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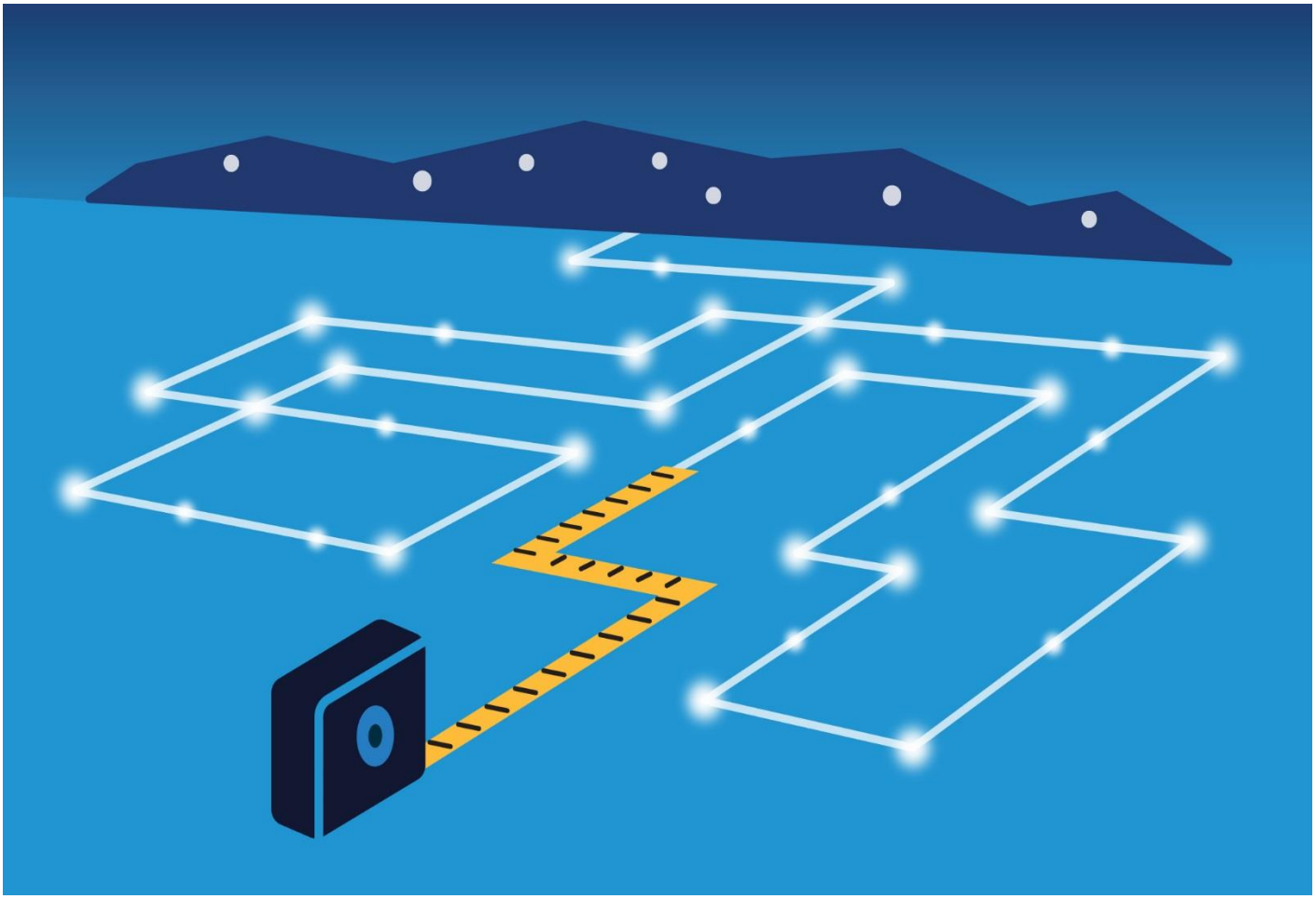

# Impact and Process Evaluation of 2013 (PY6) Ameren Illinois Company Residential Energy Efficiency Kits Program

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# 1. Executive Summary

Ameren Illinois Company (AIC) made its Residential Energy Efficiency Kits Program (EEKits) available to customers for the first time in PY6 (June 1, 2013–May 31, 2014). This program was one of five Illinois Power Authority (IPA) programs implemented in PY6. Through a school-based delivery channel and a direct-mail delivery channel, the program provided kits containing energy-efficient items to 2,062 reported school-based participants and 6,005 reported direct-mail participants. While the purpose of this report is to summarize the IPA program electric savings, the program achieved some gas savings based on supporting funds from 8-104 and those savings are presented in Appendix B of this report.

The EEKits products included CFLs, faucet aerators, and shower heads, along with instruction materials to aid customers in properly setting the temperature of their water heaters (Table 1). EEKits asked participants to complete an online survey after their participation in the program to verify installation of energy efficient items. AIC set an electricity savings goal of 2,149 MWh and established other goals related to the increased sales and awareness of ENERGY STAR®-qualified lighting products and other AIC energy-efficiency offerings.

**Table 1. PY6 EEKits Products**

| Product | Quantity per Kit |
|---|---|
| CFLs (13W–23W) school based/direct mail | 2/4 |
| High-Efficiency Bath Faucet Aerators | 1 |
| High-Efficiency Kitchen Faucet Aerators | 1 |
| High-Efficiency Shower Heads | 1 |
| Instructional Materials | N/A |

## 1.1 Impact Results

Table 2 outlines PY6 reported program participation levels by measure, as well as verified participation. The evaluation team reduced reported participation as shown in Table 2 to account for participants receiving more than one kit.

**Table 2. Summary of PY6 Program Verification Results**

| Measure | Reported Measures* | Verification Rate | Verified Measures |
|---|---|---|---|
| **Direct-Mail Delivery** | | | |
| 60W replaced by 14W CFL | 12,010 | 98% | 11,752 |
| 75W replaced by 19W CFL | 6,005 | 98% | 5,876 |
| 100W replaced by 23W CFL | 6,005 | 98% | 5,876 |
| Shower Head: 1.75 gpm | 6,005 | 98% | 5,876 |
| Faucet Aerator | 12,010 | 98% | 11,752 |
| Water Heater Temp Adjustment | 6,005 | 98% | 5,876 |
| **School-Based Delivery** | | | |
| 60W replaced by 14W CFL | 4,124 | 100% | 4,124 |
| Shower Head: 1.75 gpm | 2,062 | 100% | 2,062 |
| Faucet Aerator | 4,124 | 100% | 4,124 |
| Water Heater Temp Adjustment | 2,062 | 100% | 2,062 |

| Measure | Reported Measures* | Verification Rate | Verified Measures |
|---|---|---|---|
| **Total** | **60,412** | **98%** | **59,380** |

* Reported participants multiplied by number of units provided in each kit.

Based on the verified number of program measures distributed through the program and IPA-approved deemed per unit net savings values for program measures, the program realized total net energy and demand savings of 2,126 MWh and 0.20 MW, respectively. Differences in ex post net savings and ex ante net savings are the result of reductions made to the reported participation accounting for participants receiving more than one kit and ex ante per unit savings that did not match the deemed IPA net unit savings from Docket 12-0544. Table 3 shows the net savings results.

**Table 3. PY6 Total Program Net Savings by Measure**

| Measure | Net-to-Gross Ratio* | Ex Ante Net Savings (MWh) | Ex Ante Net Unit Savings (MW) | Ex Post Net Savings (MWh) | Ex Post Net Unit Savings (MW) | Net Realization Rate*** |
|---|---|---|---|---|---|---|
| **Direct-Mail Delivery** | | | | | | |
| 60W replaced by 14W CFL | 71% | 366 | 0.036 | 163 | 0.023 | 45% |
| 75W replaced by 19W CFL | 71% | 128 | 0.013 | 97 | 0.007 | 76% |
| 100W replaced by 23W CFL | 71% | 191 | 0.019 | 133 | 0.008 | 70% |
| Shower Head: 1.75 gpm** | 77% | 976 | 0.036 | 1,167 | 0.033 | 119% |
| Faucet Aerator** | 46% | 187 | 0.182 | 220 | 0.091 | 118% |
| Water Heater Temp Adjustment** | 46% | 259 | 0.029 | 167 | 0.019 | 64% |
| **School-Based Delivery** | | | | | | |
| 60W replaced by 14W CFL | 71% | 126 | 0.012 | 57 | 0.008 | 45% |
| Shower Head: 1.75 gpm*** | 77% | 54 | 0.004 | 92 | 0.003 | 170% |
| Faucet Aerator*** | 46% | 10 | 0.005 | 17 | 0.007 | 170% |
| Water Heater Temp Adjustment*** | 46% | 14 | 0.002 | 13 | 0.001 | 93% |
| **Total** | **69%** | **2,312** | **0.340** | **2,126** | **0.200** | **92%** |

***** Predetermined through Docket 12-0544 (IPA filing).
** Ex post savings reflect 71% electric water heater saturation based on participant returned surveys.
**** Ex post savings reflect 16% electric water heater saturation assumed in the ex ante values.
***** Net realization rate = ex post net savings ÷ ex ante net savings.

## 1.2 Process Results

Through the evaluation team's limited process review, implementation staff expressed satisfaction with how the program performed in PY6. Though the program experienced a delayed start, implementation staff reported that the delay allowed them to research direct-mail outreach opportunities, and resulted in better

timing for presenting the school-based delivery channel. Implementation staff also reported that it was difficult to track participants through each program stage, so in the future they intend to use a unique identifier for each participant. Overall, participants reported a positive response, and the implementer believes the program will increase participation in PY7.

## 1.3 Conclusions and Recommendations

After a slower-than-anticipated start, the PY6 EEKits successfully delivered a combined 7,938 verified kits to school-based and direct-mail participants. In its first year, the program researched effective methods of encouraging direct-mail participants to engage with the program and established relationships with schools that may increase future program subscription. While program staff anticipates that participation will increase as the program ramps up, and implementation staff is satisfied with the program, the evaluation team has identified the following recommendations for future program years.

### Consider Conducting an Extensive Process Evaluation

While reported to work well after its first year, the program would benefit from a process evaluation, designed to help the EEKits identify opportunities to enhance participant experience and encourage greater installation and use of energy-saving items. A process evaluation for the EEKits should include the following:

- Gaining a better understanding of program processes
- Assessing participant satisfaction
- Determining reasons for lower installation rates
- Assessing persistence of measure installation
- Identifying survey improvements

### Consider Modifying the Survey Instruments

The implementer's participant surveys included questions that could help estimate energy savings associated with the program. The evaluation team recommends adopting the following adjustments to achieve greater accuracy and to improve future impact analysis:

- Capture installation rate for each CFL wattage
- Determine if participants adjusted water heater temperatures up or down
- Determine fuel saturation for all participants
- Allow sufficient time to pass before checking installation rates
- Ensure greater consistency between the school-based and direct mail participants web-based surveys

### Improve Data Management and Continue with Plans to Improve Data Tracking

It was noted that the ex ante savings values included in the implementation data did not match the IPA deemed savings estimates. The evaluation team recommends that the implementation staff updates the ex ante

savings values used to estimate savings for the program. Additionally, the implementation staff should carry through with plans to improve data tracking, including:

- Requiring an invitation code for participants responding to mail and e-mail materials
- Using unique identifiers to identify future program participants
- Including results from the survey, such as installation rate, bulbs received, and wattage

These changes would make it easier to track participants through each stage of the program and would increase the accuracy of verification activities.

For the direct-mail delivery channel, a unique identifier tied to the participant's account number might reduce the number of participants receiving more than one kit, thus improving the verification rate. For both delivery channels, a unique identifier linked to the kit would help tie each kit to a participant.

# 2. Introduction

## 2.1 Program Description

The Residential Energy Efficiency Kits Program (EEKits) first became available to customers in PY6. Using the following distinct delivery channels, the program provided kits containing energy-efficient items:

- School-based delivery channel: Kits distributed to eighth-grade students and their families
- Direct-mail delivery channel: Kits distributed to Ameren Illinois Company (AIC) electric customers likely to have all-electric homes, based on customer billing research that identified high electric-use homes

Along with energy savings, the program sought to increase sales and awareness of ENERGY STAR-qualified lighting products along with other AIC energy-efficiency offerings. Program kits included an array of efficient products, listed in Table 4, as well as instructions on how customers could properly set their water heater temperatures.

**Table 4. PY6 EEKits Products**

| Product | Quantity per Kit |
|---|---|
| CFLs (13W–23W) (school-based/direct-mail) | 2/4 |
| High-Efficiency Bath Faucet Aerators | 1 |
| High-Efficiency Kitchen Faucet Aerators | 1 |
| High-Efficiency Shower Heads | 1 |
| Instructional Materials | N/A |

AIC used Conservation Services Group (CSG), Applied Proactive Technologies (APT), and Energy Federation Incorporated (EFI) to deliver the program and achieve the program's energy-savings goals. CSG implemented the program through both delivery channels, APT developed the curriculum and presented the program to eighth-grade classrooms in eligible schools, and EFI mailed branded kits and marketing materials directly to customers. CSG further developed web surveys specific to each delivery channel to verify kit item installations and to collect home characteristics specific to each delivery channel. The direct-mail participants survey also included satisfaction-based questions and probed participants to determine reasons for not installing items.

## 2.2 Research Objectives

The PY6 EEKits evaluation sought to provide estimates of gross and net electricity savings associated with the program. The evaluation's impact portion answered the following questions:

- 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 limited process evaluation explored how the program performed in its first year and answered the following process-related questions:

- What implementation challenges occurred in PY6?

- How was the program marketed?
- What participation challenges existed for school-based and direct-mail customers?
- How many kits did participants receive through each delivery channel?
- What installation rate did each measure achieve in each delivery channel?
- What program changes could improve program effectiveness?

# 3. Evaluation Methods

Table 5 summarizes the tasks the evaluation team conducted for the PY6 evaluation of the EEKits.

**Table 5. Summary of Evaluation Activities for PY6**

| Activity | PY6 Impact | PY6 Process | Forward Looking | Details |
|---|---|---|---|---|
| Program Staff In-Depth Interviews | | ✓ | | Interviewed program and implementation staff to gain insights into design, delivery, and potential next steps for the program |
| Materials Review | | ✓ | | Reviewed implementation plans, program forms, instructional materials, and spec sheets |
| Database Analysis | ✓ | ✓ | | Summarized database information to determine participation, key program statistics, and savings |
| Review of CSG Participant Surveys | | | ✓ | Reviewed CSG's participant survey data to assess installation rates and electric water heater saturation |

## 3.1 Data Collection

The following data collection activities informed the PY6 evaluation of the EEKits.

### 3.1.1 Program Staff Interviews

The evaluation team conducted two interviews with implementation staff who were responsible for managing and marketing the program, one interview with CSG staff and one interview with APT staff. These interviews explored the following:

- Program design versus program implementation
- Program strengths and weaknesses
- Outreach and marketing

### 3.1.2 Review of Program Materials and Data

The evaluation team reviewed the following program data:

- Program database
- Web-based survey questions and results
- Spec sheets for each item included in the energy-efficient kits
- Program instructional materials
- Implementation plans

## 3.2 Analytical Methods

### 3.2.1 Gross Impacts

The evaluation team used the program-tracking database to verify reported distribution of kits and to apply the pre-negotiated deemed gross savings values (IPA savings) established for the program through Docket 12-0544 (IPA filing), as shown in Table 6. The IPA filing included the deemed net-to-gross ratio (NTGR) and deemed net savings values, also reported in Table 6. The evaluation team applied the estimated water heater saturation (based on participant surveys) of 71% to Direct-Mail Delivery channel savings and 16% to School-Based delivery channel savings. Gas savings are reported separately in Appendix B.

**Table 6. PY6 Energy Efficiency Kits IPA Savings—Per Unit**

| Measure | NTGR | Gross kWh | Net kWh | Gross kW | Net kW**** |
|---|---|---|---|---|---|
| **Direct-Mail Delivery** | | | | | |
| 60W replaced by 14W CFL* | 0.710 | 31.54 | 13.88 | 0.047 | 0.002 |
| 75W replaced by 19W CFL* | 0.710 | 37.45 | 16.49 | 0.029 | 0.001 |
| 100W replaced by 23W CFL* | 0.710 | 51.25 | 22.56 | 0.033 | 0.001 |
| Shower Head: 1.75 gpm ** | 0.770 | 257.86 | 198.55 | 0.229 | 0.006 |
| Faucet Aerator ** | 0.460 | 40.71 | 18.73 | 0.660 | 0.008 |
| Water Heater Temp Adjustment ** | 0.460 | 61.71 | 28.39 | 0.005 | 0.003 |
| **School-Based Delivery** | | | | | |
| 60W replaced by 14W CFL* | 0.710 | 31.54 | 13.88 | 0.047 | 0.002 |
| Shower Head: 1.75 gpm *** | 0.770 | 57.76 | 44.48 | 0.051 | 0.001 |
| Faucet Aerator *** | 0.460 | 9.12 | 4.20 | 0.148 | 0.002 |
| Water Heater Temp Adjustment *** | 0.460 | 13.82 | 6.36 | 0.002 | 0.001 |

* CFL net savings provided by the IPA filing included a mid-life baseline adjustment of 62% unit savings. The IPA filing indicates that this adjustment is used to account for EISA standards and the associated changes in baseline wattages.
** Assumes a 71% electric water heater saturation.
*** Assumes a 16% electric water heater saturation.
**** Net kW savings provided by the IPA filing included coincidence factors.

#### Verification of Report Distribution

CSG and APT maintain a program database for school-based and direct-mail participants. The school-based database includes the following information:

- School name and address
- Principal's name
- Project ID
- Incentive amounts

- Presentation date
- Number of kits

The direct-mail database includes the following information:

- Customer name and address
- Project ID
- Delivery date
- Number of kits

The evaluation team verified participation by reviewing the project IDs, contact information, and kit counts for each delivery channel, and established that presentation dates fell within the PY6 program period. The evaluation team also verified the school-based records and counted all kits distributed through this delivery channel toward the program. The evaluation team reviewed the direct-mail records and, using customer contact information and kit counts, determined some participating households received more than one kit. The study adjusted the number of kits counted toward the program to reflect one kit per home.

### 3.2.2 Net Impacts

The evaluation team used the program-tracking database to verify reported distribution of kits and to apply the pre-negotiated deemed net IPA savings values established for this program. The evaluation team used Illinois Statewide Technical Resource Manual V.2 (TRM) to calculate gas savings (therms), which are reported in Appendix B.

### 3.2.3 Installation Rates for Future Application

The evaluation used results from the implementer survey to estimate installation rates for kit items for application in future program years and did not conduct its own participant survey to support the evaluation. The implementer asked every participant in each distribution channel to respond to a web-based survey. In total, school-based participants completed 1,135 surveys, and direct-mail participants completed 2 web-based surveys and 98 phone surveys.

## 3.3 Sources and Mitigation of Error

Table 7 summarizes possible error sources associated with data collection conducted for EEKits. We discuss each item in detail below.

**Table 7. 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 |

* Survey designed and data collected by the implementer, not the evaluator.

The evaluation team took a number of steps to mitigate potential error sources throughout the planning and implementation of the PY6 EEKits evaluation.

## Survey Error

- Web-Based Participant Surveys: Surveys to school-based participants attempted a census and therefore there technically is no sampling error. However, only two direct-mail participants completed web-based surveys, so these are considered under participant phone surveys.
- Participant Phone Surveys: In addition to the two web-based surveys completed by participants, 98 phone surveys were conducted with direct-mail participants. For these we calculate ±8.2% error at 90% confidence for the direct-mail kits (based on 100 respondents out of 6,005). Since the surveys were conducted by the implementer, we do not have information about non-sampling survey errors for this research effort.

## Non-Survey Error

- Web-Based Participant Surveys: Since the surveys were conducted by the implementer, we do not have information about non-survey errors for this research effort.
- Data Processing Errors:
  - Gross Impact Calculations: The evaluation team applied IPA-deemed savings values to participant data in the tracking database to calculate gross impacts. To minimize data processing errors, the evaluation team had separate team members review all calculations, verifying accurate performance of calculations.
  - Net Impact Calculations: The evaluation team applied the prospective deemed NTGRs (shown in Table 6) to estimate the program's net impacts. To minimize data processing errors, the evaluation team had separate team members review all calculations, verifying accurate performance of calculations.

# 4. Evaluation Findings

## 4.1 Program Description, Participation, and Delivery

The EEKits first became available to customers in PY6. Using two distinct delivery channels, the program provided kits containing energy-efficient items:

- School-based delivery channel: Kits distributed to eighth-grade students and their families
- Direct-mail delivery channel: Kits distributed to AIC electric customers likely to have all-electric homes, based on customer billing research used to identify high electric-use homes

The program design sought to provide a positive experience and to increase awareness of other AIC programs. The program targeted direct-mail participants based on results from customer billing data research, which identified households with high electric use, under the assumption that they would be likely to have electric water heaters. The program used the outreach efforts described in Section 4.2 to recruit schools.

The school-based delivery channel provided education and materials to 2,062 students from 31 different schools. The number of kits distributed to each class ranged from 13 to 185.

The direct-mail delivery channel provided 6,005 kits to customers, using energy-use data to identify those likely to have electric water heaters. The direct-mail delivery channel, originally designed to reach rural, hard-to-reach customers, was scheduled to begin in September 2013. However, program implementation was delayed to enable additional research into delivery options. Ultimately, the program evolved into a direct-mail delivery channel, using e-mail and mail delivered through the U.S. Postal Service to reach customers. Customers began receiving kits in April.

## 4.2 Process Assessment

### 4.2.1 Marketing and Outreach

The school-based delivery channel used outreach to schools, media interviews, and conference presentations to market the program and to recruit schools. Implementation staff reported that school staff also promoted the program to other schools through word of mouth.

The direct-mail delivery channel used mail and e-mail to reach customers, beginning in March 2014. Implementation staff reported using AIC's marketing materials in addition to materials created specifically for the program.

### 4.2.2 School and Customer Participation

Implementation staff reported satisfaction with the participation levels achieved during PY6 and expressed confidence in the program's future growth. Each delivery channel, however, presented unique participation challenges. The implementer identified scheduling as the greatest challenge to the school-based delivery channel. In particular, students had to leave class to attend the program presentation, which could create coordination challenges with teachers and schools. Missed school days resulting from inclement weather

added to these challenges. Nonetheless, implementation staff indicated the program remained in high demand in PY6, and schools have asked to be put on a waiting list to participate in PY7.

The implementer reported the largest challenge presented by the direct-mail delivery channel as identifying an effective message to encourage customers to request a kit through the program's website. The implementer used traditional mail and/or e-mail to make customers aware of the program and to encourage participation. The implementer noted little difference in the response rate between customers receiving only traditional mail and those receiving only e-mail, but customers receiving both generally exhibited higher response rates. The implementer also noted that the program's timing could have adversely affected participation, given that outreach began in late spring—a time with a reduced need for lighting.

### 4.2.3 Data Quality and Tracking

The implementer reported that, overall, data tracking worked well. However, development of simple unique identifiers for direct-mail kits did not occur prior to the PY6 deliveries, and the implementer had to rely on addresses to track customers. Participants receiving a mail or e-mail invitation to the program also received an invitation code that helped the program identify the customer. It was reported, however, that customers did not need to have this code to receive a kit, which made tracking challenging. In future years, school-based participant surveys will require the use of unique identifiers, as teacher and student names present privacy concerns.

### 4.2.4 Participant Surveys

The evaluation team analyzed participant-returned surveys to assess installation rates and electric water heater saturations (where possible) to provide input for future programs. These values were not incorporated into the impact analysis or used to estimate program savings for PY6.

- Direct-Mail Delivery: Of the 6,005 reported direct-mail participants, two completed a web-based survey and 98 completed phone surveys. The evaluation team noted that the survey asked participants for the total number of bulbs they installed, but did not verify the wattage of the installed bulbs.
- School-Based Delivery: In total, 1,135 of the reported 2,062 participants in the school-based program returned participant surveys. The evaluation team noted some inconsistencies, including variability in the participant responses. For example, school-based survey data indicating CFL installations included the following responses: "Yes," "No," "0," "1," and "2." A comparison of the question used on the web-based survey and the question provided with school-based participation data revealed that two versions of this question about the installation rate were used. The web-based survey asked: "How many CFLs did you install from your kit?" The question included with the survey data asked: "Installed 2 CFLs in kit?" In this case, the evaluation team assumed a "Yes" response indicated that the participant had installed two CFLs and that a "No" response indicated the participant installed zero or one CFL. The evaluation team assumed the proportion of customers installing zero or one CFL would be the same as the proportion of customers answering "0" or "1" when asked how many CFLs they had installed from their kit. The survey did not ask participants to verify their space or water heating fuel types.

### 4.2.5 Program Strengths and Success

Each delivery channel used by the program presented unique strengths or successes. The implementer reported teachers' excitement about the program and their ability to use the materials as a starting point for

future classes. Additionally, implementation staff reported that working with eighth-grade classes enabled the schools to develop experience and familiarity with the program, which encouraged participation in future years as new students enter the eighth grade.

The implementer reported satisfaction with the participant response to the direct-mail delivery channel, especially considering the later-than-anticipated program start.

## 4.3 Impact Assessment

### 4.3.1 Gross Impacts

Based on reported program participation and IPA savings values, the program achieved total gross energy and demand savings of 4,506 MWh and 17.84 MW. Table 8 shows ex ante and ex post gross impacts. The difference between reported measures and verified measures is due solely to the reduction in homes receiving multiple kits to only one kit per home. Program impacts do not include installation rates because savings are based on the deemed IPA values.

**Table 8. PY6 Program Ex Ante and Ex Post Gross Impacts**

| Measure | Reported Measures* | Verified Measures* | Per-Unit Impact | | Ex Ante Gross Impacts | | Ex Post Gross Impacts | |
|---|---|---|---|---|---|---|---|---|
| | | | kWh | kW | MWh | MW | MWh | MW |
| **Direct-Mail Delivery** | | | | | | | | |
| 60W replaced by 14W CFL | 12,010 | 11,752 | 31.54 | 0.05 | 416 | 0.04 | 371 | 0.55 |
| 75W replaced by 19W CFL | 6,005 | 5,876 | 37.45 | 0.03 | 146 | 0.01 | 220 | 0.17 |
| 100W replaced by 23W CFL | 6,005 | 5,876 | 51.25 | 0.03 | 217 | 0.02 | 301 | 0.19 |
| Shower Head: 1.75 gpm | 6,005 | 5,876 | 361.00 | 0.32 | 1,191 | 0.04 | 1,515 | 1.35 |
| Faucet Aerator | 12,010 | 11,752 | 57.00 | 0.92 | 256 | 0.25 | 478 | 7.75 |
| Water Heater Temp Adjustment | 6,005 | 5,876 | 86.40 | 0.01 | 259 | 0.03 | 363 | 0.04 |
| **Subtotal** | **48,040** | **47,008** | – | – | **2,485** | **0.40** | **3,248** | **10.05** |
| **School-Based Delivery** | | | | | | | | |
| 60W replaced by 14W CFL | 4,124 | 4,124 | 31.54 | 0.05 | 143 | 0.01 | 130 | 0.19 |
| Shower Head: 1.75 gpm | 2,062 | 2,062 | 57.76 | 0.05 | 65 | 0.00 | 119 | 0.11 |
| Faucet Aerator | 4,124 | 4,124 | 9.12 | 0.15 | 14 | 0.01 | 38 | 3.81 |
| Water Heater Temp Adjustment | 2,062 | 2,062 | 13.82 | 0.002 | 14 | 0.00 | 29 | 0.02 |
| **Subtotal** | **12,372** | **12,372** | – | – | **236** | **0.03** | **316** | **4.13** |
| **Total**** | **60,412** | **59,380** | – | – | **2,721** | **0.43** | **3,563** | **10.97** |

* Participants multiplied by number of units provided in kits.
** Measures may not add to totals due to rounding.

### 4.3.2 Net Impacts

Based on verified program participation and IPA net unit savings, the program achieved total net energy and demand savings of 2,126 MWh and 0.20 MW. Table 9 shows the net savings results by measure.

**Table 9. PY6 Total Program Net Savings by Measure**

| Measure | Ex Ante Net Savings (MWh) | Ex Ante Net Savings (MW) | Ex Post Net Savings (MWh) | Ex Post Net Savings (MW) |
|---|---|---|---|---|
| **Direct-Mail Delivery** | | | | |
| 60W replaced by 14W CFL | 366 | 0.036 | 163 | 0.023 |
| 75W replaced by 19W CFL | 128 | 0.013 | 97 | 0.007 |
| 100W replaced by 23W CFL | 191 | 0.019 | 133 | 0.008 |
| Shower Head: 1.75 gpm | 976 | 0.036 | 1,167 | 0.033 |
| Faucet Aerator | 187 | 0.182 | 220 | 0.091 |
| Water Heater Temp Adjustment | 259 | 0.029 | 167 | 0.019 |
| **School-Based Delivery** | | | | |
| 60W replaced by 14W CFL | 126 | 0.012 | 57 | 0.008 |
| Shower Head: 1.75 gpm | 54 | 0.004 | 92 | 0.003 |
| Faucet Aerator | 10 | 0.005 | 17 | 0.007 |
| Water Heater Temp Adjustment | 14 | 0.002 | 13 | 0.001 |
| **Total*** | **2,312** | 0.34 | **2,126** | 0.20 |

* Measures may not add to totals due to rounding

## 4.4 Conclusions and Recommendations

After a slower-than-anticipated start, the PY6 EEKits successfully delivered a combined 7,938 kits to student and customer participants. Additionally, in its first year, the program researched effective methods of encouraging direct-mail participants to engage with the program and established relationships with schools that may increase future program subscription. While AIC anticipates that participation will increase as the program ramps up and implementation staff are satisfied with the program, the evaluation team has identified the following recommendations for future program years.

### 4.4.1 Consider Conducting an Extensive Process Evaluation

While reported to work well, after its first year, the program would benefit from a process evaluation, designed to help the EEKits identify opportunities for the program to enhance participant experience and encourage greater installation and use of energy-saving items. A process evaluation for the EEKits should include the following:

- Gaining a better understanding of program processes

- Assessing participant satisfaction
- Determining reasons for lower installation rates
- Assessing persistence of measure installation
- Identifying survey improvements

### 4.4.2 Consider Modifying the Survey Instruments

The implementer's participant surveys included questions that could help estimate energy savings associated with the program. The implementer made the survey available immediately after participants received their kits. The evaluation team recommends adopting the following adjustments to achieve greater accuracy and to improve future impact analysis:

- Capture installation rate for each CFL wattage
- Determine if participants adjusted water heater temperatures up or down
- Determine fuel saturation for all participants
- Allow sufficient time to pass before checking installation rates
- Ensure greater consistency between the school-based and direct mail participants web-based surveys

### 4.4.3 Improve Data Management and Continue with Plans to Improve Data Tracking

The evaluation team recommends the implementation staff update the ex ante savings values used to estimate savings for the program. Additionally, the implementation staff should carry through with plans to improve data tracking, including:

- Requiring an invitation code for participants responding to mail and e-mail materials
- Including results from the survey, such as installation rate, bulbs received, and wattage
- Using unique identifiers to identify program participants.

These changes would make it easier to track participants through each stage of the program and would increase the accuracy of verification activities. Further, for the direct-mail delivery channel, a unique identifier tied to the participant's account number might reduce the number of participants receiving more than one kit, thus improving the verification rate. For both delivery channels, a unique identifier linked to the kit would help tie each kit to a participant.

# 5. Inputs for Future Planning

To inform future program planning, the evaluation team reviewed the participant-returned survey data to verify measure installation rates and, where possible, saturations of electric water heaters. With 100 surveys returned, the direct-mail surveys achieved a maximum error of ±8.2% with 90% confidence, and, with 1,136 school-based surveys returned, the program achieved a maximum error of ±1.2% with 95% confidence.

Table 10 shows installation rates for each measure and the electric water heater saturation for the direct-mail delivery channel. Due to the generally short time between receiving energy-efficiency kits and completing the web-based survey, participants will likely continue to install items over time.

**Table 10. PY6 EEKits Installation Rates and Electric Water Heater Saturation**

| Measure | Direct-Mail Delivery | | School-Based Delivery | |
|---|---|---|---|---|
| | N | Installation Rate | N | Installation Rate |
| 60W replaced by 14W CFL (Qty 2) | 100 | 66% | 1,008 | 61% |
| 75W replaced by 19W CFL | | 66% | – | – |
| 100W replaced by 23W CFL | | 66% | – | – |
| Shower Head: 1.75 gpm | 100 | 41% | 1,008 | 47% |
| Faucet Aerator (Kitchen) | 100 | 51% | 992 | 42% |
| Faucet Aerator (Bath) | 100 | 47% | 1,007 | 43% |
| Water Heater Temp Adjustment | 100 | 34% | 1,006 | 22% |
| Electric Water Heater Saturation | 100 | 71% | – | – |

# A. Appendix: Data Collection Instruments

**AIC EEKits Process Evaluation**

**PY6 Interview Guide**

**Researchable Questions Mapped to Interview Guide**

| Researchable Question | Indicators/Areas of Investigation | Questions |
|---|---|---|
| A. Is the program meeting its goals? | • Overall EE program goals vs. EEKits goals<br>• Delivery channel goals<br>• Program participation and savings<br>• Other goals for program – current and future | 1,2,3,4 |
| B. Are program design and implementation processes effective? | • Effective communication between implementer and AIC<br>• Reasons for program changes and impacts so far<br>• Participant program process | 0,5,6,7,8,14,17 |
| C. What challenges to implementation exist? | • Potential improvements to implementation process and components | 7,8,11,13,15,16 |
| D. What challenges to participation exist? | • PM/implementer views on barriers to participation generally | 11,13,15,16 |
| E. How is the program marketed? | • Marketing materials – use and changes<br>• Feedback from distributors to PMs re inventory and % of EE units | 9,10 |
| F. What are verified savings | • How is savings verified for this program and are results meeting expectations? | 12 |

| | |
|---|---|
| **Name of Interviewee, Title:** TBD | **Date:** TBD |
| **Program: EEKits** | **Utility: Ameren Illinois** |

### Interview Introduction

The following questions are designed to help the evaluation team gain insight to how the AIC EE Kits program is being implemented on the ground and what has been the experience of program managers and implementers during PY6. We will ask questions about program status with respect to goals, design and implementation effectiveness, participation barriers and future expectations. This interview will provide key inputs that the process evaluation team can use to answer key research questions. It is not meant to be an individual evaluation or report on your performance. However, your valuable insights are much appreciated and we hope that you will be as open as possible in sharing your views on how the program is working and how it can be improved. **[We would also like to tape this interview just for the purposes of correcting notes, please let us know if that is OK].**

| | Program Status vs. Goals | |
|---|---|---|
| 0 | Role of PM, APT, CSG, EFI<br><br>• Responsible for what tasks? (Design, marketing, implement, customer and contractor management, reporting, etc.).<br>• What kind of reporting provided to AIC | • (For each interviewee) What are your main responsibilities for Ameren Illinois' EEKits Program? What tasks do you regularly spend the majority of your time on? |
| 1 | What are the overall goals of the Ameren EE programs? How does EEKits fit into that?<br><br>• Why was the EEKits program chosen as an IPA program?<br>• What are the plans for this program forward?<br>• Are you meeting your goals? | |
| 2 | The program is only claiming energy savings for one behavior change, the water heater temperature adjustment from the school based delivery channel.<br><br>• Why is savings for this behavior not being captured for the rural kits delivery channel?<br>• Has consideration been given to other energy saving behaviors such as space temperature adjustments, unplugging electronics, washing clothes in cold water, etc.? | |
| 3 | What about "soft goals"? How do you think these are going?<br>• Increased awareness<br>• Satisfaction | |

| | | |
|---|---|---|
| 4 | In your opinion, how has the program performed so far in PY6 (in terms of both process and savings/participation goals)?<br><br>Why do you think this is? | |
| | **Program Design, Management, and Implementation** | |
| 5 | How are decisions made to change design/kits? (How often meet to discuss progress, make changes?) | |
| 6 | Can you take me through the program process from start to finish for the school based delivery channel? For the rural kits delivery channel? | |
| 7 | **(For Utility PMs)** What has been your experience working with the implementation and administration contractors? What are they doing well? What could be improved?<br><br>• Is the program functioning smoothly?<br>• Is data tracking sufficient for your needs?<br>• Customer management-complaints response<br>• Is communication and reporting about the program satisfactory?<br>• Website management?<br>• Training management?<br>• Marketing?<br>• QAQC/verification of installations?<br>• Is there a program manual? If so, could you send it to us? | |
| 8 | **(For Implementation/Admin Partner)** What has been your experience working with the utility? Are they providing adequate support/information for you to implement the program?<br><br>• Is the program functioning smoothly?<br>• Is communication and feedback from the utility satisfactory? | |
| | **Program Marketing** | |

| | | |
|---|---|---|
| 9 | Is there a marketing plan? | |
| 10 | How do you market the program?<br><br>• School based<br>• Direct mail<br><br>Have marketing efforts been successful?<br><br>• How do you track results of marketing efforts?<br>• Cross-program marketing? (HEP referrals?) | |
| | **RESULTS: School and Customer Participation** | |
| 11 | • What participation challenges exist for school-based and direct mail customers? | |
| 12 | • How are savings verified for this program?<br>• Was the follow-up survey was effective?<br>• What kind of response rate did you receive?<br>• Have results been what you expected?<br>• When will participant data be available to Cadmus? | |
| 13 | What outside influences do you believe may be impacting participation (e.g. economy, other programs, tax incentives, weather) this year? | |
| | **General Achievement and Future Challenges** | |
| 14 | Please describe any major successes so far for the program this year? | |
| 15 | What do you expect to be the biggest challenges going forward? Barriers to participation? | |
| 16 | What are your future plans for this program? | |

| | | |
|---|---|---|
| 17 | How can our evaluation be made more useful to you? Our recommendations? | |

Before wrapping up do you have any final questions or comments about the program that you want to ask or share?

Thank you very much for taking the time to assist us with this evaluation. Your contribution is a very important part of the process. Do you mind if we follow-up with your by phone or e-mail later, if additional questions arise?

# B. EEKits Gas Savings

The evaluation team calculated program gas savings (therms) using Illinois Statewide Technical Resource Manual V.2 (TRM) deemed savings values, IPA-approved NTG ratios established through Docket 12-0544, deemed (school-based delivery) and participant reported (direct-mail delivery) water heater saturation rates, participant reported installation rates, and verified measure counts. Table 11 shows these values for each gas saving measure delivered through the direct-mail and school-based delivery channels.

**Table 11. PY6 EEKits Gas Savings Assumptions and Variables**

| Measure | TRM per unit gas savings (therms) | IPA NTG | Direct-Mail Delivery | | | School-Based Delivery | | |
|---|---|---|---|---|---|---|---|---|
| | | | Verified Measures | Gas Saturation | Installation Rate | Verified Measures | Gas Saturation | Installation Rate |
| Shower Head: 1.75 gpm | 10.78 | 77% | 5,876 | 29% | 41% | 2,062 | 84% | 47% |
| Faucet Aerator (Kitchen) | 4.77 | 46% | | | 51% | | | 42% |
| Faucet Aerator (Bath) | 1.21 | 46% | | | 47% | | | 43% |
| Water Heater Temp Adjustment | 6.40 | 46% | | | 34% | | | 22% |

Table 12 shows the net savings results at the measure level. The program achieved total net gas savings of 33,832 therms.

**Table 12. PY6 Total Program Net Savings by Measure**

| Measure | Ex Ante Net Savings (therms) | Ex Post Net Savings (therms) |
|---|---|---|
| **Direct-Mail Delivery** | | |
| Shower Head: 1.75 gpm | 41,513 | 5,717 |
| Faucet Aerator* | 8,335 | 7,216 |
| Water Heater Temp Adjustment** | 19,216 | 4,943 |
| **School-Based Delivery** | | |
| Shower Head: 1.75 gpm | 11,974 | 6,822 |
| Faucet Aerator* | 9,617 | 4,036 |
| Water Heater Temp Adjustment** | 5,543 | 5,099 |
| **Total** | **96,197** | **33,832** |

* Reflects weighted average of TRM savings for each faucet type based on participant reported installation rates.

** TRM specifies interactive effects for this measure at -34.2 kWh. Accounting for IPA-approved NTG, verified participation, and gas water heater saturations, this results in negative ex post net savings of -26.4 MWh for the direct-mail delivery channel and -27.2 MWh for the school-based delivery channel. The evaluation team used IPA savings values to calculate electric savings for this program.

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