products. The kits also included instructions for properly setting the water heater temperature and a brochure on energy-saving opportunities available through other IPA programs. (Please see Program Collateral for images of the kit materials.)

Table 9. PY7 Rural Kits Products

Product	Quantity per Kit
14-watt CFL	2
23-watt CFL	2
1.0 GPM Bath Faucet Aerator	1
2.0 GPM Kitchen Swivel Faucet Aerator	1
1.75 GPM High Efficiency Showerhead	1
Hot Water Temperature Card Thermometer	1
Instructional Materials	N/A

CLEAResult and Energy Federation Incorporated (EFI) deliver the program and adhere to the program's energy-savings goals. CLEAResult manages the program. EFI mailed branded kits and marketing materials directly to customers from lists created and screened by CLEAResult.

3.2 Program Design and Implementation

3.2.1 Program Operations

CLEAResult's program manager is responsible for the operations of the program. A data director at CLEAResult produces a list of approximately 100,000 customers who are predicted to have electric space heat based on annual kWh consumption. CLEAResult uses available customer demographic data (described in Section 3.2.4) to select a group of 10,000 customers for kit delivery and sends this list to EFI for distribution of the kits. EFI prints the marketing materials, assembles the kits, and ships them to the selected customers after checking the addresses in the National Change of Address Database.[3] EFI shipped the kits throughout the program year, as shown in Table 10.

[3] Available online at http://www.nationalchangeofaddress.com

Table 10. Kit Shipment Schedule

Approximate Date Shipped	Number of Kits Shipped
July 2014	115
January 9, 2015	2,000
March 31, 2015	2,000
April 30, 2015	5,896

3.2.2 Marketing and Outreach

CLEAResult, with AIC input, developed the marketing materials contained in the kit. At AIC's request, CLEAResult changed the messaging of the marketing materials once in PY7; however, this did not present an issue as CLEAResult and EFI expect requests for changes.

CLEAResult received two awards for the marketing materials promoting other programs included in the kit:

- The Communicator Award (2015 Award of Distinction) honoring excellence in Marketing and Communications
- The Hermes Creative Award (Honorable Mention) for Packaging.

See Program Collateral for examples of the marketing materials.

3.2.3 Program Goals

CLEAResult exceeded its PY7 kit distribution goal stated in the Implementation Plan,[4] distributing 10,011 kits within its allotted PY7 program budget.

AIC does not have formal metrics in place to track the program's success in increasing energy awareness among rural customers. Currently, the AIC program staff does not track visits to the AIC website for further information. The CLEAResult manager requested records of program participation for the kit recipients to assess if the kits are driving participation in other programs.

3.2.4 Screening and Participant Selection Process

To compile the list of qualified kit recipients, CLEAResult uses its proprietary algorithm to produce a list of residential AIC electric accounts according to the following characteristics:

- Owner-occupied single-family homes
- An electric heating load greater than 5,000 kWh and less than 40,000 kWh (to identify homes with electric heat)
- No prior participation in a direct install project (CFLs, showerheads, etc.)

[4] ActOnEnergy's Program Year Seven Marketing Plan for Business and Residential Energy Efficiency Programs

- Did not receive a kit during PY6

CLEAResult supplements this list with any additional customer data it has available as well as data from AIC and other sources, which may include demographic, segmentation, and/or propensity information. CLEAResult then selects a random list of 10,000 customers from this population to receive a program kit.

3.2.5 Communications and Cooperation

CLEAResult meets with AIC weekly to maintain regular program communications, including progress made to fine-tune the customer screening process and its impact on the program. Program implementers report that AIC provides clear direction and feedback, but gives CLEAResult the freedom to implement the program as it sees fit. CLEAResult reports that they are pleased with AIC's current level of involvement with the program.

CLEAResult and EFI staff reported a good working relationship and that they meet as needed before kit shipments.

3.2.6 CLEAResult-Administered Participant Surveys

Beginning approximately three weeks after the kits shipped, the CLEAResult Customer Contact Center performed outbound calling to complete approximately 200 customer surveys. While the survey results were not available at the time of this report, the surveys attempted to ascertain the following:

- ISR of kit measures
- Technical potential for energy efficiency measures
- Customer interest in receiving more information about energy efficiency

Following these surveys, CLEAResult contacted the customers identified as having interest in receiving more information by phone to recruit them for an audit through the Home Performance with ENERGY STAR Program or to participate in other energy efficiency programs. At the time of the process evaluation interviews, it was too soon to know if this effort was successful.

The surveyed customers also received an Aggregate Potential (AP) Score based on their specific responses to CLEAResult's survey that gauges the likelihood that the customer will participate in other AIC energy efficiency programs. CLEAResult is comparing these scores to the original population to determine what, if any, factors correlate strongly with higher AP Scores.

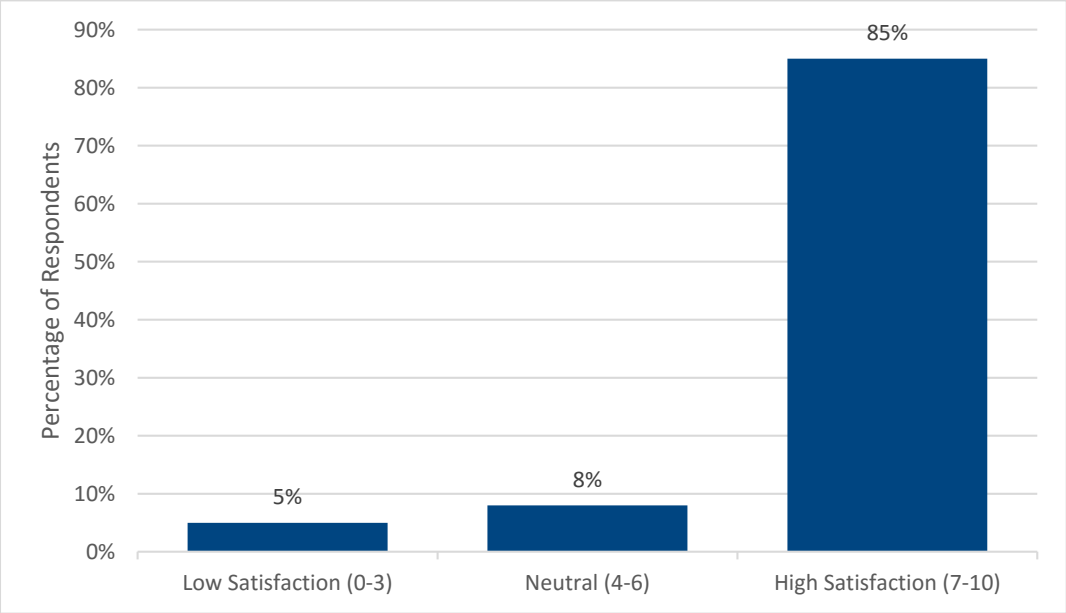
3.3 Participant Experience and Satisfaction

The evaluation team surveyed 70 customers who received residential energy efficiency kits to determine if customers installed any or all of the items in the kit, reasons they may not have installed some items, and if they lowered the temperature setting of their water heater. The team also asked customers about their overall satisfaction with the kits and other actions they might have taken after receiving the kit. These actions could include things such as installing energy-efficient kitchen appliances or HVAC equipment.

Program Satisfaction

Overall, the majority of customers were satisfied with their energy efficiency kits as shown in Figure 1. On a scale of zero to 10, where zero meant very dissatisfied and 10 meant very satisfied, 85% (n=68) of the respondents rated their satisfaction as seven or higher. Those customers who rated their satisfaction less than 7 cited reasons such as they already have the items in the kit and did not need them, it was a waste of money for the utility to send these out, or that they were paying for the kits through their electric bills. One respondent had not received a complete kit, and another was dissatisfied with the product finish (it did not come in rubbed bronze). Two customers said they have not yet installed the products or used them enough to see a savings.

Figure 1. Customer Satisfaction with Kits (n=68)



Note: Due to rounding error, the total does not sum to 100%

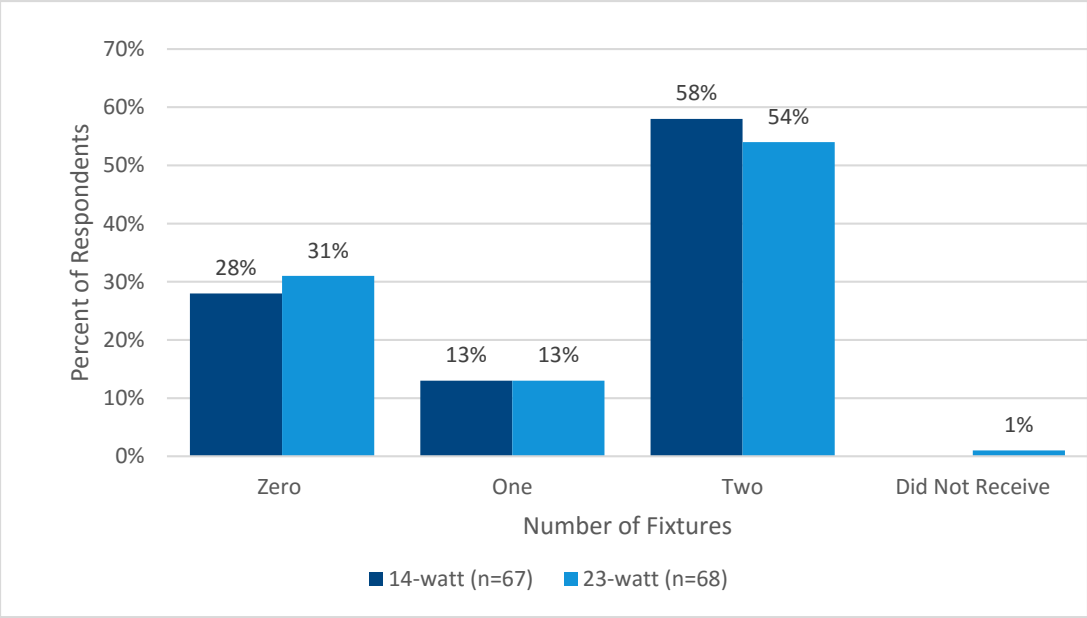
3.3.1 Measure Satisfaction

The evaluation team analyzed customer responses for each item in the kit. This section presents a detailed analysis for each measure.

CFLs

The energy efficiency kits contained two 14-watt and two 23-watt CFLs. Out of 65 respondents, nearly half (42%) said they installed all four of the CFLs and 18% said they did not install any of the CFLs; the remaining respondents reported installing some portion of the CFLs. Respondents who did not install all of the bulbs, said this was because they had either already installed efficient lighting in all of the available sockets in their homes or that the CFLs they currently had installed were still working and they saw no reason to replace them right away. Two customers said their fixtures would not accommodate CFLs. The majority of customers who did not install any or only a portion of the bulbs put the unused bulbs into storage. One respondent recycled the bulbs and two respondents threw them away. Figure 2 shows installation frequencies by wattage.

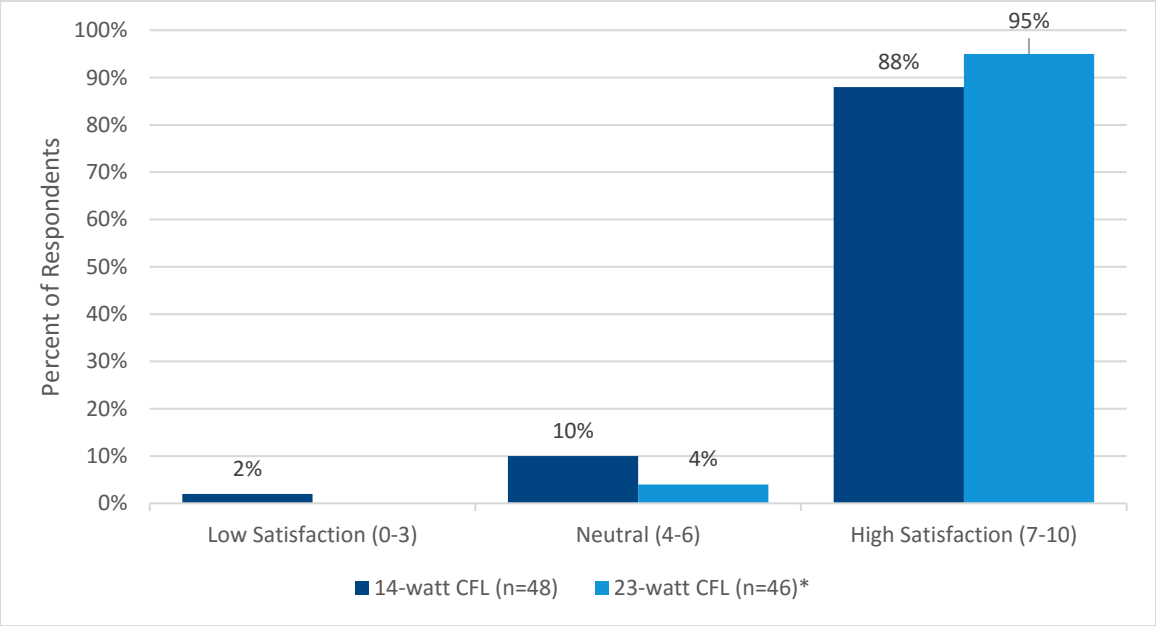
Figure 2. Customer Installation of CFLs



Note: Due to rounding error, the total does not sum to 100%

On a scale of zero to 10, where zero meant very dissatisfied and 10 meant very satisfied, 88% (n=48) of customers rated their satisfaction with the 14-watt CFLs as seven or higher, and 95% (n=46) rated their satisfaction with the 23-watt CFLs as seven or higher (Figure 3). Customers who rated their satisfaction with the CFLs lower than seven said the 14-watt CFLs were not bright enough and they did not like the yellow color of the 14-watt and 23-watt bulbs.

Figure 3. Customer Satisfaction with CFLs

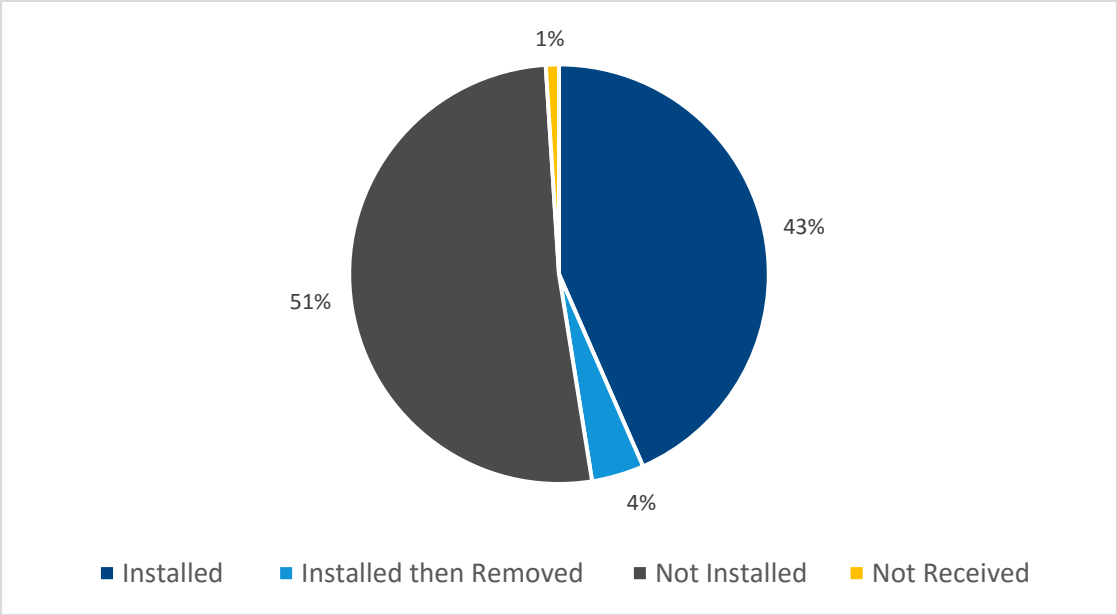


Note: Due to rounding error, the total does not sum to 100%

High-Efficiency Showerhead

Customers received one high-efficiency showerhead in their kits. As shown in Figure 4, fewer than half of the respondents had installed the showerhead at the time of the survey (September 2015). Of the 70 customers surveyed, 43% installed the showerhead (of which 87% replaced standard showerheads), 4% installed and removed the showerhead, and 51% did not install the showerhead. Of the customers who did not install the showerhead (n=35), 57% said they planned to install it, 34% said they do not plan to install it, and 9% said they may install it. One percent of the surveyed respondents did not recall receiving a showerhead in their kits.

Figure 4. Customer Installation of Showerheads (n=70)

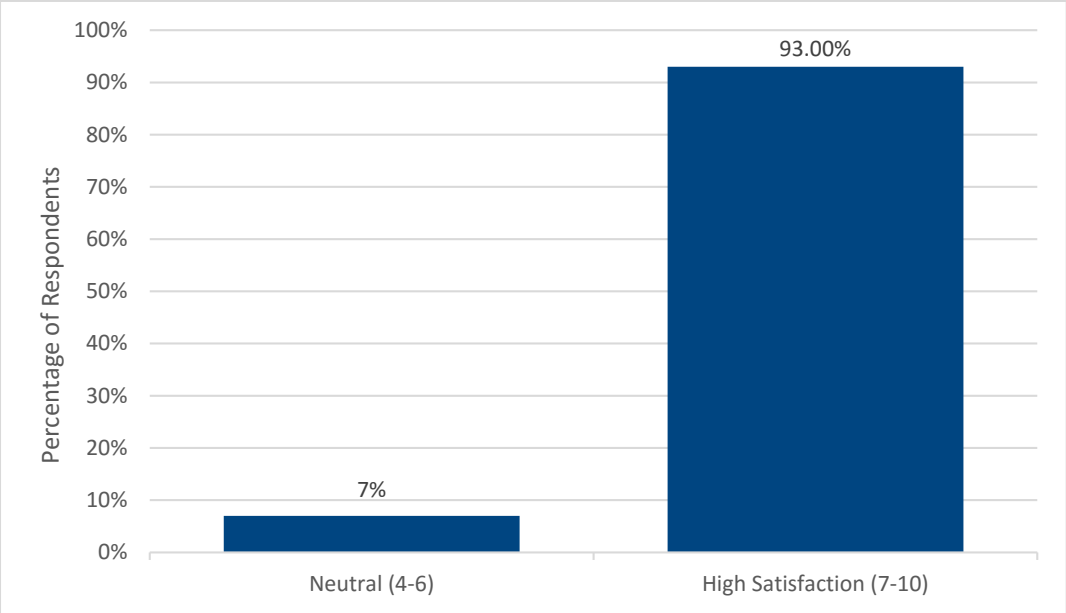


Note: Due to rounding error, the total does not sum to 100%

The 12 customers who said they do not plan to install the showerhead provided a variety of reasons for their decision. Four said they had showerheads they prefer and/or they paid a lot of money for their showerheads. One customer disliked the water volume from the high-efficiency showerhead, and seven customers already had high-efficiency showerheads installed in all of their showers.

Customers who installed the showerhead reported high satisfaction with the product. Using a scale of zero to 10, where zero meant not at all satisfied and 10 meant very satisfied, 93% of customers rated their satisfaction at seven or higher (Figure 5). Two customers (7%) who rated their satisfaction lower than seven cited water pressure as the reason.

Figure 5. Customer Satisfaction with Showerheads (n=30)



Kitchen and Bathroom Faucet Aerators

Customers received one high-efficiency kitchen faucet aerator and one high-efficiency bathroom faucet aerator in their kits. Approximately 30% of the surveyed customers installed the aerators; 31% installed the kitchen faucet aerators and 30% installed the bathroom faucet aerators (Figure 6).

Kitchen Faucet Aerator

Of the 70 customers surveyed, 31% installed the kitchen faucet aerator (of which 36% replaced existing high-efficiency aerators), 4% installed and then removed the aerator, and 63% did not install the aerator. One percent of respondents did not recall receiving a kitchen aerator in their kits.

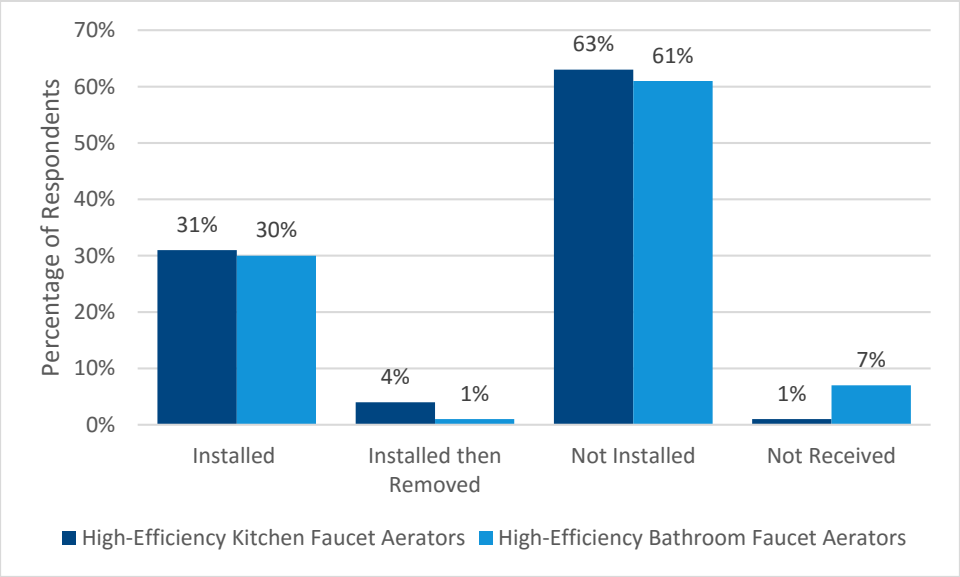
Of the customers who did not install the aerator (n=44), 34% said they plan to install it, 50% said they do not plan to install it, 9% said they may install it, and 7% said they did not know.

Bathroom Faucet Aerator

Of the 70 customers surveyed, 30% installed the bathroom faucet aerator (of which 52% replaced existing aerators), 1% installed and then removed the aerator, and 61% did not install the aerator. Seven percent of respondents did not recall receiving a bathroom faucet aerator in their kits.

Of the customers who did not install the aerator (n=43), 37% said they plan to install it, 44% do not plan to install it, 12% said they may install it, and 7% said they did not know.

Figure 6. Customer Installation of Aerators (n=70)



Note: Due to rounding error, the total does not sum to 100%

The 50% of customers (n=44) who said they do not plan to install the kitchen faucet aerator, and the 44% (n=43) who said they do not plan to install the bathroom faucet aerators gave similar reasons for not installing the equipment. Those reasons include not liking the design or color of the aerators, liking the aerator they already have, or questioning why they should replace a working aerator. In addition, five customers said the kitchen faucet aerator they received did not fit or they could not install it; four customers said the same about the bathroom faucet aerator. One customer had a dishwasher that must plug into the kitchen faucet and therefore could did not install the aerator, and one customer simply did not want to install the bathroom faucet aerator.

Customers who installed the aerators reported high satisfaction with the products. Using the scale of zero to 10, where zero meant not at all satisfied and 10 meant very satisfied, 96% (n=22) rated their satisfaction with the kitchen aerator at seven or higher. All of the customers (n=21) rated their satisfaction with the bathroom faucet aerator at seven or higher.

Water Heater Instruction Card and Thermometer

Customers received one disposable thermometer in their kit affixed to a waterproof card with instructions on turning down the temperature setting on their water heater.

Of the 70 customers surveyed, 27% tested their hot water temperature, and 59% did not test their hot water temperature. Fourteen percent of respondents did not know if the hot water temperature was tested.

Of the customers who did not test their hot water temperature (n=41), 32% said they plan to use the card and thermometer to test it, 61% said they do not plan to test it, and 7% said they did not know.

Customers who said they do not plan to use the disposable thermometer to lower their water heater setting most frequently reported that they like their current temperature setting. After this, customers most frequently

said either they did not see the card or they have a new efficient or on-demand water heater. Customers also cited the following reasons for not lowering the water heater setting:

- It is too much of a hassle
- It is already turned down
- Only use hot water for dishwashing and bathing or live alone and do not use much water
- Use geothermal
- The current water temperature is "only lukewarm"

Of the 19 of customers who tested their hot water temperature, 14 reported temperatures between 120° and 149° Fahrenheit (F), and five customers did not know the temperature of their hot water. Six customers reported their hot water temperature was lower than 120°F (Table 11).

Table 11. Results of Initial Water Heater Temperature Tests (n=19)

	Less than 120°F	120-129°F	130-139°F	140-149°F	150°F or higher	Don't Know
Temperature Before Adjusting Setting	6	3	3	2	0	5

Eight of the 19 customers who tested their hot water temperature adjusted their water heater temperature after testing it; seven of those customers adjusted their hot water temperature lower. One customer adjusted the temperature up from the 120-129°F range to the 130-139°F range.

Table 12. Temperature Before and After Adjusting Water Heater Setting (n=8)

	Less than 120°F	120-129°F	130-139°F	140-149°F	150°F or higher	Don't Know
Temperature Before Adjusting Setting	1	2	2	1		2
Temperature After Adjusting Setting	4	3	1			

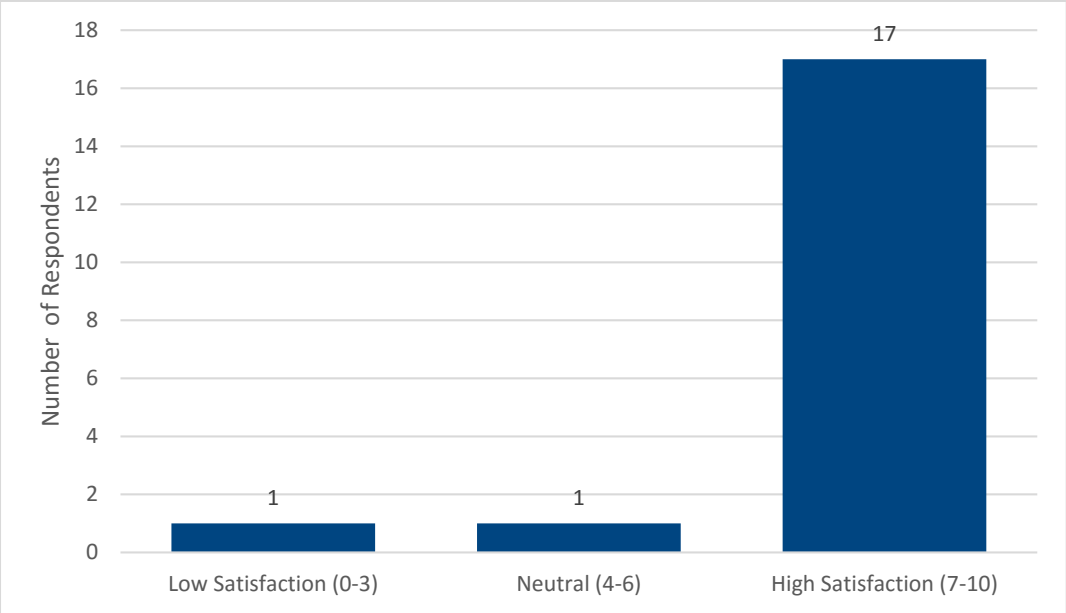
Instruction Card

The majority of customers who used the temperature card said the instructions were helpful in lowering their water temperature. Using a scale of zero to 10, where zero meant not at all helpful and 10 meant very helpful, 15 customers rated the helpfulness of the instructions as seven or higher, while three customers said the instructions were not at all helpful. Those who did not find the instructions helpful said either they did not use the instructions or their water heater was already set at an energy-saving setting. The one remaining customer who answered the question did not know if the instructions were helpful.

Disposable Thermometer

Overall, customers were satisfied or highly satisfied with the disposable thermometer. Using the scale of zero to 10, where zero meant very dissatisfied and 10 meant very satisfied, 17 (n=19) rated their satisfaction as seven or higher (Figure 7). Customers who said they were not satisfied stated either that they did not need the thermometer or it did not work.

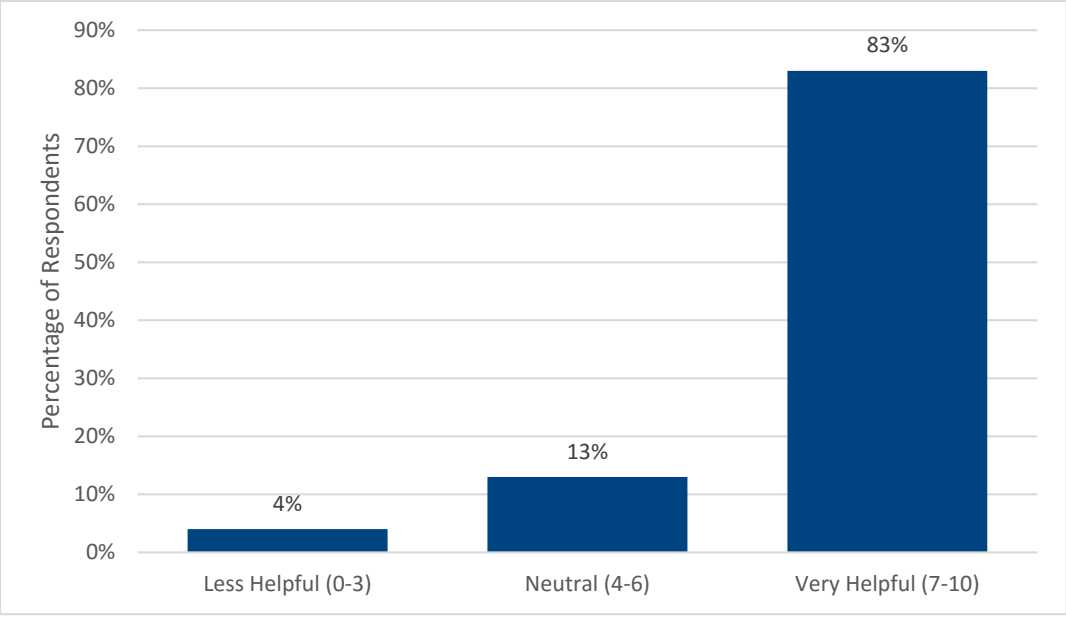
Figure 7. Customer Satisfaction with Disposable Thermometer (n=19)



Instruction Materials in Kit

Using the scale of zero to 10, where zero meant not at all helpful and 10 meant very helpful, 83% (n=59) of the respondents rated the helpfulness of the instruction materials in the kit as seven or higher (Figure 8). Customers who found the instructions less than helpful said either they did not read them, they lost them, or there were few instructions.

Figure 8. How Helpful Customers Found Instructional Materials (n=59)



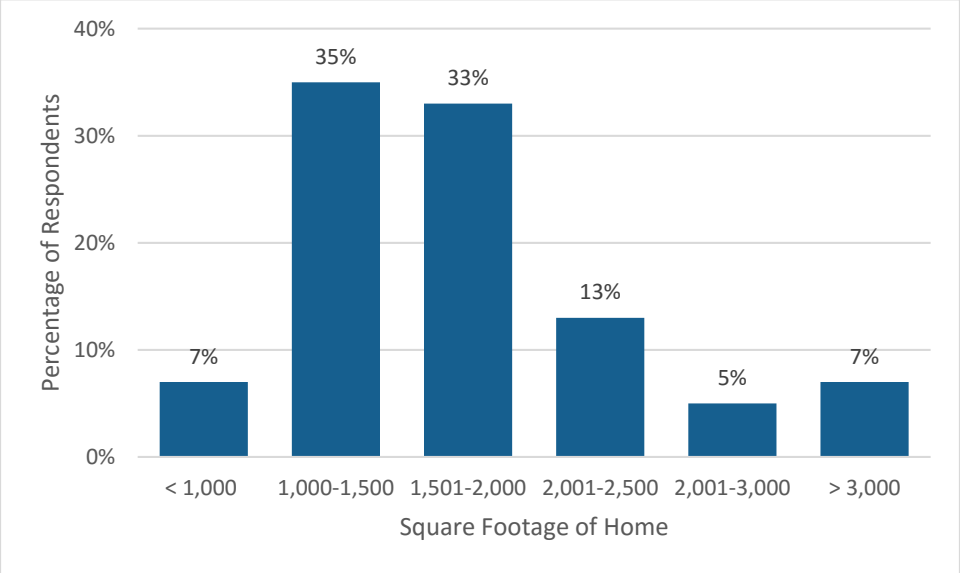
The majority of customers (96% [n=68]) said they had not visited AIC's ActOnEnergy website or called the number provided to learn more about AIC's energy efficiency programs. Sixty-one percent (n=57) of customers said they have not and do not plan to participate in one of AIC's ActOnEnergy programs. However, 39% (n=57) said they have participated or plan to participate in an AIC program.

3.3.2 Customer Demographics

Program marketing targeted residential electric customers with electric water heaters and greater-than-average electricity usage history. Survey results showed that 83% (n=70) of the respondents reported using electricity for space heating, and 83% (n=69) reported using electricity for water heating. The remaining customers said they used gas, geothermal, hot water, or wood to heat their homes and gas or geothermal to heat their water.

Ninety-three percent (n=70) of surveyed customers were homeowners, and 73% (n=70) lived in single-family detached homes. The next largest percentage of homeowners (16%) lived in mobile homes or trailers and the remaining respondents lived in single-family attached, multifamily, or modular homes. Participants' homes range from 1,000 square feet to more than 3,000 square feet in size and from four to 200 years old in age. The majority of homes (68% [n=55]) were between 1,000 and 2,000 square feet (Figure 9). Home age was evenly distributed across the spectrum, with a slight peak (17% [n=66]) at 40 years old and smaller peaks at 30 and 45 years old (8% at each peak).

Figure 9. Size of Homes (n=55)



Forty-six percent (n=70) of all respondents were between 45 and 65 years old, and 43% were 65 years old or older. Fifty-one percent (n=70) of the homes were occupied by two people, and 33% (n=61) of respondents had annual household incomes less than $35,000.

3.4 Impact Assessment

3.4.1 Gross Impacts

The evaluation used results from the participant survey to estimate installation rates for kit items except for the CFL measures, which used the prescribed value in Illinois Statewide TRM V2. Table 13 lists the verified installation rates for each kit measure that were used in the electric and gas ex-post savings calculations.[5] The ex-ante savings calculations produced by the implementer used installation rates derived from multiple sources including the Illinois Statewide TRM V2, Illinois Statewide TRM V1, and internal estimates.

Table 13. PY7 Rural Kits Installation Rates

Measure	Installation Rate
14-watt CFL	69.5%
23-watt CFL	69.5%
1.0 GPM Bath Faucet Aerator	17%
2.0 GPM Dual Kitchen Faucet Aerator	20%
1.75 GPM Chrome High-Efficiency Showerhead	39%
Hot Water Temperature Card Thermometer	10%

Note: The installation rates reported in this table for the faucet aerators and showerheads included an additional question that is not used to calculate the numbers in Figure 6. The additional question focused on if the aerators or showerhead replaced an existing high-efficiency aerator or showerhead.

Based on reported program participation and evaluated savings values, the program achieved total gross electric energy savings of 2,494 MWh and demand savings of 0.275 MW. Table 14 shows ex-ante and ex-post gross electric impacts.

[5] Gas savings are presented in Appendix B of this report.

Table 14. PY7 Program Ex-Ante and Ex-Post Gross Electric Impacts

Measure	Reported Ex-Ante Installation Rate	Reported Ex-Ante Gross Impacts		Reported Measures[a]	Evaluated Installation Rate	Verified Measures[b]	Ex-Post Gross Impacts		Gross Realization Rate[c]	
		MWh	MW				MWh	MW	MWh	MW
14-watt CFL	69.5%	401	0.042	20,022	69.5%	13,915	401	0.043	100%	101%
23-watt CFL	69.5%	677	0.072	20,022	69.5%	13,915	678	0.072	100%	100%
1.0 GPM Bath Faucet Aerator	48%	186	0.091	8,710	17%	1,481	34	0.035	18%	39%
2.0 GPM Dual Kitchen Faucet Aerator	48%	186	0.091	8,710	20%	1,742	173	0.033	93%	37%
1.75 GPM Chrome High Efficiency Showerhead	81%	1,727	0.126	8,710	39%	3,397	1,133	0.083	66%	66%
Hot Water Temperature Card Thermometer	50%	376	0.043	8,710	10%	871	75	0.09	20%	20%
Total	**64%**	**3,552**	**0.464**	**74,882**	**47%**	**35,321**	**2,494**	**0.275**	**70%**	**59%**

Note: Totals may not sum due to rounding.
[a] Based on IL-TRM Version 2, we assumed 87% of total verified water saving measures were installed in homes with electric water heating
[b] The difference between reported measures and verified measures is due to the application of installation rates developed from the participant survey effort.
[c] Gross realization rate = ex-post gross savings ÷ ex-ante gross savings.

The evaluation team received ex-ante electric savings estimates from the Rural Kits program implementer and reviewed the assumed estimates for comparisons to the ex-post electric savings methodologies. Ex-ante electric savings methodology assumptions and inputs were not made available to the evaluation team to enable a recreation of the claimed ex-ante electric per-unit estimates. Because of this, there are unknown differences between the ex-ante and ex-post electric per-unit savings assumptions for kit measures. The differences between total ex-ante and ex-post electric savings estimates are due to differences in the ex-ante and ex-post gross electric per unit savings assumptions and installation rates. Described below are the discrepancies for each program measure:

- Ex-ante and ex-post CFL per unit savings estimates are the same. Ex-ante and ex-post savings were both calculated using the Illinois Statewide TRM V2 installation rate of 69.5%. There are no major discrepancies to note. The 14-watt CFL gross kW realization is 101% due to the ex-post gross kW per unit estimate being 0.00003 kW larger than the ex-ante gross kW per-unit estimate.

- Ex-ante bathroom faucet aerator per unit savings estimate of 44.4 kWh is more than the ex-post per unit savings estimate of 23.1 kWh calculated in accordance with the Illinois Statewide TRM V2. The implementer acknowledged they did not calculate separate savings estimates for the different aerator types and that they used 44.4 kWh and 0.022 kW gross per-unit savings estimates for both kitchen faucet aerator and bathroom faucet aerator ex-ante gross savings calculations. Another source of the ex-post gross population savings being less than the ex-ante gross population savings is due to difference in installation rates used for the ex-post and ex-ante

gross savings. The ex-ante savings used an ISR of 48%[6] based off Illinois Statewide TRM V1 while the evaluation team used the bathroom faucet aerator specific 17% ISR calculated from the participant survey, in accordance with Illinois Statewide TRM V2, to calculate the ex-post gross savings.

- Ex-ante kitchen faucet aerator per unit savings estimate of 44.4 kWh is less than the ex-post per unit savings estimate of 99.2 kWh calculated in accordance with the Illinois Statewide TRM V2. The implementer acknowledged they did not calculate separate savings estimates for the different aerator types and that they used 44.4 kWh and 0.022 kW gross per-unit savings estimates for both kitchen faucet aerator and bathroom faucet aerator ex-ante gross savings calculations. Another source of the ex-post gross population savings being different than the ex-ante gross population savings is due to difference in installation rates used for the ex-post and ex-ante gross savings. The ex-ante savings used an ISR of 48% based off Illinois Statewide TRM V1 while the evaluation team used the kitchen faucet aerator specific 20% ISR calculated from the participant survey, in accordance with Illinois Statewide TRM V2, to calculate the ex-post gross savings.

- The ex-ante showerhead per unit savings estimates of 245 kWh and 0.018 kW are less than the ex-post per unit savings estimates of 334 kWh and 0.025 kW that the evaluation team calculated in accordance with Illinois Statewide TRM V2. A difference between the ex-ante and ex-post per unit savings estimates could be that the ex-post per unit savings estimate is using home type information from the participant survey to estimate single-family and multi-family weighted average showerheads per household in conjunction with the prescribed single-family and multi-family values in Illinois Statewide TRM V2. Another difference between the ex-ante and ex-post per unit savings estimates could be that the evaluation team used the number of people per household (2.26) as reported through participant survey in the ex-post gross per-unit savings calculations, as directed by Illinois Statewide TRM V2, which states to use actual occupancy information when available. Despite the ex-post per unit savings estimates being larger than ex-ante per unit savings estimates, the ex-post gross population savings is less than the ex-ante gross population savings due to difference in installation rates used for the ex-post and ex-ante savings. The ex-ante gross savings used an ISR of 81%[7] based off Illinois Statewide TRM V1 while the evaluation team used the 39% ISR calculated from the participant survey, in accordance with Illinois Statewide TRM V2, to calculate the ex-post gross savings.

- Ex-ante water heater temperature card thermometer per unit savings estimates of 86.4 kWh and 0.010 kW are the same as the ex-post per unit deemed savings estimates of 86.4 kWh and 0.010 kW contained in IL-TRM Version 2. The source of the ex-post gross population savings being less than the ex-ante gross population savings is due to difference in installation rates used for the ex-post and ex-ante gross savings. The ex-ante savings used an ISR of 50% that was estimated by the implementer, while the evaluation team used the water heater temperature card thermometer specific 10% ISR calculated from the participant survey, in accordance with Illinois Statewide TRM V2, to calculate the ex-post gross savings.

[6] IPA Program Assumptions

[7] IPA Program Assumptions

In addition to gross savings achieved because of measure installations in PY7, the evaluation team calculated gross savings from delayed CFL installations per the Illinois Statewide TRM V2.0. In particular, IL-TRM V2.0 assumes that consumers will install 98% of kit CFLs within three years and that they will never install the remaining 2% of bulbs. Table 15 provides the savings from bulbs provided to participants in PY7 that are realized in PY7, as well as in PY8 and PY9 given later installations.

Table 15. Yearly Gross Impact of PY7 Residential Lighting Measures by Assumed Installation Year

Measure	Energy (MWh)			Demand (MW)		
	PY7	PY8	PY9	PY7	PY8	PY9
14-watt CFL	401	89	76	0.043	0.009	0.008
23-watt CFL	678	150	128	0.072	0.016	0.014
Total	1,079	239	203	0.114	0.025	0.022

The evaluation team will include the PY8 and PY9 savings in future evaluation reports.

Net Impacts

Based on verified program participation, the Illinois Statewide TRM V2.0 deemed per-unit gross savings values, and SAG-approved NTGR, the program achieved total net electric energy and demand savings of 2,105 MWh and 0.228 MW, respectively. Table 16 shows the net electric savings results by measure.

Table 16. PY7 Total Program Net Electric Savings by Measure

Measure	NTGR[a]	Ex-Ante Net Savings (MWh)	Ex-Ante Net Savings (MW)	Ex-Post Net Savings (MWh)	Ex-Post Net Savings (MW)
14-watt CFL	0.88	353	0.037	353	0.037
23-watt CFL	0.88	596	0.063	596	0.063
1.0 GPM Bath Faucet Aerator	0.73	136	0.066	25	0.026
2.0 GPM Dual Kitchen Faucet Aerator	0.73	136	0.066	126	0.024
1.75 GPM Chrome High Efficiency Showerhead	0.82	1,416	0.104	929	0.068
Hot Water Temperature Card Thermometer	1.0	376	0.043	75	0.009
Total	**0.84[b]**	**3,012**	**0.379**	**2,105**	**0.228**
			Net Realization Rate[c]	**70%**	**59%**

Note: Totals may not sum due to rounding
[a] SAG-approved NTGR used for ex-ante net savings and ex-post net savings.
[b] Weighted by ex-post MWh savings. Weighted by ex-post MW savings NTGR is 84%.
[c] Net realization rate = ex-post net savings ÷ ex-ante net savings.

4. Conclusions and Recommendations

The PY7 Rural Kits Program successfully delivered 10,011 kits to rural families within budget. Although the utility and implementation staff reported satisfaction with the program, the evaluation team has identified opportunities for improvement and recommends the following actions for to consider in future program years.

- **Conclusion #1:** AIC can measure the effectiveness of the program marketing to increase participation in other programs or traffic to the AIC web site.
  - **Recommendation:** Work with CLEAResult to implement a method for gauging if kits influence recipients to participate in other energy efficiency programs. For example, include a customer-specific URL on the marketing materials.
- **Conclusion #2:** The majority of surveyed customers (96% [n=68]) did not visit AIC's ActOnEnergy website or call the number provided to learn more about AIC's energy efficiency programs.
  - **Recommendation:** Develop stronger messaging that focuses on a broad range of benefits from energy savings, such as monetary savings.
- **Conclusion #3:** Additional customer education may increase showerhead installation rates and reduce improper disposal of CFLs.
  - **Recommendation:** CLEAResult could include educational materials in the kits that provide the following:
    - Instructions for proper disposal of CFLs and locations of CFL collection and recycling centers.
    - Information and testimonials on how high-efficiency showerheads have improved over original versions.

Inputs for Future Planning

To inform future program planning, the evaluation team reviewed the participant survey data and estimated measure-level NTGRs.

The following equation produces the NTGR for the program:

$$NTGR = (1 - Freeridership + Spillover)$$

The evaluation team used the data collected from the PY7 participant survey, in conjunction with the methods described in the draft NTG protocol, to develop measure-level NTGRs for future program planning (Table 17 and Table 18).

Table 17. PY7 NTGR Estimates for Future Planning

Measure	Final Freeridership Score	Spillover Score	NTGR	NTGR Absolute Precision
14-watt CFL	50%	13%	63%	± 22%
23-watt CFL	59%		54%	± 22%
1.0 GPM Bath Faucet Aerator	5%		108%	± 9%
2.0 GPM Dual Kitchen Faucet Aerator	14%		99%	± 16%
1.75 GPM Chrome High Efficiency Showerhead	21%		92%	± 27%
Hot Water Temperature Card Thermometer	0%		113%	N/A

Table 18. PY7 Gas NTGR Estimates for Future Planning

Measure	Final Freeridership Score	Spillover Score	NTGR	NTGR Absolute Precision
1.0 GPM Bath Faucet Aerator	5%	4%	99%	± 9%
2.0 GPM Dual Kitchen Faucet Aerator	14%		90%	± 16%
1.75 GPM Chrome High Efficiency Showerhead	21%		83%	± 27%
Hot Water Temperature Card Thermometer	0%		104%	N/A

Appendix A provides details on how we estimated freeridership and spillover.

Appendix A. Freeridership

Freeridership is based on participants' anticipated plans had the program not been available. Given this definition, a freerider is a participant who indicates they would have purchased and installed the same measures at the same time in the program's absence. PY7 freeridership calculations include the following components: a current/past behavior score (CP) and no-program/timing score (NPT). Evaluators then combine the resulting scores from the two components, using a simple average to arrive at an overall freeridership score.

$$FR = Mean(Mean(CP_i, NPT_i)$$

Current/Past Behavior Freeridership Scores

For the measures included in energy-efficient kits, current and past behavior is often a more accurate indicator of freeridership than hypothetical future behavior that relies on the respondent considering a counterfactual scenario. As a result, the evaluation team estimated a CP freeridership score for survey respondents based on their reported past behavior in relation to each kit measure. We then averaged the CP freeridership scores with the NPT freeridership scores (presented in the next section) to arrive at the final freeridership estimates for each measure.

For respondents who reported that kit measures were installed at the time of the survey, we assigned a CP freeridership score of 0% if the respondents did not have those measure types installed before receiving the free kit from AIC.

For showerheads and faucet aerators, if a respondent answered that they already had the measure type installed before receiving the free kit, we assigned a CP freeridership score of 100%.

For CFL measures, if respondents said they already had CFLs installed in their home prior to receiving the kit, we determined the CP freeridership score based on a follow-up question. The follow-up question asked participants how many years they have been using CFLs in their homes. For respondents who have used CFLs for one year or less, we assigned a CP freeridership score of 0%. For respondents who have used CFLs for four years or more, we assigned a CP freeridership score of 100%. We assigned partial CP freeridership scores to respondents who reported using CFLS from one to four years.

If a respondent answered "don't know" to either question, we treated the value as missing. Table 19 summarizes the PY7 CP freeridership responses and scoring by measure (showing the average CP freeridership score of all responding participants in parentheses following the count of the number participants responding).

Table 19. PY7 Current/Past (CP) Behavior Freerider Score

Before you received the free [MEASURE]s from Ameren Illinois, did you already have [MEASURE]s installed in your home?		Measure				
Response	FR Score	14-watt CFL (n=45)	23-watt CFL (n=44)	Bathroom Faucet Aerator (n=11)	Kitchen Faucet Aerator (n=21)	Showerhead Faucet Aerator (n=30)
Yes	100% (If [MEASURE]=CFL then score comes from B17 below)	See below	See below	1	3	3
No	0%	10	8	10	18	27
B17. How many years have you been using CFLs?						
Never used until now	0%	0	0	N/A	N/A	N/A
1 year or less	0%	0	0			
1 to 2 years	25%	8	6			
2 to 3 years	50%	5	5			
3 to 4 years	75%	7	8			
4 or more years	100%	15	17			
Overall Weighted Current/Past Behavior Freeridership Score[a]		**54%**	**60%**	**9%**	**14%**	**10%**

[a] Weighted by verified measure installations.

No-Program/Timing Freeridership Scores

The evaluation team calculated a NPT score based on responses to questions about hypothetical future behavior; these questions relied on respondents considering a counterfactual scenario about whether they would have purchased the kit measures in the near future if they had not received the kit for free. If respondents said they already had plans to purchase the kit measures at the time they received the kit, we asked them what was the likelihood (on scale of zero to 10, where zero meant not at all likely and 10 meant extremely likely) that they would have purchased the kit measure within six months of receiving the kit. As shown in Table 20, we translated the respondents' ratings into a NPT freeridership score ranging from 0% to 100%.

Table 20. PY7 No-Program/Timing (NPT) Freerider Score

Were you planning on buying any [MEASURE] at the time you received the kit?		Measure				
Response	FR Score	14-watt CFL (n=42)	23-watt CFL (n=42)	Bathroom Faucet Aerator (n=11)	Kitchen Faucet Aerator (n=22)	Showerhead Faucet Aerator (n=29)
Yes	From timing question below	See below	See below	See below	See below	See below
No	0%	18	15	11	18	18
No, already in all locations	100%	N/A	N/A	0	0	3
Maybe	50%	N/A	N/A	0	2	2
Timing Question: In terms of timing, what is the likelihood that you would have purchased [MEASURE] within 6 months of receiving the kit using a 0 to 10 scale where 0 is not at all likely and 10 is extremely likely?						
0 - Not at all likely	0%	0	0	0	0	0
1	10%	0	0	0	0	0
2	20%	0	0	0	0	0
3	30%	1	1	0	0	0
4	40%	0	0	0	0	0
5	50%	1	1	0	0	0
6	60%	2	2	0	0	0
7	70%	2	3	0	0	0
8	80%	7	5	0	0	3
9	90%	0	0	0	0	1
10 - Extremely likely	100%	11	15	0	2	2
Overall Weighted No-Program/Timing Freeridership Score[a]		**45%**	**58%**	**0%**	**14%**	**32%**

[a] Weighted by verified measure installations.

Final Freeridership Scores

The evaluation team combined the CP and NPT freeridership scores into a final freeridership score for each measure using the mean of the two separate estimates. Table 21 summarizes the CP, NPT, and final freeridership scores by measure.

Table 21. PY7 No-Program/Timing (NPT) Freerider Score

Measure	CP Freeridership Score	NPT Freeridership Score	Final Freeridership Score
14-watt CFL	54%	45%	50%
23-watt CFL	60%	58%	59%
1.0 GPM Bath Faucet Aerator	9%	0%	5%
2.0 GPM Dual Kitchen Faucet Aerator	14%	14%	14%
1.75 GPM Chrome High Efficiency Showerhead	10%	32%	21%

Spillover Ratio

The evaluation team measured spillover associated with the program by asking participants if they had purchased any additional energy-efficient equipment (for which they did not receive incentives or rebates) since receiving the energy efficiency kit through the program. We asked respondents who said they had purchased additional energy-efficient equipment to rate how influential (on a scale of zero to 10, where zero meant not at all influential and 10 meant highly influential) each measure in the energy efficiency kit was on their decision to install additional equipment. We attributed the purchase of additional efficiency equipment to the program if a respondent rated the influence of a measure greater than seven.

To determine energy savings from additional energy measures installed, the evaluation team used the Illinois Statewide TRM V2.0 (as well as the Illinois Statewide TRM V3.0 to calculate refrigerator energy savings estimates), except for high-efficiency showerheads and faucet aerators. High-efficiency showerhead and faucet aerator spillover measures utilized the ex-post evaluated program savings estimates that were developed as part of the PY7 Rural Kits program evaluation, which followed Illinois Statewide TRM V2.0.

Table 22. PY7 Spillover Measures

Spillover Measure	QTY	Total kWh Savings	Total Therm Savings
High-Efficiency Showerhead	1	334	0
High-Efficiency Faucet Aerators	3	0	2.7
Energy-Efficient Refrigerators	3	1,656	0
Energy-Efficient Clothes Washer	1	130	0
ENERGY STAR Dishwashers	2	120	0
Total	**10**	**2,239**	**2.7**

The evaluation team calculated the spillover rate for the Rural Kits Program by dividing the sum of all spillover energy savings by the total ex-post program energy savings using the following equation:

$$\text{Participant Spillover Rate (SO)} = \frac{Sum\ of\ Energy\ Savings\ from\ Additional\ Measures\ Installed}{Survey\ Sample\ Ex\ Post\ Gross\ Program\ Energy\ Savings}$$

As shown in Table 23, we divided the spillover energy savings by the program energy savings to calculate 12% spillover for the program.

Table 23. PY7 Spillover Ratio

Metric	Electric (kWh)	Gas (therms)
Survey Sample SpilloverSavings	2,239	2.7
Survey Sample Program Savings	17,244	75.5
Participant Spillover Rate	13%	4%

NTGR

Table 24 lists the final percentage of electric freeridership and spillover, as well as the NTGR, by measure.

Table 24. PY7 NTGR

Measure	Final Freeridership Score	Spillover Score	NTGR	NTGR Absolute Precision
14-watt CFL	50%	13%	63%	± 22%
23-watt CFL	59%		54%	± 22%
1.0 GPM Bath Faucet Aerator	5%		108%	± 9%
2.0 GPM Dual Kitchen Faucet Aerator	14%		99%	± 16%
1.75 GPM Chrome High-Efficiency Showerhead	21%		92%	± 27%
Hot Water Temperature Card Thermometer	0%		113%	N/A

Table 25 lists the final percentage of gas freeridership and spillover, as well as the NTGR, by measure.

Table 25. PY7 Gas NTGR

Measure	Final Freeridership Score	Spillover Score	NTGR	NTGR Absolute Precision
1.0 GPM Bath Faucet Aerator	5%	4%	99%	± 9%
2.0 GPM Dual Kitchen Faucet Aerator	14%		90%	± 16%
1.75 GPM Chrome High-Efficiency Showerhead	21%		83%	± 27%
Hot Water Temperature Card Thermometer	0%		104%	N/A

Appendix B. Natural Gas Impacts

Gross Impacts

The implementer did not estimate ex-ante gas savings for the program as they assumed 100% of the kits distributed would be delivered to homes that use electricity as their primary water heating energy source. Thirteen percent of participants surveyed in PY7 reported that they use natural gas as their primary water heating energy source and the evaluation team used this information to estimate gas measure installations and gas savings achieved by the program. Because the implementer assumed 100% of the kits would be distributed to homes that use electricity for their water heating energy source, there were no ex-ante gross therm per unit savings values provided to the evaluation team. Due to their being no PY7 ex-ante per-unit therm savings estimates for the Rural Kits program, the evaluation team reverted to the gross per unit therm estimates used in the PY6 AIC EEKits evaluation, which were based off Illinois Statewide TRM V2 deemed savings parameters. The ex-ante savings presented in Table 26 utilize the same installation rates the implementer used for electric savings, which were derived from multiples sources including the Illinois Statewide TRM V2, Illinois Statewide TRM V1, and internal estimates.

Based on reported and evaluated program participation, the program achieved total gross gas energy savings of 9,471 therms. Table 26 shows ex-ante and ex-post gross gas impacts.

Table 26. PY7 Program Ex-Ante and Ex-Post Gross Gas Impacts

Measure	Reported Ex-Ante Installation Rate	Reported Ex-Ante Gross Impacts (therms)	Reported Measures[a]	Evaluated Installation Rate	Verified Measures[b]	Ex-Post Gross Impacts (therms)	Gross Realization Rate[c]
1.0 GPM Bath Faucet Aerator	81%	756	1,301	17%	221	196	26%
2.0 GPM Dual Kitchen Faucet Aerator	48%	2,980	1,301	20%	260	1,204	40%
1.75 GPM Chrome High Efficiency Showerhead	48%	11,364	1,301	39%	508	7,237	64%
Hot Water Temperature Card Thermometer	50%	4,165	1,301	10%	130	833	20%
Total	**57%**	**19,264**	**5,206**	**22%**	**1,119**	**9,471**	**49%**

[a] Based on IL-TRM Version 2, we assumed 13% of total verified water saving measures were installed in homes with electric water heating.
[b] The difference between reported measures and verified measures is due to the application of installation rates developed from the participant survey effort.
[c] Gross realization rate = ex-post gross savings ÷ ex-ante gross savings.

Ex-ante gas savings methodology assumptions and inputs were not available to the evaluation team to enable a recreation of the claimed ex-ante electric estimates, as the implementer assumed 100% of the kits would be distributed to homes that use electricity for their water heating energy source. Because of this, there are unknown differences between the ex-ante and ex-post electric savings assumptions for kit measures. The differences between total ex-ante and ex-post electric savings estimates are due to differences in the ex-ante and ex-post gross electric per unit savings assumptions and installation rates. Described below are the

discrepancies for each program measure:

- Ex-ante bathroom faucet aerator per unit savings estimate of 1.2 therms is more than the ex-post per unit savings estimate of 0.9 therms calculated in accordance with the Illinois Statewide TRM V2. A possible difference between the ex-ante and ex-post per unit savings estimates could be that the ex-post per unit savings estimate is using information from the participant survey to estimate faucets per household (2.2) instead of the deemed single-family and multi-family values in Illinois Statewide TRM V2. Another possible difference between the ex-ante and ex-post per unit savings estimates could be that the evaluation team used the number of people per household (2.26) as reported through participant survey in the ex-post gross per-unit savings calculations, as directed by Illinois Statewide TRM V2, which states to use actual occupancy information when available. Despite the ex-post per unit savings estimates being larger than ex-ante per unit savings estimates, the ex-post gross population savings is less than the ex-ante gross population savings due to difference in installation rates used for the ex-post and ex-ante savings. The ex-ante gross savings uses an ISR of 48%[8] based off Illinois Statewide TRM V1 while the evaluation team used the 17% ISR calculated from the participant survey, in accordance with Illinois Statewide TRM V2, to calculate the ex-post gross savings.

- Ex-ante kitchen faucet aerator per unit savings estimate of 4.8 therms is more than the ex-post per unit savings estimate of 4.6 therms calculated in accordance with the Illinois Statewide TRM V2. A possible difference between the ex-ante and ex-post per unit savings estimates could be that the evaluation team used the number of people per household (2.26) as reported through participant survey in the ex-post gross per-unit savings calculations, as directed by Illinois Statewide TRM V2, which states to use actual occupancy information when available. Another reason that the ex-post gross population savings are less than the ex-ante gross population savings due to difference in installation rates used for the ex-post and ex-ante savings. The ex-ante gross savings uses an ISR of 48%[9] based off Illinois Statewide TRM V1 while the evaluation team used the 20% ISR calculated from the participant survey, in accordance with Illinois Statewide TRM V2, to calculate the ex-post gross savings.

- The ex-ante showerhead per unit savings estimate of 10.8 therms is less than the ex-post per unit savings estimates of 14.3 therms that the evaluation team calculated in accordance with Illinois Statewide TRM V2. A possible difference between the ex-ante and ex-post per unit savings estimates could be that the ex-post per unit savings estimate is using home type information from the participant survey to estimate single-family and multi-family weighted average showerheads per household in conjunction with the prescribed single-family and multi-family values in Illinois Statewide TRM V2. Another possible difference between the ex-ante and ex-post per unit savings estimates could be that the evaluation team used the number of people per household (2.26) as reported through participant survey in the ex-post gross per-unit savings calculations, as directed by Illinois Statewide TRM V2, which states to use actual occupancy information when available. Despite the ex-post per unit savings estimates being larger than ex-ante per unit savings estimates, the ex-post gross population savings is less than the ex-ante gross population savings due to difference in installation rates used for the ex-post and ex-ante savings. The ex-ante gross savings

[8] IPA Program Assumptions

[9] IPA Program Assumptions

uses an ISR of 81%[10] based off Illinois Statewide TRM V1 while the evaluation team used the 39% ISR calculated from the participant survey, in accordance with Illinois Statewide TRM V2, to calculate the ex-post gross savings.

- Ex-ante water heater temperature card thermometer per unit savings estimate of 6.4 therms is the same as the ex-post per unit deemed savings estimates of 6.4 therms, contained in IL-TRM Version 2. The source of the ex-post gross population savings being less than the ex-ante gross population savings is due to difference in installation rates used for the ex-post and ex-ante gross savings. The ex-ante savings uses an ISR of 50% that was estimated by the implementer homes with electric water heating, while the evaluation team used the water heater temperature card thermometer specific 10% ISR calculated from the participant survey, in accordance with Illinois Statewide TRM V2, to calculate the ex-post gross savings.

Net Impacts

Table 27 shows the net gas savings results by measure. Based on verified program participation and Illinois Statewide TRM V2.0 deemed per-unit gross savings values, the program achieved total net gas energy of 7,790 therms.

Table 27. PY7 Total Program Net Gas Savings by Measure

Measure	NTGR[a]	Ex-Ante Net Savings (therms)	Ex-Post Net Savings (therms)
1.0 GPM Bath Faucet Aerator	0.73	552	143
2.0 GPM Dual Kitchen Faucet Aerator	0.73	2,175	879
1.75 GPM Chrome High Efficiency Showerhead	0.82	9,318	5,935
Hot Water Temperature Card Thermometer	1.00	4,165	833
Total	**0.85[b]**	**16,210**	**7,790**
		Net Realization Rate[c]	**48%**

[a] SAG-approved NTGR used for ex-ante net savings and ex-post net savings..
[b] Weighted by ex-post therm savings.
[c] Net realization rate = ex-post net savings ÷ ex-ante net savings.

[10] IPA Program Assumptions

Appendix C. Data Collection Instruments

Ameren Illinois - PY7 Rural Kits Intervi

Ameren_RuralKits_Survey_FINAL_Septem

Appendix D. Program Collateral

Figure 10. Home Starter Kit Label

Figure 11. Home Starter Kit Insert, Side A

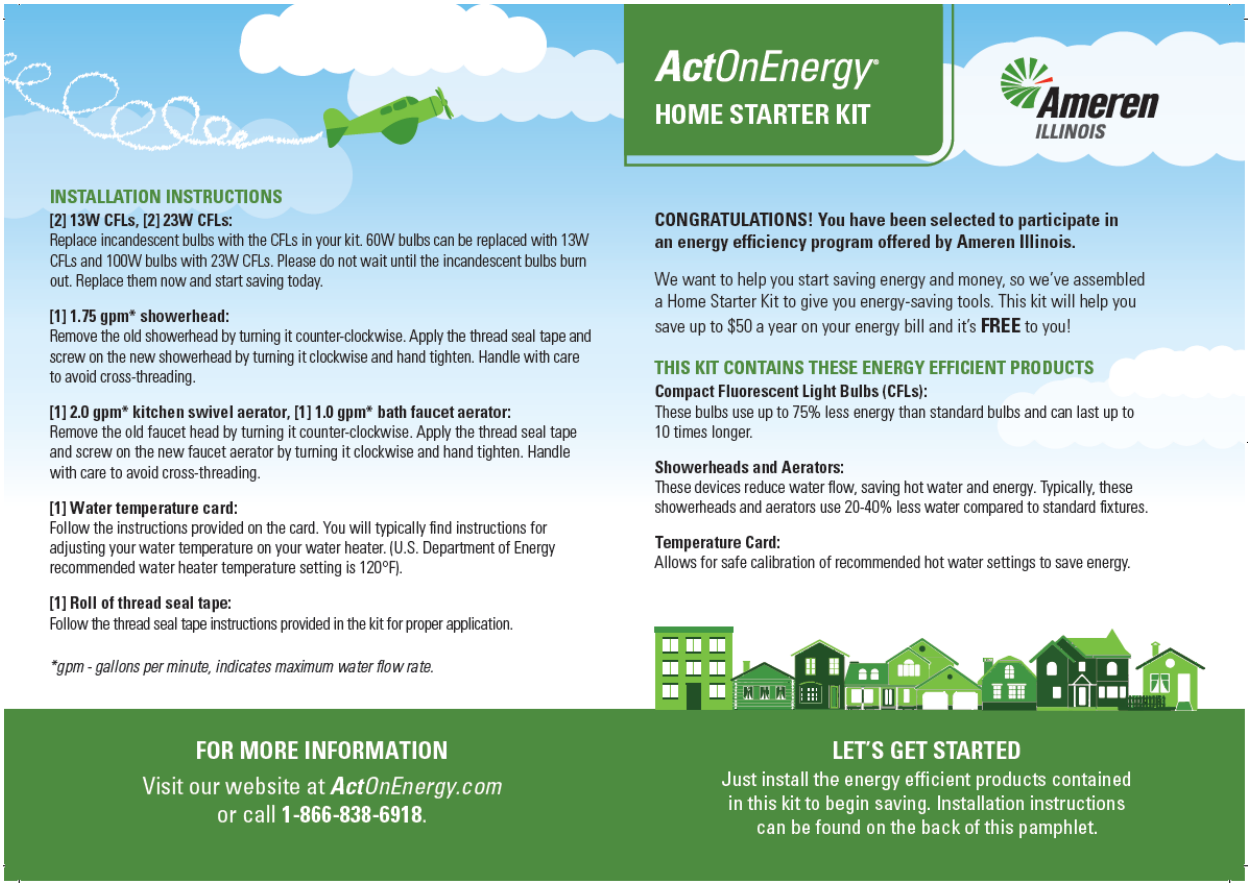
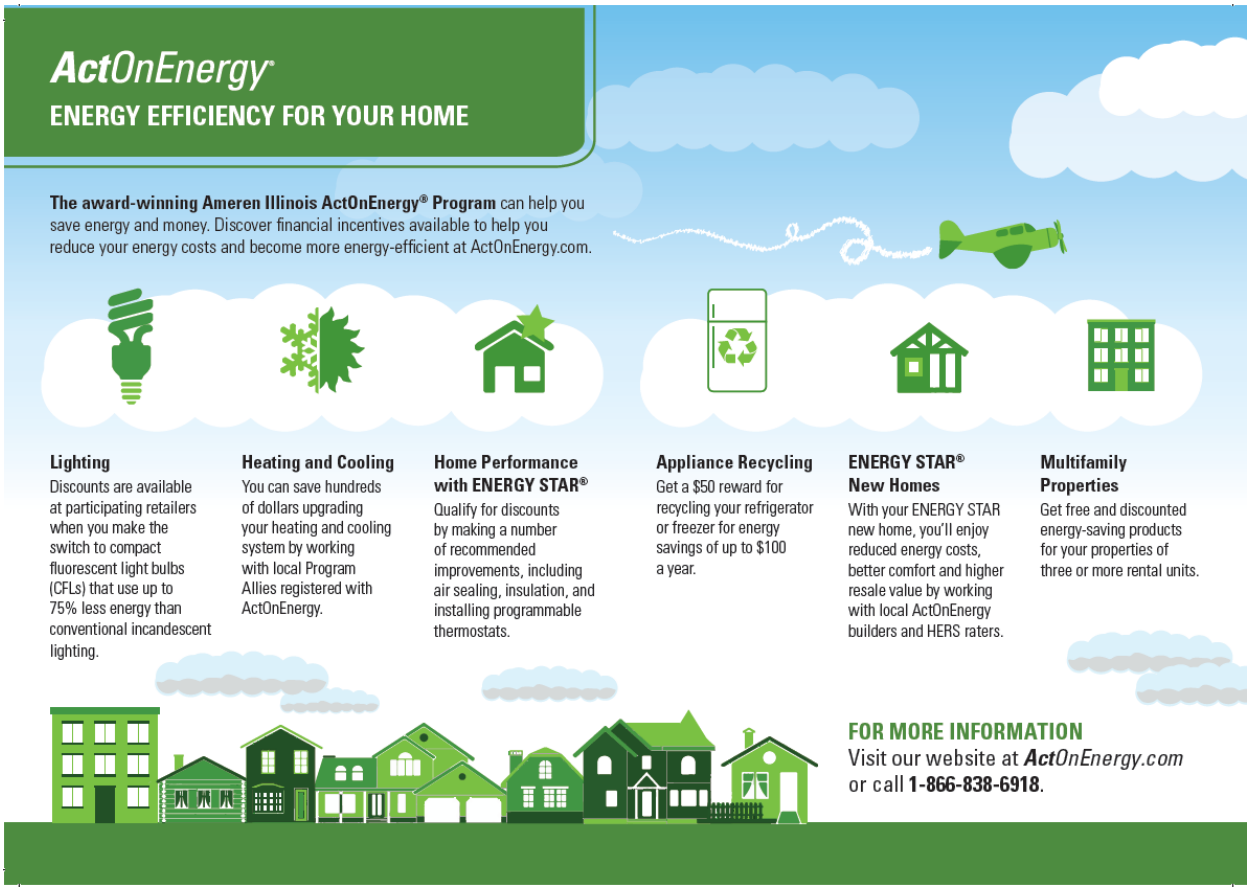


Figure 12. Home Starter Kit Insert, Side B



Appendix E. Survey Response Rate Methodology

The survey response rate is the number of completed interviews divided by the total number of potentially eligible respondents in the sample. We calculated the response rate using the standards and formulas set forth by the American Association for Public Opinion Research (AAPOR). We chose to use AAPOR Response Rate 3 (RR3) for all AIC program evaluations given that we are often unable to determine the eligibility of all sample units through the survey process. RR3 includes an estimate of eligibility for these unknown sample units. The formulas used to calculate RR3 are presented below. The definitions of the letters used in the formulas are displayed in the Survey Disposition tables in Section 2.2.3.

$$e = (I+P+E) / ((I+P+E)+(NE)$$

$$RR3 = I / ((I+P) + (R+NC+O) + e (UH+UO)$$

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

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

Appendix F. Other Cost Effectiveness Inputs

Heating Penalty Results

Efficient lighting products generate less waste heat compared to baseline lighting products. When customers replace baseline products with more efficient lighting, they must use more space heating to compensate for the "lost" heat from lighting. The heating penalty represents this increased gas usage for space heating. The penalty is used in the analysis of program cost effectiveness.

Table 28 shows the gas-heating penalty that results from the additional space heating needed when customers install efficient lighting. The Evaluation Team used the Illinois Statewide TRM V2.0 to calculate these impacts.

Table 28. Gas Heating Penalty

Measure	Heating Penalty (Therms)		
	PY7	PY8	PY9
14-watt CFL	-1,175	-260	-222
23-watt CFL	-1,986	-440	-374
Total	-3,161	-700	-596

For more information, please contact:

Hannah Arnold
Managing Director

510 444 5050 tel
510 444 5222 fax
harnold@opiniondynamics.com

1999 Harrison Street, Suite 1420
Oakland, CA 94612