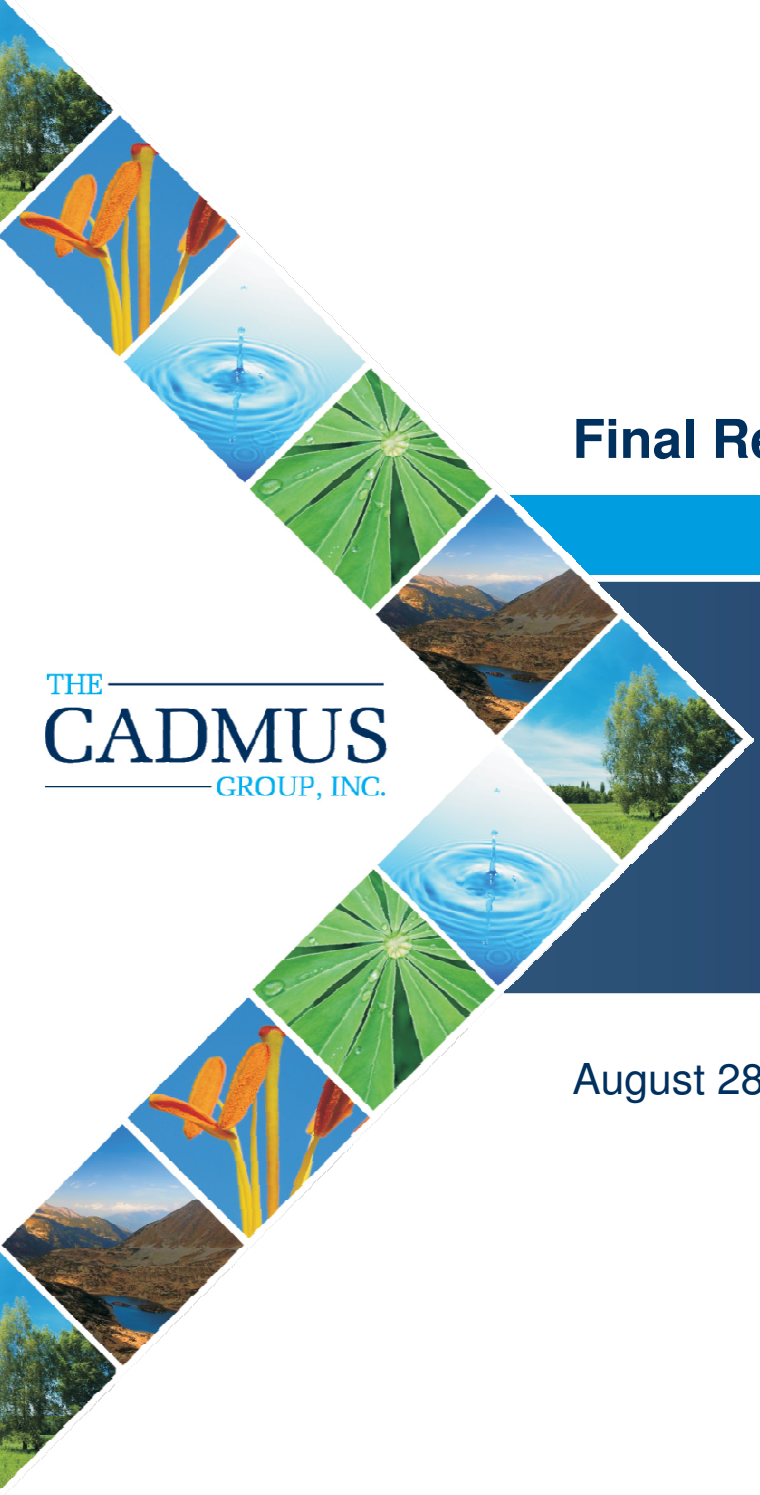

THE CADMUS GROUP, INC.

Final Report

Colorado Energy Savings Kits Program Evaluation

August 28, 2012

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Table of Contents

1. EXECUTIVE SUMMARY

Xcel Energy's (XE's) Colorado Energy Savings Kit (ESK) Program offers natural gas and electric energy-efficient measures to low-income households. The kits contain six compact fluorescent lamps (CFLs), two low-flow faucet aerators, and an efficient showerhead. The kits are provided without cost to low-income XE residential customers.

XE contracted with The Cadmus Group, Inc. to conduct an evaluation of this program. While conducting the process evaluation, Cadmus considered energy impacts. Because the program is a give-away program and serves low-income customers, it was not necessary to estimate a net-to-gross ratio as part of the evaluation. Cadmus collected data on spillover to provide feedback on how the program is transforming the market for these measures.

Evaluation Objectives

Cadmus focused our evaluation efforts for this program on the following defined tasks and objectives:

Task 1. Conduct Project Initiation Meeting and Present Evaluation Plan
Objective: *To provide a forum for program staff to discuss the evaluation goals, clarify basic research and analyses methods, identify data required from Xcel Energy, and finalize the project schedule timeframe.*

Task 2. Internal Review/Development of Logic Model
Objective: *To obtain a description of the internal workings of the program and identify any problematic issues or areas that might impact the data collection or analysis of the program.*

Task 3. Primary Research: Participant Surveys
Objective: *To assess program satisfaction, exposure to marketing, market barriers, spillover, and customer input on market transformation.*

Task 5b[1]. Measure Spillover Savings Attributable to the Program
Objective: *To employ methods for best estimates of program spillover attribution.*

Task 6. Peer Utility Benchmarking
Objective: *To identify specifics of the ESK programs offered by peer companies.*

Task 7. Progress Reporting
Objective: *To provide monthly/weekly progress reports to Xcel Energy to communicate the progress and any challenges, including their resolutions.*

Task 8a, 8b, 8c. Draft Report/Executive Summary(s), Final Report, Results Presentation
Objective: *To provide a report of findings including recommendations from the evaluation.*

[1] The task numbering is consistent with tasks numbering for other program evaluations conducted for Xcel Energy. However, since not all of the pre-defined tasks were required for this evaluation, the task numbers are not sequential.

Key Findings

Findings for the data collection tasks are summarized below.

Task 2: **With input from XE, Cadmus developed an interview guide and conducted interviews with program staff and implementing agencies. Based on these interviews, we created a process flow diagram (**

Figure 1, page 18) and a logic model (**Error! Reference source not found.**, page 20) that document how the program is delivered to customers, as well as the program inputs, outputs, and expected outcomes.

XE staff members articulated a clear vision and goals for the program. Although the program has effectively met savings and participation targets in the past, key challenges included recruiting a large enough group of eligible customers that were income-verified; increasing the rate of return for the business reply card (BRC); and increasing the kit measure installation rate. Prior to Cadmus' evaluation, XE staff members had already identified several improvements for the 2012 program and were redesigning the BRC, kit packaging, and installation instructions.

XE staff members described a kit delivery method used in 2011 that was different from past methods. After the first BRC returns came in, XE determined the number requesting kits was not large enough to fulfill savings targets. Rather than send the same BRCs to a new group of eligible customers, XE sent a revised postcard that announced that they would be receiving a kit and offering an opportunity to opt out of receiving a kit. The kits were then distributed to all the eligible households that did not opt out.

Task 3: With input from XE, Cadmus designed a survey for participating customers. Cadmus contracted with Gilmore Research Group (GRG) to conduct these telephone surveys with a large sample of customers (n=401) who stated they had received the kit. Some high-level results of the survey are as follows (outlined in more detail in the following sections):

1. **Participation Motivation:** Just over one-third (35%) of respondents said they did not request a kit. Two important motivations for participants that did request a kit were the opportunity to save on energy bills and the connection many participants have with the Low-Income Energy Assistance Program (LEAP) and other low-income assistance agencies. This connection with LEAP and other agencies made them aware of the kits and in many cases agency personnel encouraged them to request and use the kit.
2. **Participation Barriers:** Many respondents (41%) indicated having difficulty saving energy in their home. A common barrier they mentioned is the challenge of involving other household members in saving energy.
3. **Program Awareness:** Program efforts to redesign the kit packaging and information materials in 2012 were warranted, given the confusion 2011 participants expressed over who sent the kits. Over one-third (36%) of respondents in 2011 did not know the kit had come from XE before opening it.
4. **Customer Education:** Respondents reported that their familiarity with ways to save energy in their homes increased after receiving the kit. Although the kit contributed to this increase, many recipients also suggested providing more information in the kit, online, and in bill inserts.
5. **Satisfaction:** Overall, recipients were very satisfied with their kit. Concerns about individual kit measures focused on the aerators not fitting existing plumbing and reluctance to give up a hand-held shower attachment.
6. **Installation:** The installation rates as reported by respondents are in line with installation rates verified through other methods. One way that installation rates could be improved,

however, is by providing information with the kits to alleviate renters' concerns about altering or damaging property.

7. **Kit Measures**: Because respondents had a variety of cooling equipment types and about one third (30%) had no central cooling system, cooling measures are not likely a priority for additional and/or alternative items to include in the kits. Weatherstripping equipment and motion sensors were two additional kit items in which respondents expressed interest.

Task 5b: During the evaluation planning phase, Cadmus recommended that XE use an assumed NTG value of 1.0 for the ESK Program. This is consistent with the Colorado Public Utilities Commission policy for low-income programs. XE adopted this recommendation, and as a result we did not calculate a NTG ratio for this evaluation.

We did, however, collect spillover data to be considered for future planning. Survey respondents reported installing130 energy efficient measures that could be attributed to ESK Program influence. Although the plausibility of the kit influencing an investment in some of the measures reported may be questioned, Cadmus calculated an additional 37% of savings that could be attributed to the ESK Program as spillover.

Task 6: Cadmus completed a benchmarking study to compare the ESK Program design elements to those of other income-eligible kit programs from 2004 to 2010 across the United States and Canada. Cadmus analyzed similar programs in Colorado, Iowa, Maryland, New Mexico, Oregon, Wyoming, and British Columbia. Some high-level results are as follows (see the Benchmarking Analysis chapter for more details):

- Six of the seven programs reviewed utilized a mailing delivery method similar to XE's. Some of the comparison programs also employed additional delivery methods such as workshops and direct installation.
- Most of the comparison programs had similar eligibility requirements and used LEAP funding or Low-Income Home Energy Assistance Program (LIHEAP) funding as one identifier for eligibility. Unlike XE's program, however, some of these other programs used additional methods and partnerships to identify and recruit recipients.
- XE's kit measures were similar to comparison program kits, but XE provides the most CFLs per kit (6 in 2011 and 8 in 2012). Other programs also provided additional measures, such as window sealing kits and weatherstripping tape. Table 9 shows a comparison of kit measures.
- XE has highest participation level, distributing far more kits (total volume) than any other program. Table 14 shows participation levels for XE and the comparison programs.
- Other utilities claimed higher per-kit savings for natural gas measures. A comparison of savings values is available in Table 11.
- XE's installation rates are comparable to comparison program installation rates for CFLs and showerheads. XE's installation rate for aerators is somewhat lower than other programs. A comparison of installation rates is available in Table 12.

Recommendations

Cadmus has the following program recommendations based on our analysis of data collected for this evaluation. Recommendations are combined when similar suggestions came from different data collection activities.

1. **Consider additional ways to market the program through LEAP, local assistance agencies, and the Low Income Weatherization Program.** If these other agencies and programs are already screening customers for low-income eligibility, participation in the ESK Program could be increased with additional opt-in coordination. This coordination could also help with installation challenges faced by disabled customers. If the number of eligible participants generated from the energy assistance recipients does not provide a large enough sample to achieve program participation and savings goals, XE could consider the following supplemental methods for participant recruitment:
    a. XE could partner with social service agencies and/or non-profit organizations throughout the Colorado service territory to distribute energy-saving kits to the low-income customers they serve.
    b. XE could consider targeting buildings owned by the Department of Housing and Urban Development (HUD) or those on the Department of Energy's (DOE's) HUD-approved list of qualifying buildings.
    c. Consider methods that allow customers to self-identify their eligibility.
2. **Consider measuring whether kit recipients' awareness of XE as the source improves with the redesigned packaging introduced in 2012**. This could be added to XE's annual verification survey.
3. **Consider enhancing the educational/informational materials included in the kits.** The kits could include family-oriented materials that engage children and whole families in saving energy; behavioral energy-saving tips; rebate and other XE DSM program information; benefits of and how to set a programmable thermostat; and general maintenance information for heating and cooling equipment.
4. **Consider additional research to quantify savings achieved through behavior change influenced by the energy education component of the ESK Program**.
5. **Consider exploring the costs and benefits of providing education through workshops.** Although this delivery method may increase program costs, it may also increase installation rates and savings.
6. **Consider suggestions for improving the installation rates**, such as enhancing information about equipment settings and maintenance, and connecting the measures to expected energy savings.
    a. Explore possible causes for the large percentage of customers that said they had not received a kit.
    b. **Explore faucet aerator compatibility issues.** Consider offering information about faucet aerator adaptors and how to obtain one if the kit aerator does not fit the recipient's faucet.

7. **Consider exploring additional innovative electricity-saving measures to include in the energy-saving kits.** Consider including alternative measures to achieve significant electric savings impacts:

   a. **Weatherstripping measures**

   b. **Coupons/vouchers for** smart power strips

   c. **Coupons/vouchers for** lighting controls.

   Kit measures that were evaluated and excluded at the start of the program may have value in the future as the baseline and technologies change.

2. INTRODUCTION

This report provides Cadmus' evaluation findings for XE's Colorado ESK Program. This program offers education and energy-efficient equipment to low-income households.

This chapter describes Cadmus' evaluation methods and data collection activities and provides a report overview.

Research Methods

Cadmus conducted data collection activities from February 23 through June 22, 2012. These activities focused on gathering inputs to inform the process evaluation. Our research approach for evaluating the program consisted of the following activities:

- Review of XE's program materials and participant database
- Primary data collection via surveys and interviews with the following market actor groups:
  - Program staff (XE staff n=6, implementer staff n=2)
  - Participants (n=401)
- Benchmarking of comparable energy savings kit programs (n=7)

Subsequent chapters provide additional details regarding the methodologies for each evaluation task.

Report Overview

This report is organized into the following chapters:

- Chapter 3 presents the program description, history, and design.
- Chapter 4 presents the results from program staff interviews.
- Chapter 5 presents the results from the participant surveys, as well as a spillover analysis.
- Chapter 6 provides the program benchmarking results.
- Appendix A includes the participant survey.

3. PROGRAM DESCRIPTION

XE's ESK Program provides income-qualified customers with a kit containing energy-saving devices and educational information on additional energy-saving actions they can take to reduce their energy bills.

XE mails an offer to income-qualified customers informing them of their eligibility to receive a free Energy-Savings Kit. Interested customers return a pre-paid BRC to the third-party program implementer. Customers generally receive their kit within six to eight weeks of mailing the BRC.

The 2011 Energy-Savings Kits included the following electric and natural gas efficiency measures:

- High-Efficiency Showerhead (1.5 gpm)
- Kitchen Aerator (1.5 gpm)
- Bathroom Aerator (1.0 gpm)
- Four 14-Watt CFLs (60-watt equivalent)
- Two 19-Watt CFLs (75-watt equivalent)

The program was designed in 2008 for low-income customers in XE's Colorado service territory, and was launched in 2009. XE worked with an external consultant in 2009 to determine the best kit measures to include for Colorado customers. This program operates in addition to XE's income-qualified single family and multifamily weatherization programs, a similar kit program for school children, and a showerhead and lighting program for all customers regardless of their income.

To be eligible for the ESK Program, customers must have applied for the LIHEAP or LEAP Program through the State of Colorado. The State provides a list of LIHEAP and LEAP participants to XE, who then applies assistance funding through the XE customer billing database. Each year, XE generates a list of qualified customers from their database and mails out free kit offers to new potential participants.

Originally, the program design team noticed the success of the school kits and created the Energy-Savings Kit for low-income customers to expand savings opportunities with this customer group. The expectations and goals for program participation were initially set very high, and did not account for the difficulty in obtaining a list of low-income qualified customers. The Governor's Energy Office (GEO) indicated they could provide a list of income-qualified customers, so XE partnered with GEO as the first program implementer. As the program launched, however, the GEO was not as successful at producing lists of LIHEAP and LEAP customers as they first anticipated. XE then decided to work with the Mile High Youth Corps (MHYC) instead, and awarded them the 2010-2011 implementation contracts.

4. PROGRAM STAFF INTERVIEWS

This chapter summarizes the findings from interviews with program stakeholders at XE, MHYC, and Energy Federation Incorporated (EFI), who are responsible for delivering program services.

Market Actors

Cadmus conducted interviews in March and May 2012 with the following program stakeholders:

- XE program manager (PM): Stephanie Doyle
- XE CO residential programs manager: Kate Warman
- XE regulatory staff member: Neil Cowan
- XE energy-efficiency engineers: Drew Quirk and Bruce Boerner
- XE corporate communications staff member: Billy Draper
- MHYC energy program director: Joe Pereira
- EFI 2012 ESK Coordinator: John O'Connell

Program Vision and Goals

The overall objectives of the program are to increase low-income customers' awareness of energy efficiency and low-income energy-efficiency programs, and to educate participants on the benefits associated with the energy-saving items provided in the kits. Increased awareness and education leads to program participation and energy savings for the customer and for XE.

Participation and energy savings are the key program goals. Participation numbers have declined over the past two years because the list of eligible low-income customers that have not already received a kit have also declined. The PM uses an energy calculator to determine the amount of savings achievable per kit. XE then uses the savings goals to determine the number of kits that need to be distributed. The PM indicated that XE needs to find more participants in order to meet the annual goals.

Kit measure savings are attributed based on the type of fuel the customer receives from XE. Customers that use both gas and electric service from XE are counted toward participation and savings for both gas and electric measures. In 2011, XE sent kits directly to some eligible customers rather than requiring them to reply to the BRC. This resulted in a lower installation rate of the kit contents.

The second program goal is to educate customers on energy-saving actions they can take in their homes. In 2011, the kit included a brochure promoting the Low-Income Weatherization Program and indicated that the customer is eligible for a kit. This created confusion for some customers who thought they could receive a second kit. XE's intention was to provide a brochure that could promote both the Weatherization program and the Kits program, as eligibility requirements were the same for both programs. The 2011 kits also included a *60 Simple Ways* brochure outlining energy-saving tips; however, not all of these tips were appropriate for the low-income audience.

The PM is currently developing new materials that focus energy-saving tips on low-cost actions. The kit does not include a BRC or Website for customers to report their installation rates.

Roles and Responsibilities

The PM sets up and manages the program budget, works with corporate communications to design collateral materials for the kit, manages relationships with the printing and shipping vendors, manages program participation tracking, responds to customer issues, coordinates the M&V process, provides energy savings forecasting, and verifies that program savings are correct. The current PM was a marketing assistant for the program, but in January 2012 became the PM when the previous PM was promoted.

The PM workload varies according to the time of year. On average, the PM role takes a couple of hours per week, but it currently requires more hours because the PM and other team members are revising the installation guide and kit educational materials.

XE also provides call center Personal Account Representatives (PARs) for low-income customers. As these customers are often at risk for defaulting on their energy bill payments, the PARs can provide payment options and connect customers to resources, such as LIHEAP. PARs, however, do not directly screen customers for energy assistance eligibility, so they are not in a position to refer customers to receive a kit.

The program implementer manages the kit assembly, shipping, procurement, general logistics, and reporting processes. MHYC implemented the program in 2010 and 2011, and it is implemented by EFI in 2012. The MHYC hires 18 to 24 year olds who are associated with the Americorps program for a variety of projects. Assembling Energy Savings Kits is one of several tasks these youth corps performed. This employment model is a fee-for-service approach that provided job skill development as a service to the community.

Communication

Due to the sporadic time requirements of the program, communication between stakeholders occurs as needed. Recent turnover in corporate communications staffing resulted in some loss of institutional memory with past program design and communications decisions, but also created a fresh perspective for changes already planned.

XE determines the program participation and savings goals through the regulatory filing process. Each filing is subjected to many layers of internal review and input. Engineering staff determine the savings for each kit measure, and they built a calculator that provides a specific savings value for each participant. When the filings are complete and accepted, XE communicates the goals for all their programs in an overarching document.

XE's corporate communications staff have a formal process for implementing new program materials. The process begins with a brief completed by the PM describing the concept and goals for the new materials. The design team meets with the PM to discuss the brief, then communicates the project status and asks questions as needed.

The MHYC indicated that they had a good communication process with XE. They knew they would be shipping kits two to three times per year and could expect communication and check-ins in the weeks leading up to the shipping periods.

Program Processes

The ESK Program now uses the XE billing system (CRS) to identify customers that receive energy assistance. As LIHEAP qualification is a requirement for energy assistance, any customers that receive energy assistance also qualify for an Energy-Savings Kit. CRS updates the list of energy-assisted customers each November through April based on assistance requests during the heating season. XE generates a list of the qualified customers each April, and compares that list to customers that previously received a kit. Each qualifying household is eligible for one kit every five years, a time period that XE selected based on the measure life of the kit contents. XE then produces and mails the BRCs, and sends the list of eligible customers to the implementer for tracking purposes.

The implementer receives and processes the BRC replies, tracking which eligible customers requested a kit. They then ship a kit to each requesting customer and provide XE with the list of customers that received a kit.

The process for making design changes to kit materials begins with the PM completing a project brief. This is a two-page form describing the project background, business objectives, desired response, single most important message, messaging hierarchy, supporting rationale, the program offer, target audience, test strategy, metrics, results, and creative direction. The PM meets with the design team to discuss the brief and produce a delivery schedule. The design team submits a design request that is reviewed by the team manager and other reviewers. The team manager then issues the project design change opportunity to the team or assigns the project to one of the team members. Once the change has been approved and designed, the team generally requires seven days to complete it. This timing may vary depending on technical issues associated with the printer.

Program Implementation

XE worked directly with the energy program director at MHYC in 2010 and 2011 (EFI is the program implementer in 2012). XE staff determine the number of kits needed based on the savings goals and number of eligible low-income households. They provide this number to the implementer to initiate kit assembly.

The implementer receives specific kit orders from XE in bulk to enable a bulk shipping discount. Typically in 2010 and 2011, the MHYC produced kits for two to three distributions over a six month time frame. XE then provides the implementer with the mailing list of eligible customers. The implementer mails the cards to each customer on the list. Interested customers return the BRC to the implementer with pre-printed contact information. The implementer then processes the reply cards and ships kits to those that responded.

Occasionally a kit is returned as undeliverable. The implementer either relabels the kit and sends it to a new recipient, or they send it back to the original street address with a corrected name or general resident designee.

The MHYC described a positive working relationship with XE. This relationship developed from MHYC having the freedom to design their own processes around the goals XE provided. XE directed very little of the initial implementation plan. The MHYC developed the original kit item installation instructions, and later XE developed their own branded installation and education materials to supplement the kit items.

The new implementer, EFI, has yet to initiate the implementation process in 2012. At the time of the interview, the kit packaging materials were in final design stages. EFI had inventory ready for shipment and processes in place to address the expected requests. Once the BRCs are mailed to customers and received by EFI, they planned to implement a similar process as described by the MHYC.

One additional service EFI proposed was to use an online response option. This is generally more appropriate with an e-mail based audience, and can include reminders and individual customer calls if needed. EFI has found this method to be effective at generating a higher response rate with other programs that have available e-mail addresses.

Participation Barriers and Challenges

The PM's primary challenge has been identifying enough low-income qualified customers to meet the program participation and savings requirements. XE staff find the low-income customer qualification method limiting as defined in the program design. They would like to explore the possibility of working with community and assistance organizations to identify and qualify additional low-income customers.

Even with a sufficient list of qualified customers, only approximately 30% return the BRC requesting a kit. Staff reported that some customers do not understand the need for energy conservation or do not trust XE's motivation to help them save energy. These beliefs may prevent some customers from responding to the offer. In 2011, XE included an offer on the BRC for an energy-efficient appliance package drawing to increase motivation.

In 2011, the PM chose an opt-out approach to increase participation. Rather than requiring a returned BRC, postcards were sent to eligible customers announcing that they would be receiving an Energy-Savings Kit from XE and providing them the choice to opt-out of receiving the kit. The kits were then sent directly to the eligible customers. The implications of this approach are discussed in the Participant Surveys chapter.

Another program challenge is getting customers to install the kit contents. The reasons recipients do not install measures are varied. Staff reported that some households might only install one or two items provided in the kit. The kit contains a bilingual installation guide and a DVD that demonstrates how to install each measure. Because the energy savings are relatively small on a monthly basis, some customers simply do not make the connection between the kit measures and the savings they might receive on their bill. To address one of the barriers to installing the showerhead, the kit now includes a small roll of Teflon tape.

Some kits never reach the intended customer. This program challenge could be caused by several and varied reasons: the kit is lost in the mail, the recipient has a post office box that does not enable receipt of packages, the customer moved/changed addresses, or the kit was left outdoors

and may have been lost or adopted by a neighbor. XE staff mentioned that some customers said they did not realize the package was the kit they requested, and they disposed of it.

Marketing

The primary marketing goal for the program is for customers to send back the BRC. The marketing objective is to provide an attractive offer that motivates customers to reply and have interest in a kit. Ultimately, XE also wants kit recipients to install the kit contents.

Because customers are qualified through LIHEAP or LEAP, they do not have the opportunity to self-identify as low-income or request a kit directly. At this time, XE does not promote the program through any other marketing channel.

XE staff have explored alternatives for identifying low-income customers on a limited basis. One suggested approach is to look at U.S. Census Bureau data to identify geographic areas with a concentration of low-income households. While this may be a viable approach, it would also require substantial time and effort to match the Census data with customer billing records and then screen out previous kit recipients. XE staff are pursuing this approach in this 2012 program year. Other methods the team has entertained include targeting food stamp recipients and Toys for Tots events, and working with community agencies that serve low-income households. XE staff hope to develop new ways to identify low-income prospects in the coming year.

XE corporate communications staff work together on a design team to create effective kit items, from the BRC to kit packaging and contents. The design team is currently working with their printer to understand the precise design specifications for redesigned items in 2012.

Data Tracking/Reporting

XE is currently changing their DSM program tracking database from RECAP to Salesforce. Staff said the new system will provide enhanced data tracking and reporting capabilities, but they will need time to learn the new system.

Staff members relied on specific functions of the RECAP system for this program. For example, the RECAP error reporting would indicate if a customer had moved and energy assistance had been applied twice. This would alert staff not to send a second BRC offer to those customers. Staff do not know whether the new system has a similar error reporting function.

Quality Control

XE has an M&V process to determine the kit measure installation rates. Historically, installation rates have not been as high as staff reportedly would like: 67% for CFLs, 58% for showerheads, and 51% for faucet aerators (2011).

Six weeks after the initial kits mailing, XE sends the returned BRCs list to the M&V survey provider, Customer Link. Customer Link calls a statistically significant sample of kit recipients to determine if they received and installed the kit measures. Customer Link asks customers that have not installed the measures whether they plan to install them and, if so, why they have not installed them yet. If the customer does plan to install the measures, Customer Link calls them back (up to two more times) to determine if they installed them yet. Customer Link reports the

installation rate per measure for the survey respondents to XE on a weekly basis.

Program Changes and Future Success

XE staff's confidence in the program's ability to meet the 2012 goals hinge on the ability to identify a sufficient number of eligible participants. Staff are hopeful they can meet program participation goals with the standard method, the geographic target approach, and by enhancing the marketing materials included in the kit.

Program changes in 2012 include:

- New PM
- New program implementer
- Two additional CFLs included in each kit
- Adjusted savings goals based on the limited list of eligible customers
- Redesigned kit packaging
- Revised installation guide
- Small roll of Teflon tape for showerhead installation
- Revised energy-saving tips brochure
- Developing a bilingual kit (English/Spanish, in process)
- New method for targeting low-income customers geographically

Recognizing the changing standards for energy-efficient lighting, several XE staff mentioned a concern about the kit's reliance on CFLs for electric savings. Staff view the inclusion of CFLs as a temporary kit component that is not necessarily viable for the long term.

XE staff anticipate the need to explore what kit measures to include in future program years. They are also interested in understanding more about what type of education is needed and what additional resources XE can cost-effectively provide.

After XE staff assess how the program operates under the new implementer, they expect to make additional program changes. One idea to increase responses to the BRC is to offer an extra incentive, such as a grocery or discount store gift card.

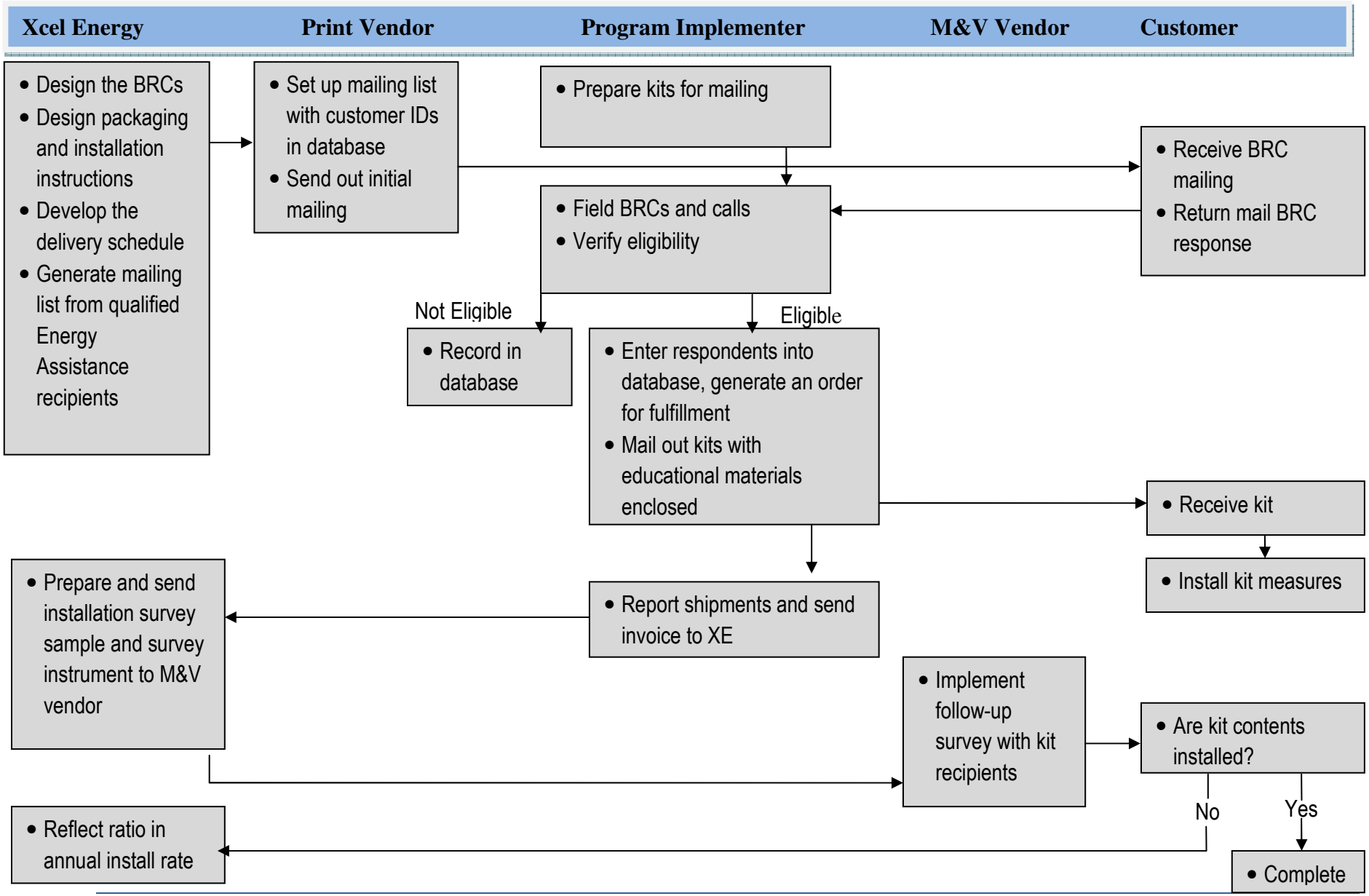
One XE staff member said: *"The program as designed is set up for success. We just need customers to take us up on it."*

Process Flow Diagram

The process flow diagram shown in

Figure 1 graphically represents the current program operation, consisting of activities and the connection between those activities.

Figure 1. CO Energy Savings Kits Program Process Flow



Logic Model

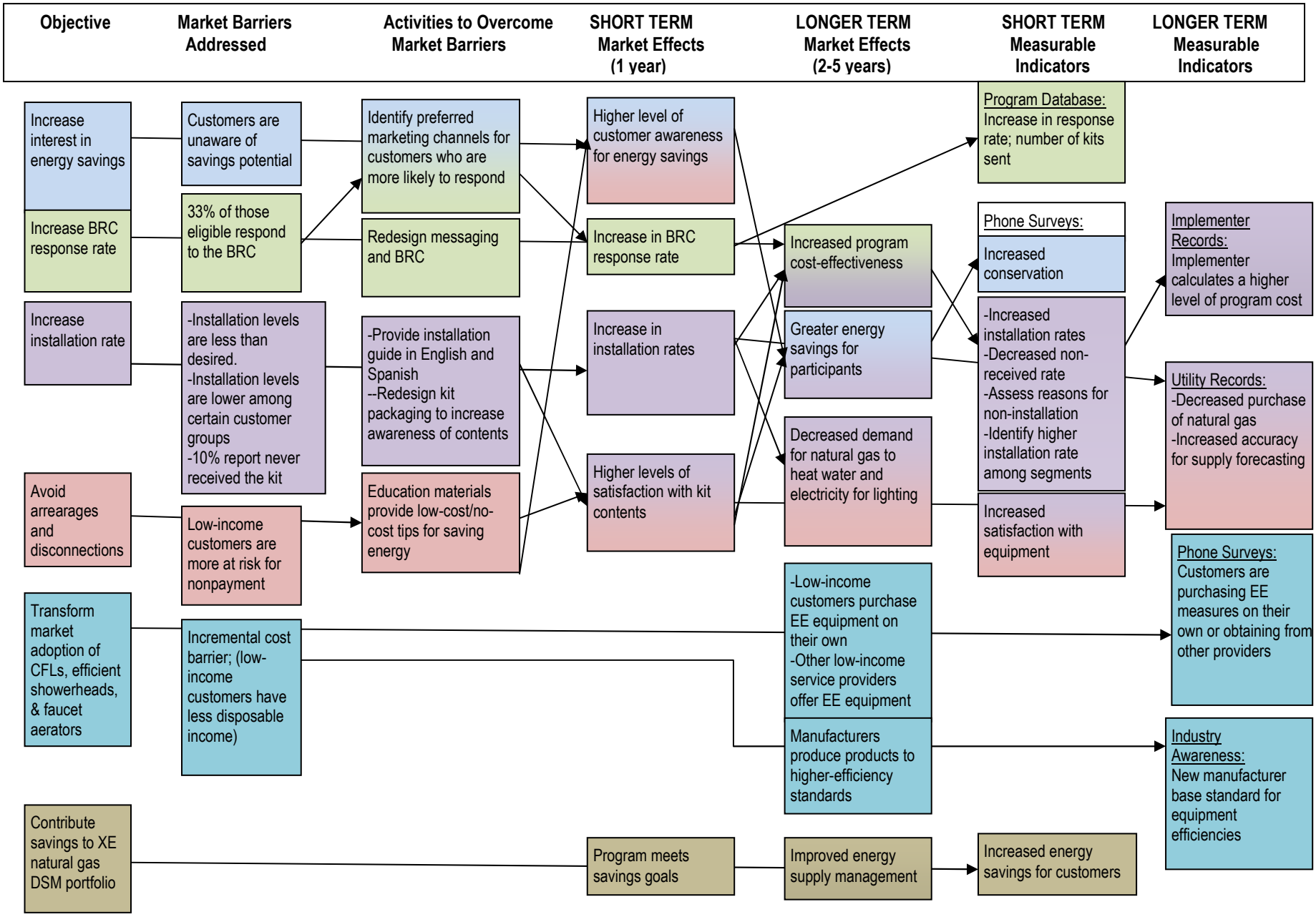
As part of the program evaluation, Cadmus developed a logic model, shown in **Error! Reference source not found.**, to document information and activity flows between the program implementers and market actors. The key program objectives depicted in the logic model are to:

- Increase interest and awareness of energy-saving opportunities
- Increase the response rate for receiving the Energy-Savings Kits
- Increase the kit measure installation rate
- Avoid the expense of processing arrearages and disconnections for low-income customers
- Transform market adoption of CFLs, faucet aerators, and efficient showerheads

The program was effectively designed to address the objectives and barriers in ways that lead to the intended short- and long-term outcomes. Many of the barriers Cadmus identified through our data collection efforts for this evaluation were already addressed through the redesign of the BRC, kit packaging, and kit information materials.

One program area identified through the phone surveys that is not addressed in the logic model is the number of customers that said they did not receive a kit, despite program records indicating that a kit was shipped to them. With the current program design and processes, the annual M&V process is the only way to identify customers that did not receive a kit. There are currently no processes in place to verify the source of the problem or to resend a kit to those individuals.

Figure 2. CO Energy Savings Kits Program Logic Model



5. PARTICIPANT SURVEYS

The 2011 ESK Program evaluation included telephone surveys with customers that received a kit. This chapter summarizes those participant survey findings.

Objectives

Cadmus designed the participant survey to address the following questions:

1. What motivates customers to participate?
2. What are the participation barriers?
3. Are the kits and education materials reaching the intended target market?
4. How effective are kit materials in creating brand recognition and educating customers?
5. What characteristics/demographics are associated with participation and installation?
6. Are customers satisfied with their participation experience?
7. How can participation and installation rates be increased?

Method

GRG conducted telephone surveys with kit recipients, asking them questions regarding program awareness, satisfaction, barriers, installation, and demographics. XE provided a list of 25,621 customers that were sent a kit in 2011. Sampling from the list provided, GRG completed 401 surveys with kit recipients to achieve a 95/5 precision and confidence level.

Of the participants GRG attempted to reach for this survey, 772 (14%) said they had never received a kit. Some of these customers may simply be mistaken, forgot, or moved before the kit arrived. The number reported as not received, however, was larger than expected.

Summary of Key Survey Findings

1. **Participation Motivation:** Just over one-third (35%) of respondents said they did not request a kit. Cadmus defined these respondents as passive participants, while active participants could give a reason for why they requested a kit. Two important motivations for active participants were the opportunity to save on energy bills and the connection many participants have with LEAP and other low-income assistance agencies. The ESK Program as currently designed is well positioned to appeal to those motivations and work within the current infrastructure to reach low-income customers.
2. **Participation Barriers:** Many respondents (41%) indicated having difficulty saving energy in their home. A common barrier they mentioned is the challenge of involving other household members in saving energy. This and several of the other barriers mentioned could be addressed in a brochure or flyer within the kit. Currently, the kit materials are limited in this area and could be adapted to engage children at different age levels in saving energy.
3. **Program Awareness:** Program efforts to redesign the kit packaging and information materials in 2012 were warranted, given the confusion 2011 participants expressed over

who sent the kits. Over one-third (36%) of respondents in 2011 did not know the kit had come from XE before opening it.

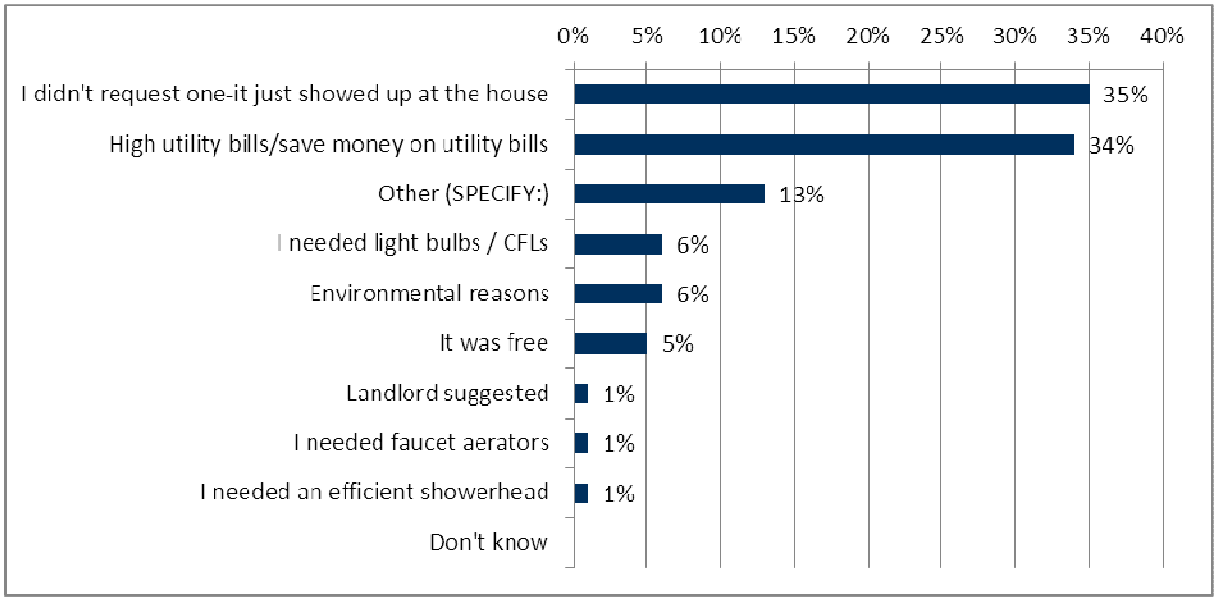
4. **Customer Education:** Respondents reported that their familiarity with ways to save energy in their homes increased after receiving the kit. Although the kit contributed to this increase, many recipients also suggested providing more information in the kit, online, and in bill inserts.
5. **Kit Measures**: Cooling measures are not likely a priority for additional and/or alternative items to include in the kits, given the variety of participant cooling systems. Kit enhancements could focus on energy-saving tips and information on ways to use their existing equipment to reduce energy use, such as programmable thermostats.
6. **Satisfaction:** Overall, recipients were very satisfied with their kit. Concerns about individual measures focused on the aerators not fitting existing plumbing and reluctance to give up a hand-held shower attachment.
7. **Installation:** The installation rates reported align with M&V rates, but could be improved. For example, including kit information specific to renters could alleviate their concerns about altering or damaging property. Some reasons for not installing measures simply cannot be overcome. Specifically, individual preferences for specific lighting options and showerhead styles go beyond the program's scope of influence. Passive participants had lower installation rates for CFLs and showerheads than active participants.

Detailed Participant Findings

Participant Motivation

Just over one-third (35%) of respondents said they did not request a kit. This is consistent with the large batch of kits that the MHYC mailed to eligible customer homes in 2011 without requiring their reply to the BRC. Another third (34%) had indicated they were interested in saving money on their utility bills. The remaining third cited a variety of motivations for requesting the kit (Figure 3). The "other" motivations shown in the figure as cited by 13% included other organizations (such as LEAP, Veterans Green Jobs, food banks, and the XE Low Income Weatherization Program) that played an influential role in encouraging respondents to accept and use the kits.

Figure 3. What was the Main Reason You Decided to Receive a Kit? (B1; n=390)

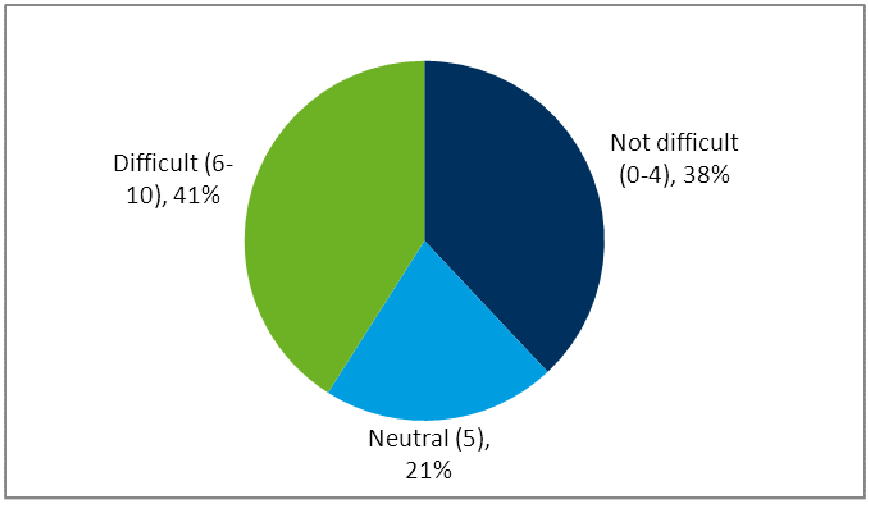


For analysis purposes, Cadmus defined respondents who said the kit just showed up at their house as passive participants. Those that gave reasons for deciding to receive a kit are defined as active participants.

Participation Barriers

Respondents had fairly evenly distributed ratings for the level of difficulty they find saving energy in their household. Roughly 41% said saving energy is difficult; 38% said it not difficult, and 21% were neutral (5 rating).

Figure 4. How Difficult is Saving Energy in Your Household? (E1; n=387)



Respondent who said that saving energy is difficult gave very specific reasons why. The most common barrier (29%) is getting help from other family members to save energy in the home. Some respondents referred to the kit items as an opportunity to educate their children about the

need for saving energy and specific ways they can save energy in their own home. Another common concern (21%) was reducing the home's air and heat leakage in the winter. Many respondents mentioned drafty windows or having an older home with poor and/or insufficient insulation.

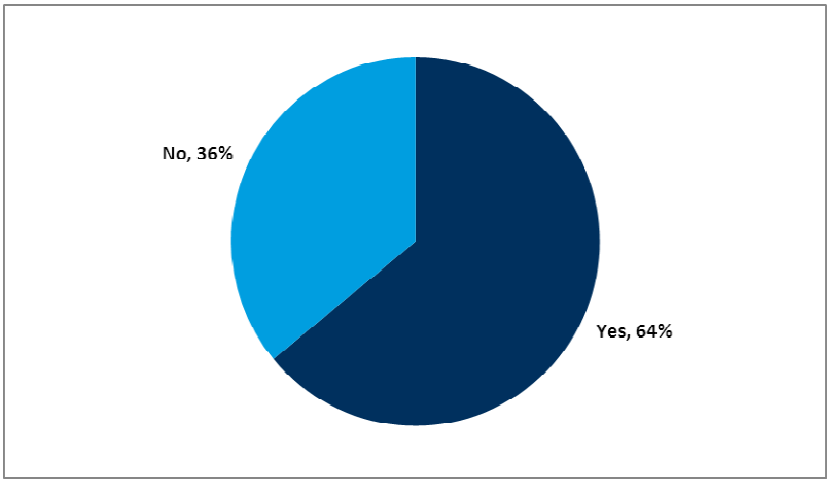
Other barriers included:

- Up-front cost of equipment and/or repair (14%).
- Plug load for electronics: "*everything runs on electricity*" (5%).
- Cooling costs and air conditioner leakage (4%).
- Lighting/remembering to turn off lights in unoccupied rooms (4%).
- Renter status/having no control to make changes or energy-efficient investments (3%).

Program Awareness

During stakeholder interviews Cadmus conducted for the 2011 program evaluation, XE staff raised concerns that customers may not recognize the kit, which arrived in plain brown packaging, and may not know it came from XE. This led to an effort in 2012 to redesign kit packaging, the BRC, and some of the kit materials. These concerns were consistent with survey findings showing that over one-third (36%) of respondents did not know the kit had come from XE (Figure 5). In open-ended comments, several respondents referred to the *"LEAP kit."*

Figure 5. Before This Call, Were You Aware That Xcel Energy Provided the Energy-Savings Kit? (B2; n=393)



The source of awareness among those 64% who already knew the kit was from XE varied greatly. Almost one-third of the aware respondents (30%) learned that XE was the kit sponsor through the initial BRC. Kit packaging (19%) and a brochure inside the kit (11%) were also common awareness sources. Other methods included bill inserts (9%), word-of-mouth (6%), LEAP (5%), advertising (4%), the XE Low Income Weatherization Program (4%), the internet/XE Website (3%), called or received a call from XE (3%), through another assistance

program (2%), and miscellaneous other reasons (4%). (Note that the total adds to more than 100%, as several respondents reported multiple sources of awareness.)

Almost one-third (31%) of respondents were familiar with other XE programs that could help them save money on their utility bill. Of those aware of other energy-saving programs, 9% said they had participated in another XE program. Most had participated in the Low Income Weatherization Program, but several respondents mentioned non-DSM programs. A small number (one or two respondents each) named other XE programs including Appliance Rebates, Evaporative Cooling Rebates, Saver's Switch, and Power Check, which makes watt meters available for checkout at local libraries.

Customer Education

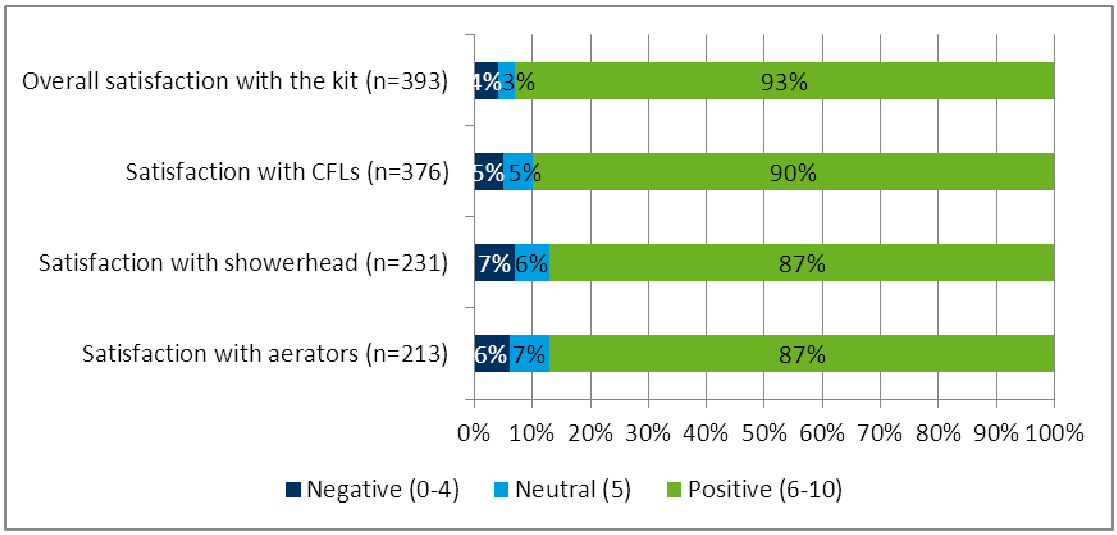
As a goal of this program is to increase customers' understanding of ways to save on their energy bill, GRG asked participants how familiar they were with ways to save energy before they received the kit versus after they received the kit. Respondents reported a rather dramatic increase in energy-saving familiarity after receiving the kit. Less than two-thirds (63%) of respondents gave a positive rating (6-10) for their familiarity with ways to save energy before receiving the kit. Nearly all respondents (92%) gave a positive rating of their familiarity after receiving the kit.

Satisfaction

A vast majority (93%) of the kit recipients rated their overall satisfaction with the kit positively (6-10), with 70% giving high ratings (9 or 10). There were no differences between active and passive participants regarding their satisfaction with the kit overall.

Similar positive satisfaction ratings were given for the three types of kit measures. Figure 6 shows measure-specific satisfaction ratings for those that installed the measure.

Figure 6. Satisfaction with Kit and Kit Contents*



* For the full survey question for each measure, see Appendix A questions D1, D2, D4, and D6.

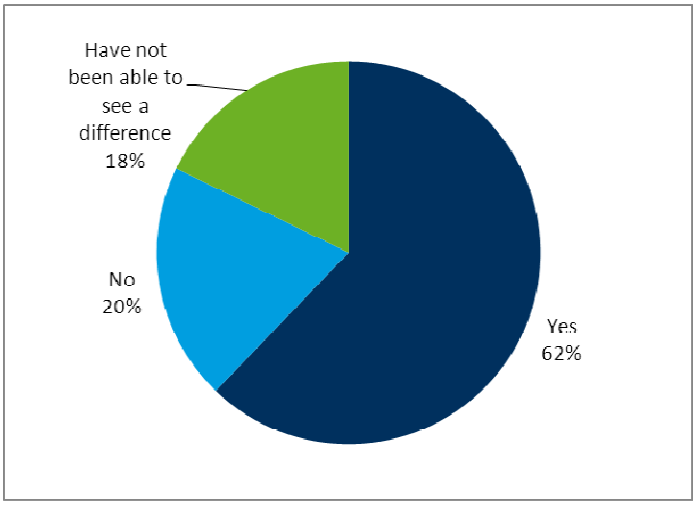
Significantly more passive participants (93%) were satisfied with the showerhead than active participants (84%). The reasons respondents gave for lower satisfaction were not liking the lower water pressure and leakage issues. Nearly all respondents (96%) were satisfied with the kit installation instructions.

Most kit recipients gave positive satisfaction ratings (6-10) for XE overall (91%) and for the energy-saving information received from XE (94%). Respondents who were not satisfied with the energy-saving information provided by XE said they did not know the kit came from XE, the information does not apply to them, or they do not have enough information about what is available:

- *"I didn't know that kit came from [Xcel Energy]. I would like if they would let people know about the kits and give out more information. There is more to it than just light bulbs."*
- *"Most of it does not apply to me."*
- *"I don't think they [Xcel Energy] provide enough information for the public about what is available out there."*

Figure 7 shows that 62% of respondents reported that their monthly energy bill has decreased since installing the kit measures.

Figure 7. Has Your Monthly Energy Bill Decreased Since Installing the Energy-Savings Kit Devices? (D12; n=349)



Information Source Preferences

A majority of respondents prefer to receive information about saving energy through conventional methods, such as bill inserts (41%) and a utility newsletter (30%). One-third indicated a preference for electronic formats, such as a Website or e-mail.

Installation

Xcel Energy conducts an annual follow-up M&V survey with kit recipients to determine installation rates for the kit measures. Using the same questions from that M&V survey, Cadmus collected installation rate responses for each kit measure to confirm the M&V findings and identify opportunities to increase installation rates.

Overall, Cadmus' findings from this survey are quite similar to those XE found in their M&V survey (Table 1).

Table 1. Kit Measures Installation Rate Comparison

Measure	M&V Survey Installation Rate	Evaluation Survey Installation Rate
CFLs	67%	77% installed; 68% still installed*
Showerhead	58%	59%
Faucet Aerators	51%	55%

* Cadmus assumed six bulbs per kit for the 368 respondents (in this analysis, we did not include the 33 respondents who did not know how many bulbs had been installed, and we did not adjust for possible broken or nonworking bulbs). Most (77%) of the bulbs distributed had been installed, but only 68% of the bulbs distributed remained installed at the time of the survey.

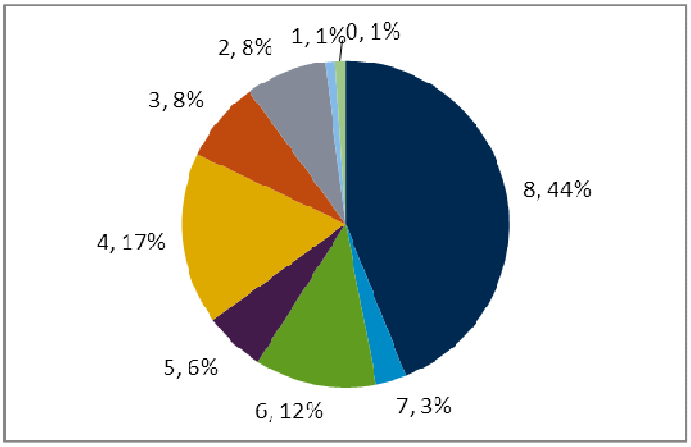
Despite the similar findings, there were two methodological differences between the survey efforts: the timing and length. XE conducts the M&V surveys within six to eight weeks after the kits are distributed, while Cadmus conducted our survey several months after kit distribution. Also, the M&V survey only has installation questions, while Cadmus' evaluation survey included several additional types of questions.

CFL Installation

Nearly all respondents (94%) had installed at least one of the kit CFLs. Over half (59%) said they installed all of the kit CFLs, although the reported number of CFLs installed did not correspond with the number of CFLs the kits contained. Just under half (47%) said they installed seven or eight CFLs (Figure 8), but the 2011 kits contained only six CFLs. These recipients were either mistaken about how many CFLs came in the kit, or several kits came with more CFLs than were originally intended.

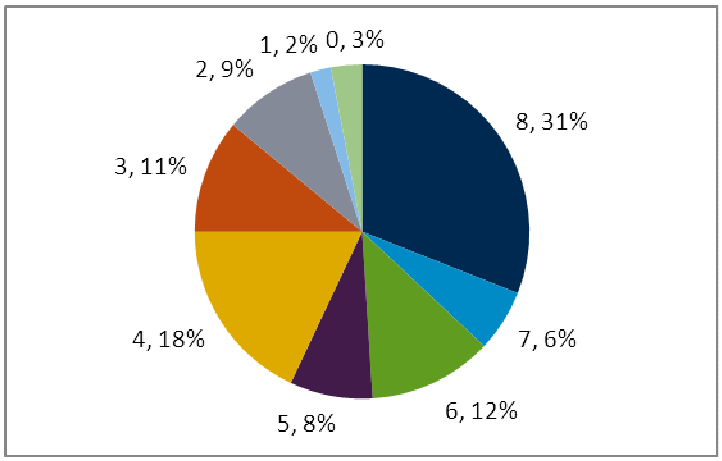
Cadmus calculated the CFL installation rate as the total number of bulbs installed divided by the total number of bulbs distributed. Of the 401 respondents, 368 gave an answer for the number of bulbs they installed from the kit. Over three-quarters (77%) of the bulbs distributed had been installed. Passive participants had a lower CFL installation rate (71%) than active participants (81%).

Figure 8. How Many of the CFLs You Received in the Kit did You Install? (C2; n=345)



Almost half of the respondents (49%) said they still had at least six or more kit CFLs installed. Over two-thirds (68%) of the bulbs that had been distributed and installed remained installed at the time of the survey. Figure 9 shows the number of CFLs respondents received in the kits that were still installed six to 12 months after receiving the kit.

Figure 9. How Many of the CFLs are Still Installed? (C3; n=329)



Although GRG did not ask respondents why they had removed the CFLs, some volunteered that the bulbs had burned out within a couple months after installing them.

Showerhead and Aerator Installation

Over half of respondents installed the showerhead (59%) and faucet aerators (55%). Almost half (49%) of those that had installed faucet aerators indicated they had installed both. As expected, installation rates were significantly higher for active participants than passive participants (Table 2).

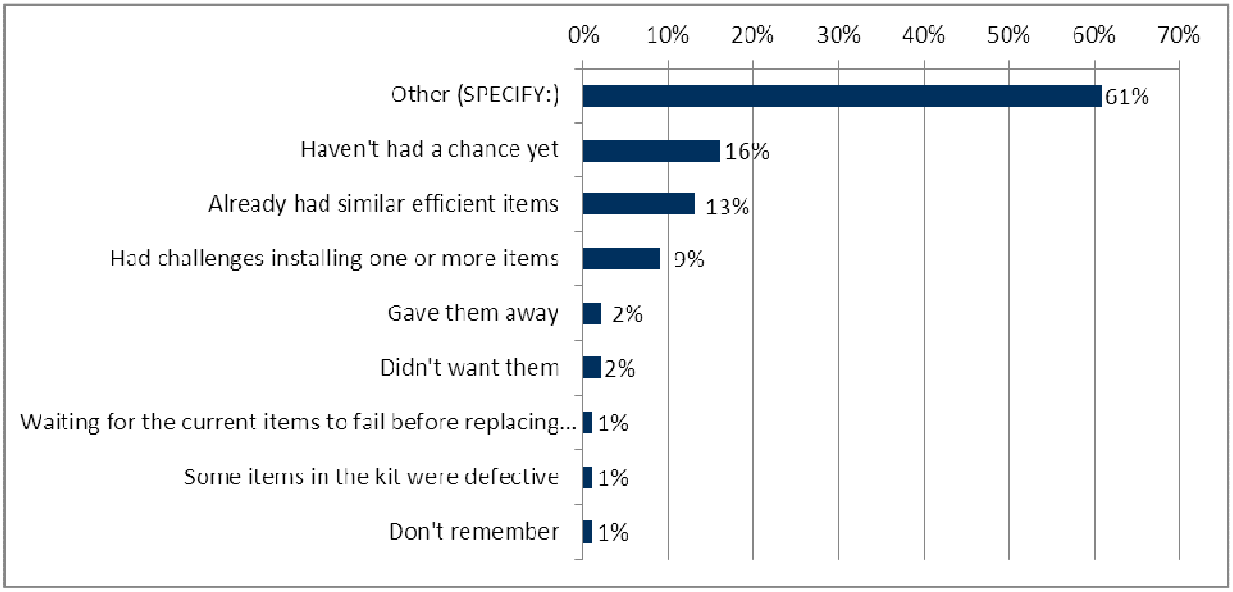
Table 2. Installation Rates for Active and Passive Participants

Measure Installation	Passive Participants (Kit mailed directly; n=135)	Active Participants (Requested kit; n=255)
CFLs	71%	81%
Showerhead	45%	67%*
Faucet Aerator(s)	52%	58%

* Statistically significant difference at the 95/5 confidence level.

Figure 10 shows the reasons that respondents had not installed the kit measures.

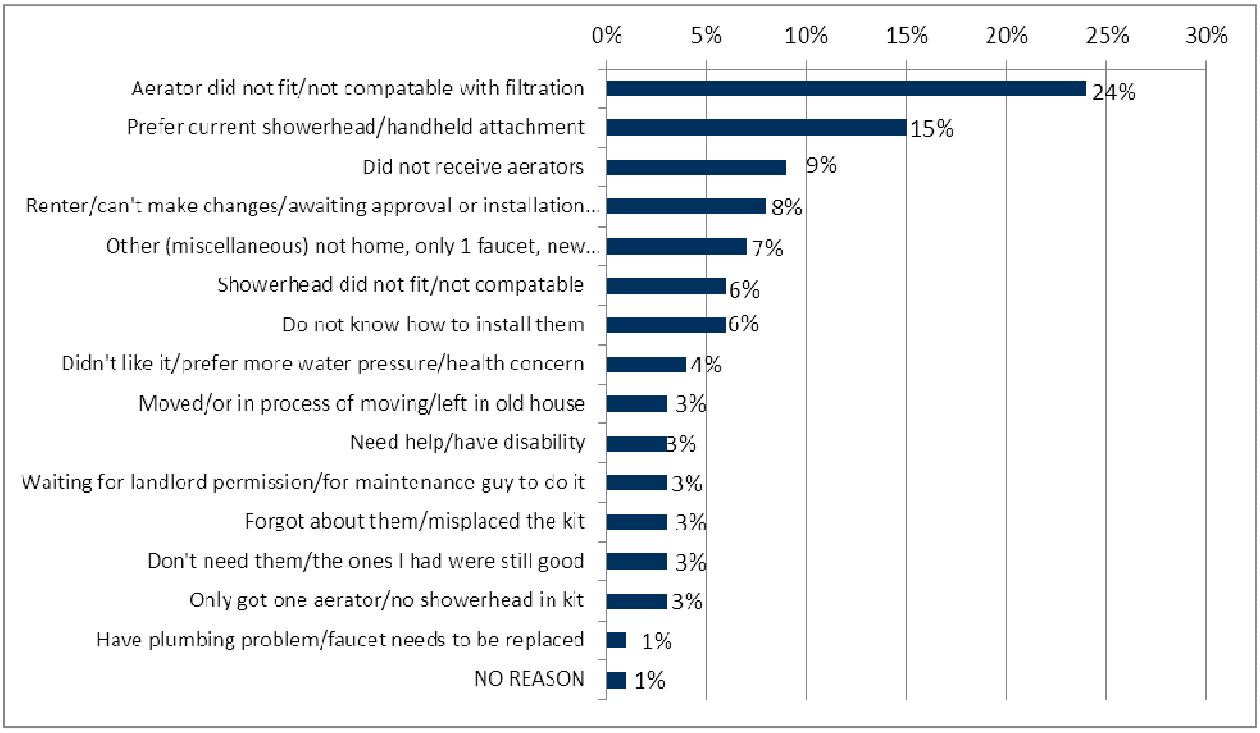
Figure 10. What is the Reason the Item(s) Has/Have Not Been Installed? (C7; n=235)



Note: Total may add to over 100%, as several respondents gave multiple responses to this question.

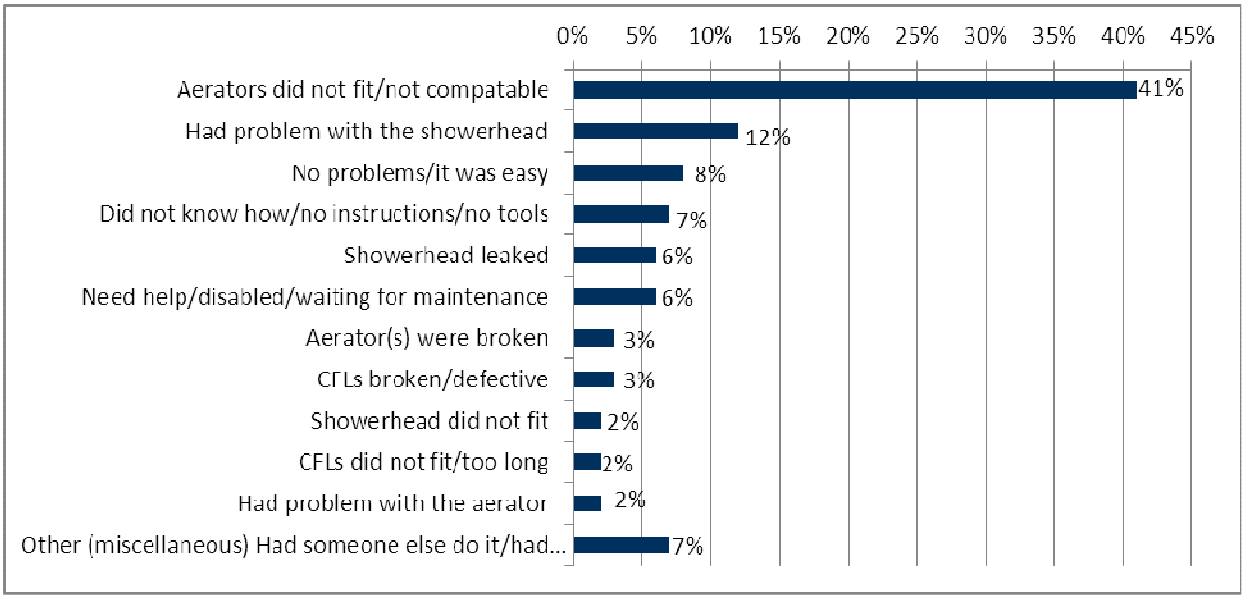
Most of the 143 respondents (61%) who had not installed any of the kit measures had a unique reason, other than those provided in the annual M&V follow-up survey of kit recipient (Figure 11). One-quarter (24%) said the faucet aerators did not fit their faucets or were not compatible with a water filtration system attached to their faucet. Another 15% prefer the hand-held showerhead attachment they already have and are not interested in the kit showerhead. Others (9%) said they did not receive any faucet aerators in their kit. Finally, some respondents that are renters either said they need the landlord's permission to install the items or are concerned about doing anything to the property that could cause damage or jeopardize their lease agreement.

Figure 11. What has Prevented You From Installing the Items? (C7 "other;" n=143)



Over three-quarters of respondents (77%) had no problems installing the kit measures. Among the 88 respondents that mentioned problems, the most frequent challenge (41%) was that faucet aerators did not fit or were incompatible with their plumbing.

Figure 12. What Difficulties did You Encounter When Installing the Items Provided in the Energy-Savings Kit? (C8; n=88)



Kit Delivery

A significant proportion (35%) of respondents that returned the BRC could not remember how long it took for their kit to arrive. Most that could remember said their kit arrived within the six to eight weeks, as stated on the BRC. Most kit recipients (91%) were satisfied with the time it took to receive the kit, rating it from a 6 to 10 on a 0 (*not at all satisfied*) to 10 (*very satisfied*) point scale.

When the kit arrived, just over half of all respondents (55%) recognized it as the kit they had requested before opening the package. Significantly more active participants (68%) were aware that the kit had come from XE than passive participants (59%).

Nearly all respondents (97%) said the kit package arrived at their house in good condition and the contents within the package were also in good condition (97%). Only two respondents indicated they had received broken CFLs.

Suggestions for Kit Contents

Most respondents (54%) said they would change nothing about the kit contents (indicating satisfaction). Those with ideas about measure changes or additions suggested the following:

- Weatherstripping, such as plastic for windows, caulk, or something to seal leaks around windows and doors (9%).
- Information about how to reduce bills and save energy (9%).
- More types of measures (7%).

Some of their unique suggestions included the following:

- Motion or timer controls for lighting and/or power strips.
- A resource guide with financing options for expensive purchases, such as furnaces.
- A checklist for servicing the furnace and/or a furnace filter.
- An energy-efficient shower device that works with a hand-held showerhead.
- Information about or vouchers for renewable energy sources (e.g., wind, solar).

Spillover Savings

As low-income programs are not required to use a NTG ratio for calculating savings attributable to the program, and because the program provides free measures, Cadmus did not collect data to evaluate freeridership for this program. XE, however, is interested in understanding potential spillover savings that could be attributed to the program. The spillover savings for this program come from additional measures participants installed since installing the kit measures as a result of receiving the kit.

Over one-third (35%) of survey respondents said they made additional energy-efficient changes to their home since receiving the kit. Common measures included weather stripping (42%), lighting (20%), insulation (17%), and new windows/doors (13%; Table 3). They also mentioned a variety of other energy-efficient changes, including installing multiple measures. GRG also

asked respondents whether they received assistance installing those spillover measures, and the extent to which receiving the kit items influenced their decision to install the additional measures.

Measures that qualified as spillover met three criteria:

1. Energy-efficient measure was installed after receiving the kit;
2. No other rebates or free program services were provided; and
3. Receiving the kit influenced their decision to install the measure.

Survey respondents reported 130 different types of measures that passed the spillover definition criteria (some respondents gave more than one answer). The number and types of measures are listed in Table 3.

Table 3. Spillover Measures Attributed to the Program

Measures Attributed to the Program	Number of Responses
Central air conditioning system	3
Clothes washer	8
Dishwasher	2
Duct sealing	2
Furnace or boiler	7
Insulation*	9
Lighting	20
Programmable thermostat	7
Putting plastic on windows*	11
Refrigerator or freezer	8
Room air conditioner	4
Solar PV system*	1
Television	6
Water heater	7
Weatherstripping	23
Whole-house fan*	4
Window or door*	8
Grand Total	**130**

* Cadmus did not include these measures in our spillover analysis due to a lack of sufficient information to quantify their savings.

Cadmus based the savings for qualified measures on the 2011 Colorado Technical Reference Manual Deemed Savings Technical Assumptions. Using the assumptions provided and the participant survey responses, Cadmus calculated an additional 37% of savings that could be attributed to the ESK Program as spillover. Estimated spillover savings are provided for electric and gas measures in Table 4.

Table 4. Spillover Savings Estimates

Fuel Type	Program MMBtu Savings	Program Participants	Program MMBtu Savings Per Participant	Number Surveyed	Survey Sample MMBtu Program Savings	Survey Sample MMBtu Spillover Savings	Spillover Estimate
Electric	20,928	19,774	1.058	103	109	32	29%
Gas	42,969	26,070	1.648	298	491	193	39%
Total		**45,844**		**401**	**600**	**225**	**37%**

Although the high degree of spillover appears to indicate that the ESK Program has a profound influence, leading to savings that far exceed what is provided in the kit, these estimates are considered optimistic at best and possibly exaggerated. Some of the measures respondents included and the influence they credited to the kit are questionable. In future attempts to measure spillover for XE's low-income programs, Cadmus will carefully scrutinize the method for determining program attribution.

Respondent Profile

Despite all respondents qualifying as low income, they exhibited a variety of energy equipment use, housing, and household and personal characteristics.

Types of Energy Equipment Use

One survey objective was to gain an understanding of the types of energy-using equipment in low-income customer homes. This information can inform the types of kit measures, energy-saving tips, education materials, and marketing channels that are appropriate for future kits or marketing. Table 5 shows the types of energy-using equipment respondents reported using in their homes.

Table 5. Types of Energy Equipment Used (G1-G6)

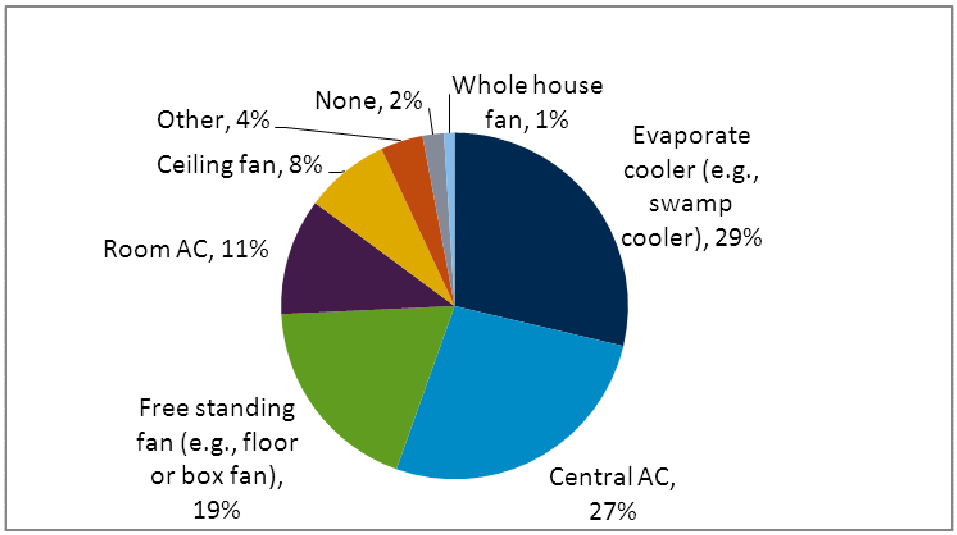
Type of Energy Use	Number of Respondents	Percent Affirmative
Has access to computer or DVD player	399	89%
Has clothes washer and dryer in home/unit	399	83%
Has natural gas fueled water heater	359	79%
Uses temperature settings to adjust temperature in home	233	76%
Main heating source is natural gas	384	74%
Has access to internet	328	73%
Has programmable thermostat	383	58%
Cools home with evaporative cooler	395	29%
Cools home with central air conditioning	395	27%
Main heating source is electric	384	23%
Has electricity fueled water heater	359	17%
Cools home with room air conditioning	395	11%
Has clothes washer only in home/unit	399	5%

Close to three-quarters of respondents use natural gas for space heating (74%) and/or water heating (79%). Propane was the mentioned fuel source from 2% of respondents. A substantial

majority also have access to a DVD player (89%) and the internet (73%), and have a clothes washer in their home or unit (88%). A smaller majority (58%) have a programmable thermostat.

About one-third (30%) of respondents have no central cooling system and rely on portable or ceiling fans to cool their homes. Those that do have cooling are divided between evaporative cooling (29%), central air conditioning (27%), and room air conditioning (11%). Figure 13 shows the types of cooling equipment respondents have and use in their homes.

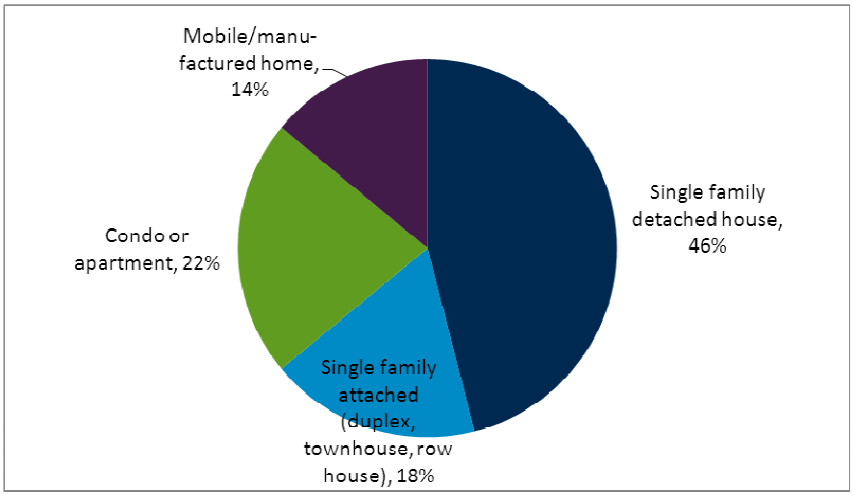
Figure 13. What Kind of Cooling Equipment Do You Use in Hot Weather at Home? (G1; n=395)



Housing Characteristics

Over half of the respondents (54%) are tenants in a residence they do not own. Just under half (46%) live in a detached single family home, while another 18% live in an attached single family home. Just under one-quarter (22%) live in a multifamily building (Figure 14).

Figure 14. Which of the Following Best Describes Your Home? (H1; n=397)



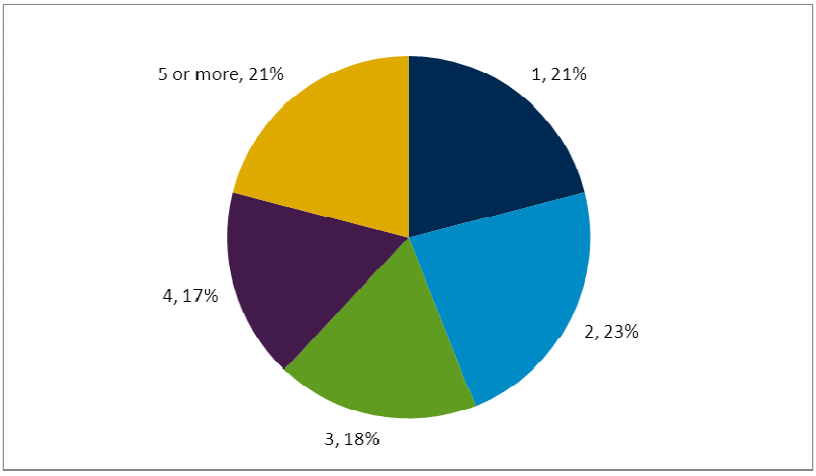
Over one-third (37%) of respondents did not know the square footage of the home they live in. This is not atypical, particularly for residents that do not own their home. Two-thirds (65%) of those that did report a size live in a home less than 1,500 square feet.

Supporting the hypothesis that low-income customers tend to move frequently, half of the respondents (51%) had lived in their home for three years or less.

Household and Personal Characteristics

Household size was very evenly distributed across response categories, from one to five or more people living in the household. Figure 15 shows the household size distribution, with just over half (56%) having three or more occupants.

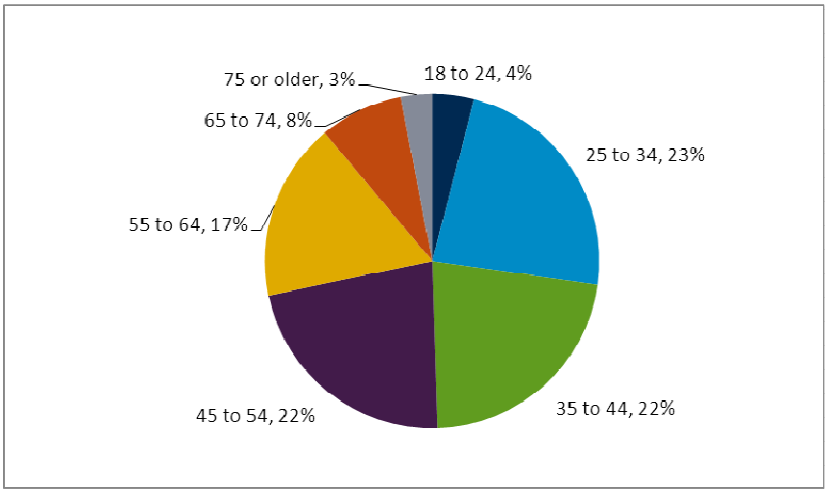
Figure 15. Including Yourself, How Many People are Living in Your Household? (H7; n=399)



Compared to participants in other XE programs, survey respondents for this ESK Program evaluation had less post-secondary education. Approximately one-third (31%) of respondents had completed high school or achieved a general equivalency diploma. Another 37% had some college education, with 18% having completed a bachelor's degree.

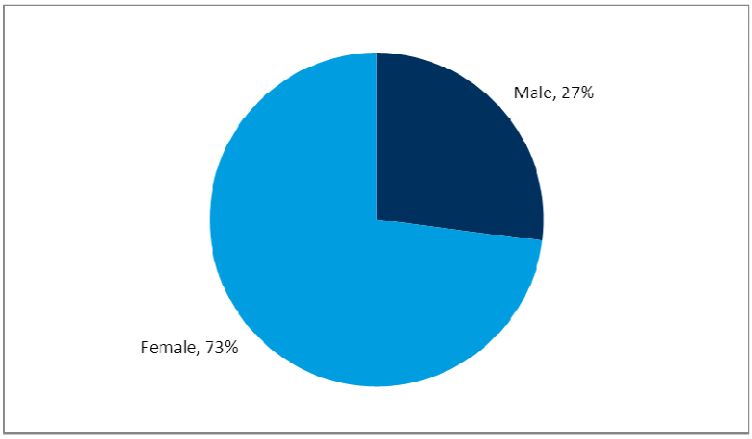
Roughly half (49%) were 44 years or younger. Although seniors often disproportionally qualify as being low income, only 11% of respondents were 65 years or older.

Figure 16. Which of the Following Categories Best Represents Your Age? (H9; n=396)



Nearly three-quarters (73%) of respondents are female. More of the active participants (31%) than passive participants (20%) are male.

Figure 17. Respondent Gender (as observed, n=401)



Segment Characteristics

Cadmus analyzed survey respondents using the PRIZM[2] segments provided by XE. As income is a primary factor differentiating the various PRIZM segments, we expected most respondents from this program to cluster into two or three life stage categories. Instead, the survey findings indicate a broader distribution of respondents across the PRIZM life stage categories, as shown in Table 6.

[2] Nielsen, Claritas: http://www.claritas.com/MyBestSegments/Default.jsp.

Table 6. Survey Respondent Segments

PRIZM Segment Life Stage Identifier	PRIZM Segment Description	Colorado Customers	ESK 2011 Program Participation	ESK Program Survey Respondents
Y1	Midlife Success	19%	9%	9%
Y2	Mainstream Singles	15%	16%	13%
Y3	Striving Singles	7%	12%	12%
F1	Accumulated Wealth	6%	1%	7%
F2	Young Accumulators	11%	6%	
F3	Mainstream Families	10%	17%	16%
F4	Sustaining Families	4%	10%	10%
M1	Affluent Empty Nests	8%	1%	8%
M2	Conservative Classics	9%	7%	
M3	Cautious Couples	7%	9%	14%
M4	Sustaining Seniors	4%	9%	12%

As expected, very few respondents were categorized in the higher income segments, F1 and M1. Cadmus combined these categories with similar other segments (as shown in Table 6) for analysis purposes. Mainstream Families was the largest segment represented by ESK Program participants and survey respondents (17%), followed closely by Mainstream Singles (16%). The relatively even distribution of kit respondents across the PRIZM segments may be an indicator of the economics during 2011, in which high unemployment rates may have contributed to a broader array of customers qualifying for low-income status.

Conclusions

1. **What motivates customers to participate?** Two important motivations for active participants were the opportunity to save on energy bills and the connection many participants have with LEAP and other low-income assistance agencies. The ESK Program as currently designed addresses the energy savings motive, and many respondents indicated they requested the kit at the prompting of an assistance agency.
2. **What are the participation barriers?** Many respondents (41%) indicated having difficulty saving energy in their home. A common barrier they mentioned is the challenge of involving other household members in saving energy (29%). Currently, the kit materials are limited in this area and could be adapted to engage children at different age levels in saving energy. This and several of the other barriers mentioned could be effectively addressed in a brochure or flyer within the kit.
3. **Are the kits and education materials reaching the intended target market?** A substantial number of customers (n=772; 14%) from the survey sample list said they did not receive the kit. Some of these customers may be mistaken or forgot, but the number is sizeable enough to warrant further investigation into the delivery process to identify possible gaps in program design.
4. **How effective are kit materials in creating brand recognition and educating customers?** Respondents reported that their familiarity with ways to save energy in their

homes increased after receiving the kit. Although the kit contributed to this increase, many recipients also suggested providing more information in the kit, online, and in bill inserts.

5. **What characteristics/demographics are associated with participation and installation?** Cooling measures are not likely a priority for additional and/or alternative items to include in the kits, given the variety of participant cooling systems. Kit enhancements could focus on energy-saving tips and information on ways to use the existing equipment to reduce energy use, such as programmable thermostats. As over half of the respondent households had three or more occupants, information and tips provided in the kit could focus on engaging all members of a larger household in saving energy.
6. **Are customers satisfied with their participation experience?** Overall, recipients were very satisfied with their kit. Concerns about individual kit contents focused on aerators not fitting existing plumbing and reluctance to give up a hand-held shower attachment.
7. **How can participation and installation rates be increased?** The reported installation rates align with M&V measured rates, but could be improved. Some reasons given for not installing measures simply cannot be overcome, such as individual preferences for specific lighting and showerheads. One respondent suggested that XE give customers a choice to opt-out of receiving an individual measure on the initial BRC. This may apply to households that currently already use an efficient measure or have few light sockets. Also, including kit information specific to renters could alleviate their concerns about altering or damaging property.

   Although the opt-out approach was effective in getting the kits to more qualified customers, the installation rate was lower for CFLs and showerheads. Trade-offs between participation levels and installation rates should be weighed when considering the costs and benefits associated with the opt-out approach.

Recommendations

1. **Consider additional ways to market the program** through LEAP, local assistance agencies, and the Low Income Weatherization Program. These are already common sources for kit recipients' awareness of the program, and could be used to build interest in participating. If these other agencies are already screening customers for low-income eligibility, participation could be increased with additional opt-in coordination. This coordination could also help with installation challenges faced by disabled customers.
2. **Consider measuring whether kit recipients' awareness of XE as the source of the kit improves with the redesigned packaging in 2012**. This could be an added question for XE's annual verification survey.
3. **Consider enhancing the educational/informational materials included in the kit.** This could include family-oriented materials that engage children and whole families in saving energy; behavioral energy-saving tips; rebate and other XE DSM program information; benefits of and how to set a programmable thermostat; and general maintenance information for heating and cooling equipment.

4. **Explore faucet aerator compatibility issues.** Consider offering information about faucet aerator adaptors and how to obtain one in the event that the kit aerator does not work with the recipient's faucet.
5. **Consider suggestions for improving the installation rates**, such as enhancing information about equipment settings and maintenance, and connecting the measures to expected energy and bill savings.
6. **Consider including weatherstripping measures**, as this was a common suggestion for additional/different kit contents. Additional electric measures could include coupons or vouchers for smart power strips and lighting controls.
7. Explore possible causes for the number of customers that said they had not received a kit.

6. BENCHMARKING ANALYSIS

Cadmus conducted a benchmark study to compare design elements of XE's ESK Program with other low-income energy-saving kit programs across North America. Cadmus benchmarked seven programs that distributed free energy-saving kits to low-income customers between 2004 and 2010 (Table 7). These programs were administered in British Columbia, Colorado, Iowa, Maryland, New Mexico, Oregon, and Wyoming. The programs in Colorado, New Mexico, and Wyoming are geographically close to XE's Colorado service territory; the programs in other areas show how similar programs operate across North America.

Table 7. Comparison of Energy Kit Programs

Program State	Program Name	Program Administrator
British Columbia	Power Smart Energy Saving Kit Program	BC Hydro
Colorado	First Response Program	Energy Outreach Colorado
Iowa	Iowa Energy Wise Program	Alliant Energy-IPL Aquila (now Black Hills Energy) MidAmerican Energy
Maryland	Watt Watchers Limited Income Home Performance Program	Potomac Edison
New Mexico	Low Income Easy Savings Program	Public Service Company of New Mexico
Oregon	Oregon REACH Program	Oregon Department of Housing and Community Services
Wyoming	Low Income Weatherization Program	Rocky Mountain Power

We compared the following key program design elements:

- Program implementation,
- Participant recruitment,
- Program incentives, and
- Program impacts.

These findings are discussed in detail below.

Findings

Program Implementation

Contrary to XE's ESK Program, all but two of the comparison programs were implemented by community action agencies within the program administrator's service territory. XE's energy-savings kits are distributed by a third-party provider. The implementer, MHYC in 2011, is a residential distributor of energy-efficiency-related products in the United States. The Wyoming program was also implemented by a contractor, Niagara Conservation. The program in British Columbia was implemented internally.

Program Delivery

All of the comparison programs and XE's program were implemented using at least one of the following delivery methods:

- Direct mailings: Kits with energy-saving measures and education materials are mailed to qualified customer homes.
- Workshops: Group sessions are convened where information on energy efficiency is provided in an interactive format and energy kits are distributed.
- Direct installation: The program implementers visit qualified customer homes, install measures from an energy kit, and educate the customer about energy-efficient behaviors.

Table 8 illustrates the delivery method(s) used by each program. The Oregon and Colorado programs were the only two designed to reach customers through all three delivery approaches.

Table 8. Delivery Methods

Type of Delivery	XE	BC	CO	IA	MD	NM	OR	WY
Direct Mailings	X	X	X		X	X	X	X
Workshops			X	X			X	
Direct Installation		X	X			X	X	

Direct Mailings: Like XE, six of the compared programs distributed energy kits by mailing them to income-qualified participants. The Oregon program was not delivered through traditional direct mailing. Instead, program implementers distributed energy-saving kits by hanging them on participants' doorknobs. The customer experience, however, was similar to receiving a kit in the mail.

Workshops: Three programs used workshops to distribute energy-saving kits. The workshops combined the energy-saving kit distribution with a more rigorous energy education component. The Iowa program's one-hour Energy Wise workshops covered the basics of energy use, ways to identify energy-savings opportunities, the process for installing the measures provided, and how to take advantage of other low-cost/no-cost energy-saving approaches.

The Oregon program's door hanger kits included an invitation to an energy education training session. The training sessions were organized based on the number and location of responses received from the door hanger invitations. The sessions were most often provided in a workshop or group setting; however, in-home sessions were available to customers whose needs prevented them from attending workshops or as a follow-up to workshop attendance.

During the 2007 program year, Colorado's program did not implement a classic group workshop model because program staff could not identify a training location where they could obtain high enough customer attendance to be cost-effective. Rather, when customers showed up at their local community action agency for assistance with their energy bills, representatives provided one-on-one mini-workshops. As the customers discussed arrears and financial issues, the representative explained actions the customer could take to reduce their energy consumption, then provided them with a kit.

Direct Installation: Four of the comparison programs delivered their program using direct installation. The program implementer conducted short visits to the customers' homes to install measures and provide basic education. To increase saving opportunities for participants, the Oregon program implementers told customers about the availability of weatherization services while in their home installing program kit measures. Direct installation is the most labor-intensive of the three delivery methods for program implementers. To offset the labor and administrative costs associated with installing kit measures for customers, the British Columbia program offered supplemental direct installation funding ($30 per kit) to housing providers who installed kit measures for their entire building or housing stock.

Participant Recruitment

In order to participate in XE's ESK Program, customers must receive LIHEAP, LEAP, or energy assistance funding. XE customers who have applied for one of the three funding opportunities are notified by mail of their eligibility to receive a free energy-savings kit.

Similar to XE's program, many of the comparison programs marketed primarily to customers on the LIHEAP list. The 2012 maximum household income eligible for LIHEAP is 150% of the federal poverty level. Although most of the comparison programs followed the LIHEAP eligibility guidelines, two programs offered their energy-saving kits to an expanded customer population: the Maryland and Colorado program's energy-saving kits were available to any customer with a household income up to 175% and 185% of the federal poverty guidelines, respectively.

In addition to mailing informational postcards to LIHEAP customers, the New Mexico program partnered with local non-profit organizations, including the Salvation Army, Interfaith Power and Light, and the Red Cross, to distribute energy-saving kits to their low-income customers.[3] They also provided the City of Albuquerque Department of Senior Affairs with energy-saving kits to install in senior citizen's homes as part of its weatherization services.

Rather than targeting customers directly from the LIHEAP list, the Oregon program focused on residents living in specific communities, such as low-income multifamily apartment complexes and manufactured or mobile home parks. The Oregon program implementers worked with their local social service provider networks to identify qualifying locations. Similarly, the British Columbia program targeted qualified subsidized housing providers to distribute energy-saving kits to their customers. They provided simple application forms for the housing providers to distribute and collect from each customer living in their building who was interested in participating. They then delivered kits to the housing providers, who distributed them.

The British Columbia program was advertised on their Website. They opened the program to customers whose income may qualify,[4] but that had not signed up for government assistance, by allowing them to self-identify their income online or by calling a toll free number. The Website informed customers that they would need to be ready to provide the following information to the call center in order to be verified by program staff as eligible to receive a kit: name and account

[3] This benchmark program report did not cite specific verification procedures required by program partners.

[4] British Columbia program customers with a combined household income below the Low-Income Cut-Off as published by Statistics Canada were eligible.

number, contact information and city/community, and the number of people living in their household. Online applicants were verified automatically when entering their specified eligibility data.

Program Incentives

The overall objective of XE's ESK Program is to increase and expand education among low-income customers on the importance of energy efficiency and the value of taking action to improve efficiency in their homes. Similar to XE, each of the compared programs provided their low-income population with two, fully subsidized incentives: low-cost energy saving measures and energy education.

Program Measures

XE's kit includes both electricity and natural gas saving measures, including the following standard, low-cost, energy-saving measures commonly included in energy-saving kits and direct installation programs:

- CFLs
- Bathroom faucet aerator
- Kitchen faucet aerator
- High-efficiency showerhead

Table 9 lists the measures included in each of the comparison programs' energy-saving kits. Only two of the programs offered CFL-only kits (in Maryland and Wyoming). Most of the programs, however, provided the same measures as XE, with additional measures including weatherstripping, energy-efficient night lights, door sweeps, and outlet seals. Other kit measures, offered by many of the programs, were included in the energy kit for educational purposes. Program measures such as water-flow measuring bags, refrigerator and freezer thermometers, shower timers, and water temperature thermometers were used to supplement the energy education component of the programs.

Table 9. Comparison of XE and Benchmark Program Measures

Measure	XE	BC	CO	IA	MD	NM	OR	WY
Air filter alarm (for furnace or air conditioner)				X				
Bathroom aerator	X	X		X		X	X	
CFLs	X	X	X	X	X	X	X	X
Direct hot water tank wrap						X		
Door sweeps						X		
Energy-efficient night light		X						
Foam pipe wrap		X						
Foam weatherstripping		X				X		
High-efficiency (low-flow) showerhead	X	X	X	X		X	X	
Hot water gauge		X						
Kitchen aerator	X	X		X		X	X	
Outlet and switch sealer/cover		X				X	X	
Outlet safety caps						X		
Refrigerator and/or freezer thermometer(s)		X	X	X			X	
Shower timer							X	
Switch plate thermometer							X	
V-seal weatherstripping		X				X		
Water leak tester							X	
Water temperature thermometer			X	X			X	
Water-flow measuring bag		X		X				
Window insulator film		X						

According to program staff interviews, XE's ESK Program has a strong emphasis on electric savings in low-income customer homes. XE's program and each of the comparison programs provides CFLs to program participants. XE's Energy-Savings Kit provides more CFLs than any of the other programs: six bulbs per kit. The New Mexico program kit also included six CFLs; however, the remaining programs' energy-saving kits included between two and four bulbs. Table 10 compares the number and wattage of CFLs included in each program's energy-saving kit.

Table 10. Comparison of Number of CFLs in Benchmark Programs' Energy-Savings Kit

CFL Wattage	XE	BC	CO	IA	MD	NM	OR	WY
13-Watt		2	0-2*				2	4
14-Watt	4			1				
15-Watt			0-2*				2	
18-Watt					4			
19-Watt	2			1				
20-Watt		1	0-2*					
23-Watt			0-4*			6		
Total CFLs in Kit	**6**	**3**	**2-4***	**2**	**4**	**6**	**4**	**4**

* The Colorado program's energy-saving kit contents were dependent on the delivery method and third-party vendor. A total of six versions of the kit were distributed:

1. Workshop Kit: (1) 13w; (1) 23w
2. Mailed Kit- Vendor 1: (2) 15w; (2) 23w
3. Mailed Kit- Vendor 2: (2) 15w; (2) 20w
4. Mailed Kit- Vendor 3, Kit Option 1: (1) 13w; (3) 23w
5. Mailed Kit- Vendor 3, Kit Option 2: (2) 13w; (2) 23w
6. Mailed Kit- Vendor 3, Kit Option 3: (4) 23w

Energy Education

XE's ESK Program focuses the education component on helping low-income customers lower their energy bills and improve the comfort and safety of their dwellings. All of the comparison programs provided an educational component to their participants. The level of energy education was dependent on the delivery method used to distribute the kit:

- Direct mailings: Education materials were included in the mailed kit. Materials included educational brochures, booklets, and DVDs.
- Workshops: Discussions during the group sessions included the basics of energy use, energy-saving behavior changes that can directly lead to lower energy bills, the process for installing the measures provided in the kit, and the importance of saving energy.
- Direct installation: Program implementers provided in-home energy education personalized to the customer's home and lifestyle needs.

As shown in Table 11, three of the comparison programs quantified the savings associated with the energy education component of their program. The Colorado, Iowa, and Oregon programs used participant surveys to analyze the effects of the education provided to participants through the workshops by measuring the savings attributed to participants' behavior changes. The Colorado program also analyzed the effects of education provided through direct mailings. Although Oregon's program included energy-tips booklets in their door hanger kits, program evaluators deemed that the savings generated from behavioral changes were statistically insignificant, and were therefore not included in their impact analysis.

Table 11. Comparison of Benchmark Programs' Achieved Savings From Participant Behavioral Changes

Behavior Change	Annual Electric Savings/Home (kWh)				Annual Fuel Savings/Home (Therms)			
	IA (W)	OR (W)	CO (W)	CO (M)	IA (W)	OR (W)	CO (W)	CO (M)
Adjust hot water heater	13	32.3	N/A	N/A	2.7	0.1	8	5
Adjust heating	40	210.6	N/A	N/A	20.1	0.8	18	9
Adjust air conditioning	19	0.7	N/A	N/A	N/A	N/A	N/A	N/A
Cold water laundry	N/A	N/A	N/A	N/A	N/A	N/A	6	3
Reduce hot water use	8	67.1	N/A	N/A	1.4	0.1	N/A	N/A
Reduce shower time	N/A	96.8	N/A	N/A	N/A	0.2	N/A	N/A
Refrigerator temperature change	N/A	N/A	54	28	N/A	N/A	N/A	N/A
Turn off computer	N/A	N/A	32	23	N/A	N/A	N/A	N/A
Total Behavioral Savings	**80**	**407.5**	**86**	**51**	**24.2**	**1.2**	**32**	**17**

Key: (W) =educational workshop delivery; (M) =direct mailing delivery.

In addition to potential savings attributable to energy education and the program delivery methods and incentives discussed above, Cadmus identified the following four energy education best practices[5] that enhanced energy education to low-income customers:

1. **Educating participants on the energy-using equipment in their homes** (such as comparing CFL electricity usage to incandescent bulbs and making participants aware of the benefits of changing a furnace filter).
2. **Appealing to different learning styles** (using visuals such as photographs and charts, as well as explaining information verbally and engaging participants with physical activities to explore energy conservation measures in their homes).
3. **Connecting energy to money** (making participants aware of different ways in which they "spend" energy and guidance for understanding how day-to-day energy use adds up to annual energy expenses).
4. **Engaging children in energy efficiency** (providing materials designed to engage children in energy-saving actions).

Program Impacts

Cadmus reviewed the publicly available impact results for the programs in Colorado, Iowa, New Mexico, Oregon, and Wyoming. To analyze program impacts, Cadmus compared the installation rates, participation data, kilowatt hour (kWh) and therm savings, and program costs.

Installation Rates

Savings realization is directly linked to measure installation. Table 12 summarizes participant-reported kit measure installation rates for five of the compared programs. As with the behavior change savings analysis, the Colorado program evaluator included a comparison of installation

[5] Drakos, Jamie, M.S. Khawaja, Ph.D., and A. West. *Impact of Flipping the Switch: Evaluating the Effectiveness of Low-Income Residential Energy Education Programs.* 2007.

rates achieved through delivery the kits during the workshop versus direct mailing. Installation rates were higher for the kits distributed during the workshops.

Table 12. Comparison of Kit Measure Installation Rates

Measure	XE	CO (W)	CO (M)	IA	NM	OR	WY
CFLs	77%*	74.4%	70%	92%**	95.9%	77%**	75.3%
Showerhead	55%*	46%	36%	67%	90.9%	58%	N/A
Kitchen Aerator	49%*	N/A	N/A	52%	69.7%	58%	N/A
Bathroom Aerator		N/A	N/A	54%	87%	67%	N/A

XE's Colorado Showerhead Program, which mails free, energy-efficient showerheads to interested residential (standard-income) customers, had an installation rate of 70% during the 2010 program year. EFI implements both the ESK Program and the Colorado Showerhead Program.

Key: (W) =educational workshop delivery; (M) =direct mailing delivery.

* These are the reported deemed savings technical assumptions for 2011.

** This was the average installation rate of all CFLs included in the kits.

The impact analysis of Iowa and Oregon's programs included per-unit installation rates for each of the CFLs provided in the energy-saving kits. This research shows that for these two programs, the per-unit installation rates of CFLs decreased as the number of CFLs included in the kit increased (Table 13). Although the Iowa and Oregon program reports do not provide insight into why the installation rates decreased, Wyoming program participants were asked why they chose not to install all four of the CFLs received in their kit. Reasons most commonly cited included participants storing the remaining bulbs, giving the bulbs away, or throwing them out.

Table 13. Per-Unit CFL Installation Rates

Measure	Iowa Program	Oregon Program
CFL 1	94%	91%
CFL 2	90%	90%
CFL 3	N/A	67%
CFL 4	N/A	60%

Participation and Savings

XE's program distributed 25,621 kits: a significantly greater number than any of the comparison programs. According to available participation and savings data, the New Mexico program had the second highest participation, distributing 7,251 kits. Oregon's program reported the highest annual kWh savings per home (758); however, New Mexico's program achieved the highest per-home annual therm savings (73.2). Table 14 illustrates the full analysis of annual savings and participation for each program.

Table 14. Benchmarking of Participation and Annual Savings

State	Program Administrator	Evaluated Year(s)	Number of Kits Distributed	Electric Savings/Kit (kWh)	Fuel Savings/Kit (Therms)
Colorado	Xcel Energy	2011	25,621	239.6	1.7
Colorado	Energy Outreach Colorado	2007	3,511	146	3
Iowa	Alliant Energy-IPL Aquila (now Black Hills Energy) MidAmerican Energy	2004-2005	990	349	50.8
New Mexico	Public Service Company of New Mexico	2010	7,251	329.7	73.2*
Oregon**	Oregon Department of Housing and Community Services	2004-2006	283	758	1
Wyoming	Rocky Mountain Power	2009	3,437	113.8	N/A
		2010	2,887	113.8	

* This number reflects the 2008 *ex post* annual therm/unit savings.

** These participation and savings data represent the workshop delivery method results only.

Program Costs

Because installation rates are dependent on the level of rigor for distributing program kits, Cadmus reviewed the compared programs' reported costs. The Colorado program costs illustrate how costs varied among the three delivery methods. The direct mailing delivery option provides the lowest program costs, ranging from $17.02 to $48.30 per kit. The New Mexico and Oregon programs' costs are generally high given the labor associated with direct installation. Program costs were not available for the Iowa program.

Table 15. Comparison of Benchmark Programs' Costs per Kit Distributed

State	Program Administrator	Program Year	Delivery Method	Number of Kits Distributed	Program Costs/Kit
Colorado	Xcel Energy	2011	Mailing	25,621	$30.40-$48.30*
Colorado	Energy Outreach Colorado	2007	Mailing	3,511	$21-$43**
			Workshop		$121
			Direct Install		$228
New Mexico	Public Service Company of New Mexico	2010	Mailing	7,251	$379.96
			Direct Install		
Oregon	Oregon Department of Housing and Community Services	2004-2006	Mailing	935	$316.09***
			Workshop	283	
			Direct Install	157	
Wyoming	Rocky Mountain Power	2009	Mailing	3,437	$24.97
		2010	Mailing	2,887	$17.02

* Program costs vary by the customer's fuel type: $30.40 for natural gas and $48.30 for electric.

** Per-kit costs varied among the three vendors contracted to distribute the kits.

*** The average program cost per kit was calculated by dividing the total program costs, less utility dollars expended for weatherization (part of direct installation process), by the total participation across all three delivery methods (n=1,375).

Recommendations

1. **Consider additional program recruitment methods.** If the number of eligible participants generated from the LIHEAP, LEAP, and energy assistance funding does not provide a large enough sample to achieve program participation and savings goals, it may be worth considering the following supplemental methods to recruit participants:

   a. XE could partner with social service agencies and/or non-profit organizations throughout the Colorado service territory to distribute Energy-Savings Kits to the low-income customers they serve. The New Mexico program had success partnering with organizations, including the City of Albuquerque Department of Senior Affairs, the Salvation Army, Interfaith Power and Light, and the Red Cross. XE currently uses this model for the Low Income Weatherization Program, and it could be used efficiently in tandem with the ESK Program.

   b. XE could consider targeting buildings owned by the Department of HUD or those on the DOE's HUD-approved list of qualifying buildings. Such buildings automatically qualify for the DOE Weatherization Assistance Program, and could be used to identify qualified candidates for the ESK Program.

2. **Consider methods for allowing customers to self-identify their eligibility.** The British Columbia program provides information on their Website regarding what a customer will need to provide to program staff in order to be verified over the telephone or online. Self-identification could be used to expand the number of customers eligible for the program by including individuals who are struggling financially but may not receive government assistance. This may also provide an added benefit of making additional XE customers aware of XE efforts to assist low-income customers.

3. **Consider exploring the costs and benefits of providing education through workshops.** Although this delivery method may increase program costs, it may increase installation rates and savings as well. Partnering with local community assistance organizations to conduct workshops may provide additional benefits, such as greater integration and cross-marketing for the Low Income Weatherization Program. Behavioral changes that participants implement as a result of the workshop education are likely to garner more significant savings than can be achieved from education through mailed materials.

4. **Consider quantifying savings achieved through behavior change that was influenced by the energy education component of the ESK Program.** Participant survey results can inform XE of the percentage of participants implementing the energy-saving tips provided in the kit materials. These results could reflect the higher overall savings achieved by the ESK Program. Significant non-energy benefits[6] have also been reported when considering possible program effects, such as mitigation of arrears, collection efforts, and disconnections.

[6] Skumatz Economic Research Associates, Inc. and The Cadmus Group, Inc. *Non-Energy Benefits: Status, Findings, Next Steps, and Implications for Low Income Program Analyses in California.* 2011.

5. **Consider energy education best practices when designing the kit materials.** Although XE has begun to address previous education material deficiencies in 2012, consider continuing to keep best practices, such as connecting energy to money, addressing different learning styles, and engaging children.
6. **Consider exploring additional innovative electricity-saving measures to include in the Energy-Savings Kits.** Because current natural gas prices make gas savings measures less cost-effective, electric savings kit measures may contribute more effectively to overall savings. The Energy Independence and Security Act of 2007 will change the savings baseline for lighting by 2014, and research conducted in Iowa and Oregon showed that CFL installation rates decreased as the number provided in the kits increased. Therefore, XE may not want to rely exclusively on CFLs for electric savings generated by ESK Program participants. Consider including alternative measures (e.g., smart power strips) to achieve significant electric savings impacts. Kit measures that were evaluated and excluded at the start of the program may have value in the future as the baseline and technologies change.

APPENDIX A. XCEL ENERGY'S COLORADO ENERGY SAVINGS KIT PROGRAM PARTICIPANT SURVEY

A. Introduction

A1. Hello, my name is _____, from [Gilmore Group], and I'm calling on behalf of [Xcel Energy] about the Energy Savings Kit Program. May I speak with [INSERT PARTICIPANT'S NAME]?

1. Yes
2. No **[SKIP TO A4]**

A2. Our records indicate that an Energy-Savings Kit was sent to your address. Did you receive it? [If needed: This kit contained Compact Fluorescent Light bulbs, an efficient showerhead, and faucet aerators].

1. Yes
2. No **[THANK AND TERMINATE]**

99 Refused **[THANK AND TERMINATE]**

[EMPHASIZE THAT]:
Your participation in this study is important so that the program can include your perspective about how these services are provided in the future.

[IF NEEDED]:
This survey is for research purposes only and this is not a marketing call. This is the primary way for customers to provide input into [Xcel Energy's] energy-saving programs. Your responses will remain confidential.

RESPONSE TO CUSTOMER QUESTIONS
(Timing: This survey should take about 15 minutes of your time. Is this a good time for us to speak with you? (IF NOT, SET UP CALL BACK APPOINTMENT))

(**Caller identification:** I'm with The Gilmore Group, an independent research firm conducting this research study. I am calling to learn about your experience with the [Energy-Savings Kit].

(**Sales concern:** I am not selling anything; we would simply like to learn about your experience with the Energy-Savings Kit. Your responses will be kept confidential. If you would like to talk with someone about this study, feel free to call an Xcel Energy representative at 303-294-2130)

(**Reason for study:** Studies like this help improve the services provided by the Energy-Savings Kit and verify that you received all the items in the kit.)

A3. I'm not selling anything; I would just like to ask you some questions about your experience with the Energy-Savings Kit. Do you have about 15 minutes to answer some questions about the kit you received?

1. Yes **[SKIP TO Section B]**
2. No, new respondent coming to phone **[REINTRODUCE] [GO BACK TO A2]**
3. No, respondent not available

99 Refused **[INDICATE IF THERE IS A LANGUAGE BARRIER AND WHETHER THE RESPONDENT MAY SPEAK SPANISH. THANK AND TERMINATE]**

A4. Is there a more convenient time I could call you back?

1. Available now **[GO BACK TO A2]**
2. Not available **[ARRANGE CALLBACK]**
3. No **[THANK AND TERMINATE]**

98 Don't know **[THANK AND TERMINATE]**
99 Refused **[THANK AND TERMINATE]**

B. Awareness & Participation

B1. What was the main reason you decided to receive a kit? **DO NOT READ**

1. It was free
2. High utility bills/save money on utility bills
3. Uncomfortable home (e.g., drafty/leaky)
4. Health of family
5. Landlord suggested
6. Environmental reasons
7. I needed light bulbs/CFLs
8. I needed an efficient showerhead
9. I needed faucet aerators
10. I didn't request one—it just showed up at the house
11. Other (Specify: _____)

98 Don't know
99 Refused

B2. Before this call, were you aware that Xcel Energy provided the Energy-Savings Kit?

1. Yes
2. No **[SKIP TO B4]**

98 Don't know **[SKIP TO B4]**
99 Refused **[SKIP TO B4]**

B3. How did you first learn that Xcel Energy provided the Energy-Savings Kit? **DO NOT READ** [Single choice]

1. Business reply card/postcard
2. Kit packaging
3. Brochure in the kit
4. DVD video
5. Installation guide
6. Other (Specify: _____)

98 Don't know
99 Refused

B4. If you were interested in more information about how to save energy, what would be the best way for you to get that kind of information? **DO NOT READ [INDICATE ALL THAT APPLY]**

1. Friends/family members/coworkers
2. Television program
3. Newspaper/magazines
4. Book/library
5. Environmental organizations
6. Utility bill insert
7. Utility newsletter
8. Online/Website (which ones? _____)
9. E-mail
10. Community agency/organization
11. Community/church event
12. Phone book/yellow pages
13. Other (Specify: _____)

98 DON'T KNOW
99 REFUSED

C. Installation

C1. Have you had a chance to install the CFLs?

1. Yes
2. No **[Skip to C4]**

98 DON'T KNOW
99 REFUSED

C2. **[ASK If C1=yes]** How many of the CFLs you received in the kit did you install? **[RECORD RESPONSE, 98= DON'T KNOW, 99= REFUSED]**

C3. How many of those are still installed? **[RECORD RESPONSE, 98= DON'T KNOW, 99= REFUSED]**

C4. Have you had a chance to install the showerhead?

1. Yes
2. No
98 DON'T KNOW
99 REFUSED

C5. Have you had a chance to install the faucet aerator?

1. Yes
2. No **[Skip to C7]**
98 DON'T KNOW
99 REFUSED

C6. **[ASK If C5=yes]** Both of them or just one? [Record one or two]

C7. **[ASK If C1, C4, OR C5 = NO; Ask only once if they say no to installing any measure]** What is the reason the item(s) has/have not been installed? **DO NOT READ**

1. Haven't had a chance yet
2. Had challenges installing one or more items
3. Gave them away
4. Threw them away
5. Someone else in the household installed them
6. Some items in the kit were defective
7. Waiting for the current items to fail before replacing them
8. Already had similar efficient items
9. Didn't want them
10. Don't remember
11. Some other reason (Specify:_____)

C8. **[Skip if C1, C4, AND C5 = NO]** Can you please tell me about any difficulties you might have had with installing the items provided in the Energy-Savings Kit?

1. (Open Ended. Please Specify_____)
2. (Nothing)
98 DON'T KNOW
99 REFUSED

C9. After returning the postcard reply, about how long did it take to receive the kit? **[RECORD RESPONSE, 98= DON'T KNOW, 99= REFUSED] DO NOT READ**

1. Less than one month
2. 1 to 2 months
3. 2 to 3 months
4. 3 to 4 months
5. 4 to 5 months
6. 5 to 6 months
7. More than 6 months

C10. How satisfied were you with the time it took to receive the kit, on a scale from 0 to 10 where 0 means not at all satisfied and 10 means completely satisfied? **[RECORD RESPONSE, 98= DON'T KNOW, 99= REFUSED]**

C11. When the kit was first delivered to your house, were you aware that it was the Energy-Savings Kit that you had requested?

1. Yes
2. No

98 DON'T KNOW
99 REFUSED

C12. What kind of condition did the package arrive in? Would you say it was in… **[Read all but "other." Record other if they are unable to provide a response of 1-3 or they elaborate on the condition]**

1. Good condition
2. Average condition (a few scuff marks on the outside but no major tears or breaks)
3. Poor condition (holes or tears in packaging)
4. Other (specify)

98 DON'T KNOW
99 REFUSED

C13. And how about the condition of the contents? Would you say they were in… **[Read all but "other." Record other if they are unable to provide a response of 1-3 or they elaborate on the condition]**

1. Good condition
2. Average condition (some wear but no major breaks)
3. Poor condition (items broken or nonfunctional)
4. Other (specify)

98 DON'T KNOW
99 REFUSED

D. Satisfaction

Now I have a few questions about your satisfaction with the Energy-Savings Kit and the products that you received. Here, we are talking more about the products' performance and quality.

D1. On a scale from 0 to 10, where 0 means not at all satisfied and 10 means completely satisfied, please rate your overall satisfaction with the Energy-Savings Kit you received**. [RECORD RATING, -98= DON'T KNOW, -99= REFUSED]**

D2. **[ASK If C1=yes]** On a scale of 0 to 10 where 0 is not at all satisfied and 10 is completely satisfied, how satisfied are you with the CFLs? **[RECORD RATING, -98= DON'T KNOW, -99= REFUSED]**

D3. **[ASK If D2<5]** What was less than satisfactory about the CFLs? **[RECORD RESPONSE, -98= DON'T KNOW, -99= REFUSED]**

D4. **[ASK If C4=yes]** On a scale of 0 to 10 where 0 is not at all satisfied and 10 is completely satisfied, how satisfied are you with the high-efficiency showerhead? **[RECORD RATING, -98= DON'T KNOW, -99= REFUSED]**

D5. **[ASK If D4<5]** What was less than satisfactory about the showerhead? **[RECORD RESPONSE, -98= DON'T KNOW, -99= REFUSED]**

D6. **[ASK If C5=yes]** On a scale of 0 to 10 where 0 is not at all satisfied and 10 is completely satisfied, how satisfied are you with the faucet aerators that you installed in your kitchen and/or bathroom? **[RECORD RATING, -98= DON'T KNOW, -99= REFUSED]**

D7. **[ASK If D6 <5]** What was less than satisfactory about the faucet aerators? **[RECORD RESPONSE, -98= DON'T KNOW, -99= REFUSED]**

D8. On a scale of 0 to 10 where 0 is not at all satisfied and 10 is completely satisfied, how satisfied are you with the instructions for installing the items? **[RECORD RATING, -98= DON'T KNOW, -99= REFUSED]**

D9. I'd like you to think in terms of your satisfaction with Xcel Energy overall. On a scale of 0-10, where 0 means you are not at all satisfied and 10 means you are completely satisfied, how would you rate your satisfaction with Xcel Energy?

[RECORD RESPONSE 0-10] _____
98. Don't know
99. Refused

D10. On the same 0 to 10 scale, how satisfied are you overall with the energy-saving information provided by Xcel Energy?

[RECORD RESPONSE 0-10] _____
98. Don't know
99. Refused

D11. [ASK If D10< 6: Why do you say that? IF D10> 6, Skip to next question].

[RECORD REPSONSE]_____

D12. Do you think your monthly energy bill has decreased since installing the Energy-Savings Kit devices?

1. Yes
2. No
3. Have not been able to see a difference

98 DON'T KNOW
99 REFUSED

D13. What would you change to make the Energy-Savings Kit better? **[DO NOT READ]**

1. Nothing
2. Less wait time (to get into program, to get measures installed)
3. Offer more types of equipment
4. Provide more instructions on how to install the new equipment
5. Provide more information on how to reduce bills and save energy in my home
6. Other (Specify: _____)

98 DON'T KNOW
99 REFUSED

D14. Are you aware of any other ways to save energy that were not provided as a part of the Energy-Savings Kit that you feel should have been included?

1. Yes (Specify: _____)
2. Nothing

98 DON'T KNOW
99 REFUSED

D15. Are you aware of any other programs from Xcel Energy that can help you save money on your utility bill?

1. Yes
2. No **[Skip to E1]**

98 DON'T KNOW
99 REFUSED

D16. Which programs have you heard of? DO NOT READ

1. Single Family (Low Income) Weatherization Program
2. Saver's Switch (A/C cycling off and on at peak times)
3. Home Lighting (CFLs via Xcel Energy's Website)
4. Home Performance with ENERGY STAR/Energy Audit
5. Furnace Rebate
6. Boiler Rebate
7. Water Heater Rebate
8. Insulation Rebate
9. Air Conditioner Rebates
10. Energy Assistance (low income)
11. HomeSmart (appliance repair and tune-up)
12. Smart Grid
13. Rebates (unspecified)
14. Budget billing/averaged monthly payments
15. Other (Specify: _____)

98 DON'T KNOW
99 REFUSED

D17. Have you participated in any other (i.e., not the Energy-Savings Kit) energy-efficiency rebate programs offered by Xcel Energy?

1. Yes
2. No **[SKIP TO E1]**

98 DON'T KNOW **[SKIP TO E1]**
99 REFUSED **[SKIP TO E1]**

D18. Which programs? DO NOT READ

1. Single Family (Low Income) Weatherization Program
2. Saver's Switch (A/C cycling off and on at peak times)
3. Home Lighting (CFLs via Xcel Energy's Website)
4. Home Performance with ENERGY STAR/Energy Audit
5. Furnace Rebate
6. Boiler Rebate
7. Water Heater Rebate
8. Insulation Rebate
9. Air Conditioner Rebates
10. Energy Assistance (low income)
11. HomeSmart (appliance repair and tune-up)
12. Smart Grid
13. Rebates (unspecified)
14. Budget billing/averaged monthly payments
15. Other (Specify: _____)

98 DON'T KNOW
99 REFUSED

E. Information/ Knowledge

E1. Now I'd like you to think about possible challenges you may face with saving energy in your home. On a scale of 0 to 10, where 0 means not at all difficult and 10 means very difficult, how difficult is saving energy in your household? **[RECORD RESPONSE, -98= DON'T KNOW, -99= REFUSED]**

E2. **[If E1> 0]** What makes saving energy in your home the most challenging? [Do not read responses. Accept one.]

1. Money (up-front cost of equipment)
2. Information (knowing what to do in my household)
3. Technical skills (knowing how to do energy saving things)
4. Persuading family members to do what is needed to save energy
5. Making the time to do energy saving things
6. Other priorities are more important
7. Not important/not interested in it/just don't think about it
8. Knowing where to begin when there are so many changes that could be made
9. Have already done the things we can afford
10. Other (Specify:____)

98 DON'T KNOW
99 REFUSED

E3. Before you received the Energy-Savings Kit, how would you rate your familiarity with ways to save energy in your home? Use a 0 to 10 scale, where 0 means not at all familiar and 10 means very familiar. **[RECORD RESPONSE, -98= DON'T KNOW, -99= REFUSED]**

E4. As a result of receiving the Energy-Savings Kit and the information it contained, how would you now rate your familiarity with ways to save energy in your home? Again, using a 0 to 10 scale, where 0 means not at all familiar and 10 means very familiar. **[RECORD RESPONSE, -98= DON'T KNOW, -99= REFUSED]**

E5. What other informational materials (if any) would you find helpful for saving energy in your home? **[Read responses; Indicate yes or no to each option]**

1. An educational DVD that shows ways to save energy in a typical home
2. Information about the energy used by appliances and how much money could be saved by an upgrade
3. An online energy audit where you can enter information from your home and receive personalized suggestions for how your home could be more energy efficient
4. Age appropriate materials for engaging children in energy saving actions
5. Other (Specify:_____) Do not read but accept responses that do not fit other choices.

98 DON'T KNOW [Do not read]
99 REFUSED [Do not read]

F. Spillover

F1. In addition to the items provided in the kit, have you made any other changes to make your home more energy efficient?

1. Yes
2. No **[SKIP TO G1]**

98 DON'T KNOW **[SKIP TO G1]**

99 REFUSED **[SKIP TO G1]**

Equipment/ Improvement	F1. What changes have you made? **[Indicate mentioning with 'Y']**	F1a. **[If F1=Y]** Is the [MEASURE] ENERGY STAR certified?	F1b. **[If F1a=Y]** Did you receive a rebate from another utility for any of the additional equipment installed?	F1c. **[If F1b=Y]** which utility or rebate program was it?	F1d. On a scale of 0 to 10, where 0 means not at all important and 10 means very important, please indicate how important the kit was in your decision to install [F1 measure] at your home?
1. Room A/C					
2. Clothes washer					
3. Dishwasher					
4. Duct sealing		N/A- DO NOT ASK			
5. Furnace/Boiler		Or high efficiency?			
6. Central AC system		Or high efficiency?			
7. Insulation		N/A- DO NOT ASK			
8. Lighting					
9. Water heater		Or high efficiency?			

Equipment/ Improvement	F1. What changes have you made? **[Indicate mentioning with 'Y']**	F1a. **[If F1=Y]** Is the [MEASURE] ENERGY STAR certified?	F1b. **[If F1a=Y]** Did you receive a rebate from another utility for any of the additional equipment installed?	F1c. **[If F1b=Y]** which utility or rebate program was it?	F1d. On a scale of 0 to 10, where 0 means not at all important and 10 means very important, please indicate how important the kit was in your decision to install [F1 measure] at your home?
10. Programmable Thermostat		N/A- DO NOT ASK			
11. Refrigerator/ freezer					
12. Solar PV system		N/A- DO NOT ASK			
13. Television					
14. Whole-house fan		N/A- DO NOT ASK			
15. Window/door					
16. Weatherstripping		N/A- DO NOT ASK			
17. Putting plastic on windows		N/A- DO NOT ASK			
18. Other, Specify 1					
19. Other, Specify 2					

G. Other Equipment

G1. What kind of cooling equipment do you use in hot weather at home? [DO NOT READ]

1. Central AC
2. Room AC
3. Evaporative cooler
4. Ceiling fan
5. Whole-house fan
6. Free-standing fan (e.g., floor or box fan)
7. None
8. Other (Specify: _____)

98 DON'T KNOW
99 REFUSED

G2. Do you have a programmable thermostat in your home?

1. Yes
2. No **[SKIP TO G4]**

98 DON'T KNOW **[SKIP TO G4]**
99 REFUSED **[SKIP TO G4]**

G3. Do you use the programmable temperature settings to automatically adjust the temperatures in your home? (For example, to lower the temperatures at night while people are asleep or during the day when no one is home?)

1. Yes
2. No

98 DON'T KNOW
99 REFUSED

G4. Do you have a clothes washer or dryer in your home or unit?

1. Clothes washer
2. Clothes dryer
3. Both
4. Neither

98 DON'T KNOW
99 REFUSED

G5. **[Skip If B4=8]** Do you have access to the internet?

1. Yes
2. No

98 DON'T KNOW
99 REFUSED

G6. Do you have access to a computer or DVD player to view information in a DVD format?

1. Yes
2. No

98 DON'T KNOW
99 REFUSED

H. Demographics

Finally, I have a few general questions for general categorization purposes.

H1. Which of the following would you say best describes your home? Is it a … **[READ LIST]**

1. Single family detached house
2. Single family attached house (e.g., duplex, townhouse, row house)
3. Condo/apartment
4. Mobile/manufactured home
5. Other (Specify: _____)

98 DON'T KNOW
99 REFUSED

H2. What is the total heated square footage of your home?

1. Less than 1,000 square feet
2. 1,000 to 1,499 square feet
3. 1,500 to 1,999 square feet
4. 2,000 to 2,499 square feet
5. 2,500 to 2,999 square feet
6. 3,000 to 3,999 square feet
7. 4,000 square feet or more

98 DON'T KNOW
99 REFUSED

H3. Do you rent or own your current residence?

1. Rent
2. Own

98 DON'T KNOW
99 REFUSED

H4. How long have you lived at this residence? **[RECORD RESPONSE, -98= DON'T KNOW, -99= REFUSED]**

H5. Is your main heating source electric, natural gas, propane, or some other type?

1. Electric
2. Natural gas
3. Propane
4. Other (Specify:_____)

98 DON'T KNOW
99 REFUSED

H6. What energy source do you use to heat your water?

1. Natural gas
2. Electric
3. Propane
4. Oil
5. Other (Specify:_____)

98 DON'T KNOW
99 REFUSED

H7. Including yourself, how many people are in your household? [If necessary to clarify: This number should include all members of your household whether or not they are related to you, but do not include anyone who is just visiting or children who may be away at college or in the military.] **[RECORD RESPONSE, -98= DON'T KNOW, -99= REFUSED]**

H8. What is the highest level of education someone in your household has completed?

1. Less than high school
2. High school graduate or GED
3. Technical degree/certification
4. Some college (including associate's degree)
5. Bachelor's degree
6. Graduate study or degree

98 DON'T KNOW
99 REFUSED

H9. Which of the following best represents your age? **[TARGETING THE RESPONDENT] [READ LIST]**

1. 18-24
2. 25-34
3. 35-44
4. 45-54
5. 55-64
6. 65-74
7. 75 or older

98 DON'T KNOW
99 REFUSED

I. Conclusion

Those are all the questions I had.

I1. May we share your individual responses with Xcel Energy so they can serve their customers better?

1. Yes
2. No

I2. Respondent's gender **[RECORD, BUT DO NOT ASK]**

1. Male
2. Female

Thank you very much for your time! Your input will help ensure the quality of the Energy Savings Kit Program.

APPENDIX B

Xcel Energy requested that Cadmus explore possible market effects attributed to the Low Income Energy Savings Kit program. Although the ESK program did not have explicit market transformation goals, some of the potential market effects noted in the program logic model indicated low income customers might seek additional ways to save energy either through participation in the weatherization program or by investing in energy efficient equipment on their own. The logic model also indicated the availability of energy-saving equipment or services provided by other agencies serving low income customers may be another possible long term market effect.

Cadmus collected data on participant energy efficiency investments in the form of spillover and found in Chapter 5, Spillover Savings that over one third (35%) of ESK participants invested in additional energy-saving measures primarily associated with lighting, weatherstripping, and plastic on windows. While this is an indicator of a possible market effect for a point in time, this would need to be tracked in successive years to determine if the ESK program had a role in increasing these investments. Another indicator may include tracking ESK participants that also participate in the weatherization program or other residential DSM programs. Where customers exhibit participation in multiple programs, additional research could determine drivers and program attribution for these deepening participation levels.

Cadmus did not collect data on other agencies activities, and therefore cannot comment on the extent to which they may or may not provide additional energy conservation measures to Xcel Energy low income customers.

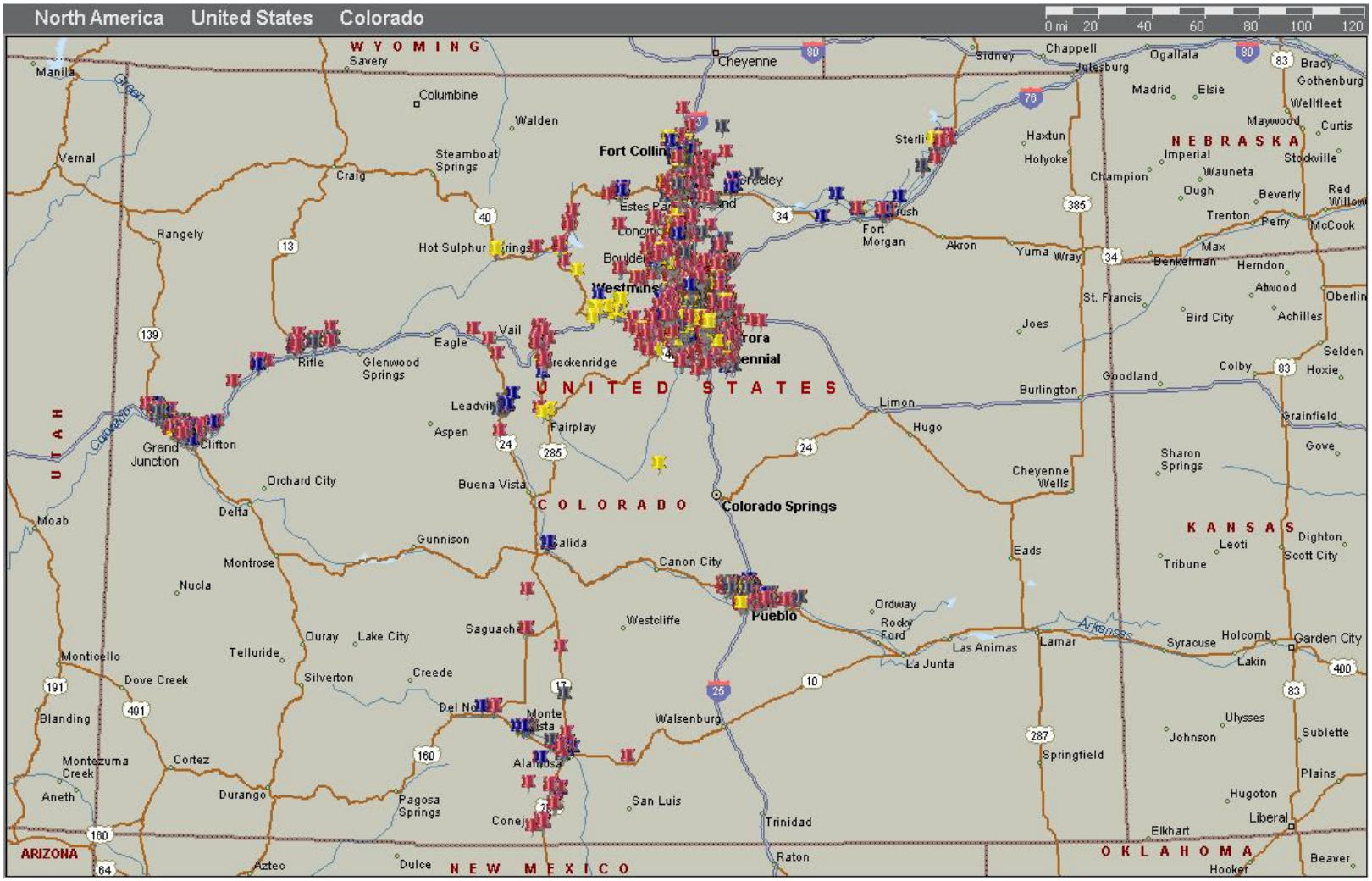
One other market effect indicator outlined in the evaluation planning process was to explore participation levels among the PRIZM segments to determine possible opportunities or saturation levels. In theory, if low income identified PRIZM segments are saturated for ESK participation, the program has accomplished all it can with that segment. For example, lower income PRIZM segments (M3, M4, F4) among Colorado customer segments with low ESK program participation levels could represent possible saturation in that customers in that segment have already participated and few remain with whom to promote the program. Additional research could determine if a significant proportion of customers in those segments have already participated or have yet to participate. Data from the program database, however, indicate higher participation levels from the M3, M4 and F4 segments relative to the Colorado population. As these participation levels were strong as expected, no evidence appears to support ESK participation saturation among low income-identified segments.

Although market effects indicators were limited for this program, other low income programs[7] have focused on non-energy benefits provided by the program as impact indicators not typically considered for other types DSM programs. If Xcel Energy were to further explore methods for identifying and measuring non-energy benefits associated with the ESK program, the program logic model should also include goals and strategies supporting program theory that kit measures result in benefits beyond the direct savings values attributed to each measure.

[7] Brockway, Nancy, J.D. *Methods for Low-Income Program Evaluation*. The National Regulatory Research Institute, July 2007.

Figure 18 shows geographic areas where 2011 participants live in Colorado. Cadmus mapped participation and coded the most common PRIZM segments in the 2011 program participation data set. Black pins represent Mainstream Families (F3); Yellow represents Mainstream Singles (Y2); Blue represents Striving Singles (Y3); and Red is for any other PRIZM segment.

Figure 18. Colorado Energy Savings Kits Program 2011 Participants



The PRIZM segments are fairly evenly distributed across Xcel Energy service territory, with a slightly higher concentration of Mainstream Singles in South and Western Denver suburbs.