

THE
CADMUS
GROUP, INC.

Colorado
Showerhead
Program
Evaluation

December 7, 2011

Prepared by:
Cheryl Winch
Katie Albee
Danielle Kolp
Katie Gustafson
Charlie Bicknell
The Cadmus Group, Inc.

Table of Contents

1. Executive Summary	1
Methodology	1
Evaluation Objectives	1
Key Findings	2
Recommendations	4
Process	4
Impact	5
2. Introduction	6
Research Methods	6
Report Overview	6
3. Program Description	7
Process Interview	7
Roles and Responsibilities	7
Overview	7
Program Delivery	7
Program Tracking	8
Challenges and Opportunities	8
Process Flow Diagram	9
Logic Model	11
4. Task 3. Participant and Nonparticipant Surveys	13
Summary of Key Survey Findings	13
Participant Detailed Findings	13
Program Awareness	13
Showerhead Installation	15
Participant Demographics	24
Nonparticipant Detailed Findings	24
Reason for Not Participating	24
Nonparticipant Demographics	25
PRIZM Segments	26
5. Task 5b. Validated and Recommend Net -to-Gross	30
Freeridership	30
Methodology	30
Results	31
Spillover	32

Participant Methodology	32
Participant Results	33
Participant Spillover Quantification	33
Spillover Results Discussion	35
Program Changes	35
Benchmarking	35
Market Transformation	36
Establishing a Baseline	37
Measuring Indicators of Market Transformation	37
Net-To-Gross Ratio.....	37
6. Task 5c. Verify Technical and Baseline Assumptions	39
7. Task 6. Peer Utility Benchmarking.....	40
Findings.....	40
Implementation	40
Customer Outreach	41
Eligibility Requirements	42
Incentives	43
Program Measures	43
Energy Education.....	43
Program Success	44
Recommendations.....	45
Appendix A: Freeridership Scoring Matrix	46
Appendix B: Participant Survey.....	47
Appendix C: Nonparticipant Survey.....	59
Appendix D: Referenced Studies.....	66

1. Executive Summary

Xcel Energy's Colorado Showerhead Program (the program) offers free, energy-efficient showerheads to Colorado Xcel Energy customers. The energy-efficient program showerhead is designed to offer year-round, long-term natural gas and electric savings to Xcel Energy customers. Residential natural gas and electric customers are eligible to receive a free, high-efficiency, 1.5 gallon-per-minute showerhead (approximately a \$5.50 value) to help reduce their energy and water use costs.

Xcel Energy sends direct mailings to selected customers in the spring and fall with an offer of a free energy-efficient showerhead. Customers respond by sending back the business reply card (BRC). Xcel Energy contracted with a third-party provider, Energy Federation Incorporated (EFI) to manage all customer responses and send out the free energy-efficient showerhead. EFI is a residential distributor of energy-efficiency related products in the United States.

Methodology

Data for this report relied on both secondary and primary data. Primary data came from participant and nonparticipant surveys in which Cadmus interviewed individuals that received a BRC to participate in the Colorado Showerhead Program. Secondary data, for the benchmarking section, came from multiple program evaluations that included showerheads as the only program measure or one of several program measures. Additional secondary sources for the technical assumptions analysis are provided in footnotes.

The net-to-gross (NTG) analysis is based on self report data from the phone survey, which includes key questions that capture freeridership and spillover. Freeridership is the percent of savings that would have occurred in the absence of the program and spillover is the evaluation-measured natural gas and electric savings attributable to the purchase of additional energy-efficient measures. Further detail outlining how the data were analyzed is included in section six.

Evaluation Objectives

Task 1. Conduct Project Initiation Meeting and Present Evaluation Plan

Objective: To provide a forum for program staff to discuss the evaluation's goals, clarify basic research and analyses methods, identify data required from the Company, 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 implementation, data development, or analysis of the program.

Task 3. Primary Research-Participant and Nonparticipant Surveys

Objective: To assess Program satisfaction, exposure to marketing, market barriers, free ridership, spillover, and customer input on market transformation.

Task 5b. Validate and Recommend Net-to-Gross

Objective: The impact evaluation's net-to-gross calculations to estimate net energy savings employ triangulation methods for best estimates of program attribution.

Task 5c. Verify Technical and Baseline Assumptions

Objective: To outline the technical, methodological, and analytical procedures that will be used to validate and modify the Company's baseline and technical assumptions. Review these assumptions and make recommendations for any modifications and improvements.

Task 6: Peer Utility Benchmarking

Objective: To identify the specifics of showerhead programs offered by peer companies and compare those specifics to Xcel Energy's program.

Task 7. Progress Reporting

Objective: To provide monthly/weekly progress reports to Xcel Energy that communicate progress and any challenges, including their resolutions.

Task 8. Final Report

Objective: To submit a file report to Xcel Energy that includes Program finding and recommendations.

Key Findings

Task 2. Internal Review/Development of Process Flow and Logic Model

With input from Xcel Energy, Cadmus developed an interview guide and conducted interviews with program staff and implementing agencies. Findings revealed that the Program achieved 250 percent of the participation goal in 2010. Staff members we interviewed were highly confident that the Program will meet or exceed its 2011 goals. More participation could be achieved by increasing the mailing list size or by including an additional mailing.

Based on these interviews, Cadmus created a process flow diagram that documents the program delivery to customers, as well as a logic model that shows the program inputs, outputs, and expected outcomes (Figure 1 and Figure 2).

Task 3. Primary Research-Participant and Nonparticipant Surveys

Program awareness. The majority of participants was aware that the free showerhead they received was through an Xcel Energy program (83 percent, Figure 3) and most learned about the Program through the card they received in the mail (83 percent, Figure 4).

Showerhead installation. Seventy percent of participants had their free Xcel Energy showerhead installed at the time of the survey (Figure 6). The majority of participants (69%) installed their showerhead within one to two weeks of receiving it (Figure 7).

Among those that did not install their showerhead, the main reason cited for not installing the showerhead was that they hadn't had a chance yet (23%). The second most commonly cited reason was that they were having challenges installing it or were not sure how to install it (20%, Figure 9).

Satisfaction. The majority of participants were satisfied with the showerhead they received (87 percent, Figure 15). Among those who were dissatisfied, the most common disliked feature was the low flow- rate of the showerhead.

Product Bundling: When asked what kind of follow-up respondents would find helpful, 37 percent said that home energy-saving ideas would be helpful. Twenty-three percent would like an offer for a second free energy-efficient showerhead (Figure 11).

Nonparticipants.¹ When asked reasons for nonparticipation, 24 percent reported that they already had an efficient/low-flow showerhead. Additional reasons for not participating in the program included being happy with their current showerhead (18%), or otherwise not needing a showerhead (12%, Figure 19).

Task 5b. Validate and Recommend Net-to-Gross

Cadmus determined the NTG ratio by discounting freeridership and giving savings credit to spillover attributable to the Program. We determined that the Program can attribute a high percentage of gross savings to spillover measures (17 percent each for electric and gas), thereby adding significant savings to the final NTG percentage.

Freeridership was calculated to be 18 percent for PY2010, meaning that roughly one in five customers who received and installed the showerhead would have bought the same or equivalent unit had the Program not existed. Combined with spillover, this finding indicates that 99 percent of Xcel Energy's claimed gross savings for gas showerheads and similarly, 99 percent of savings for electric showerheads can be attributed to its Colorado Showerhead Program.

Although we believe that The Colorado Showerhead Program has no measurable savings attributable to market transformation, the program does have the potential to impact market transformation within a few years.

Task 5c. Verify Technical and Baseline Assumptions

For the Colorado Showerhead Program, it was determined mid project that verifying the Technical and Baseline assumptions fell outside the scope of the study.

Task 6. Peer Utility Benchmarking

Cadmus completed a benchmarking study comparing design elements of the Colorado Showerhead Program with nine other programs offered throughout the county. A few of these programs focused on only showerheads, while other programs included multiple measures in addition to showerheads.

The studies we reviewed in this analysis varied greatly in their program structure. While some programs, like the Xcel Energy program, used a program implementer to send a free, low-flow showerhead to customers' homes, others were designed as a point-of-purchase program, a direct install program, or a rebate program that would lower the cost of the low-flow showerhead. Additionally, many programs offered more energy saving measures in addition to showerheads,

¹ Nonparticipants received a business reply card but did not reply to the offer to receive a free, energy efficient showerhead.

such as faucet aerators, insulation, compact fluorescent light bulbs (CFLs), and energy-efficient appliances. All programs required participants to be customers of their utility, and some programs had additional requirements such as income status, homeownership status, and dwelling type.

Not all of the descriptions of previously mentioned programs claim to include education as a component of their program. However, Cadmus assumes that any programs offering an energy audit provided an opportunity for homeowners to learn ways they could save energy by improving their home's efficiency. Programs that included energy-efficiency tips either disseminated those tips to customers online though leave behind materials, or via mailers.

Recommendations

Based on findings from process and impact research and analysis, Cadmus has the following Program recommendations:

Process

1. **Consider reviewing the method for determining the installation rate.** Using the same survey questions as the Xcel Energy M&V survey six months after the 2010 year end, Cadmus found the 2010 installation rate of 70 percent was higher than the 57 percent measured at the end of the 2010. Consider allowing at least six months from the time of showerhead distribution to the M&V installation rate survey or consider using a deemed value as measured and verified through the program evaluation process. Allowing for six months before verifying installation may require distributing the showerheads earlier in the year to allow enough time for measuring the installation rate before annual program savings are reported.
2. **To increase the installation rate, consider implementing one to two follow-up opportunities** after the BRCs have been sent and again after the showerheads have been sent to remind people about the offer and to encourage them to install the showerhead. Many nonparticipating survey respondents said that they did not participate because they forgot to reply/did not get around to replying to the offer before it expired. Twenty-three percent of surveyed participant respondents who had not yet installed their free showerhead at the time of the survey said that they had not had a chance to install it. A follow-up reminder call could be the impetus necessary to prompt installation follow-through.
3. In addition to follow-up, Xcel Energy may want to **consider incorporating a direct install effort**, if it is determined cost effective. Thirty percent of participant survey respondents had not yet installed their free showerhead at the time of the survey. This approach has proven effective for low income and whole-house program approaches.
4. **Consider using this Program to educate customers about other Xcel Energy programs and additional ways to save energy.** This Program offers an opportunity for Xcel Energy to educate consumers about additional ways to save energy. After having participated in the Colorado Showerhead Program, half of all participating survey respondents expressed an interest in receiving information from Xcel Energy about additional ways they could save energy in their home. This finding is consistent with the high levels of spillover found for the Program. Since the Program requires a low level of

effort, it could serve as a natural gatekeeper for additional measures or be used as a way to increase customer interest in participating in other Xcel Energy demand-side management (DSM) programs.

5. **Consider expanding the Program to commercial meters and directly targeting multifamily buildings.** This Program has just been for residential customers, and thus far program administrators have tried to avoid multifamily buildings by identifying and avoiding mailing addresses with apartment or unit numbers. The energy savings of the program would increase significantly by including multifamily and commercial customers.

Impact

6. Cadmus recommends that Xcel Energy **consider using a NTG ratio of 0.99** for this Program due to high levels of spillover. Xcel Energy could also add a question to their BRC, such as “*Do you already have an efficient showerhead installed in your main shower?*,” to help lower the rate of Program freeridership.
7. Xcel Energy may want to consider **conducting a market transformation study** to capture future savings and develop a baseline to use as an indicator for developing the program exit strategy. The Colorado Showerhead Program has the potential to impact market transformation within a few years.

2. Introduction

This chapter outlines our research objectives, describes our approach and the data collection activities conducted for the program evaluation, and provides a report overview.

Research Methods

Cadmus conducted data collection activities from February 2 through July 13, 2011. These activities focused on obtaining information to support the process and impact evaluation. The research approach we used to evaluate the program included of the following:

- Review of Xcel Energy’s program participant tracking database.
- Primary data collection via surveys and interviews with the following market actor groups:
 - Program staff (Xcel Energy staff n=6 and implementer staff n=1);
 - Participating customers (n=274); and,
 - Nonparticipating customers (n=145).
- Benchmarking of programs that had showerheads (n=6 programs).

Report Overview

This report is organized into the following chapters.

- Chapter 3 presents the process interviews, the Program process flow diagram, and the Program logic model.
- Chapter 4 presents the results from the participant and nonparticipant surveys.
- Chapter 5 presents the NTG ratio analysis and findings.
- Chapter 6 addresses the Baseline and Technical assumptions review.
- Chapter 7 provides results of the program benchmarking.
- Appendices are included at the end of this report, which include the freeridership scoring matrix, copies of all data collection instruments, and citations of the studies that were referenced in the benchmarking section.

3. Program Description

Process Interview

This chapter outlines a summary of findings from program interviews with stakeholders at Xcel Energy and EFI, the program implementer. Cadmus delivered a memo of the full results from these interviews to Xcel Energy in April 2011.

Roles and Responsibilities

Cadmus conducted interviews in March 2011 with:

- Jackie Ducharme and Josh Field, (Xcel Energy program managers);
- Drew Quirk and Bruce Boerner (Xcel Energy Energy-Efficiency Engineers);
- Neil Cowan (Xcel Energy regulatory analyst);
- Jeremy Petersen (Xcel Energy CIP/DSM technical consultant); and
- Brad Steele (EFI president and program implementer).

Overview

The Colorado Showerhead program was designed to achieve gas savings targets and to support the gas portfolio, as needed. Program staff requested that Cadmus help them gain insight on ways to maximize the showerhead installation rate and to ensure ongoing customer satisfaction with the showerhead. This turn-key type of program can achieve savings by sending direct mail to customers offering a free showerhead. Past experience with this approach has yielded a consistent 16 percent response rate to the mailing.

The program achieved 250 percent of the participation goal in 2010. Staff members interviewed were highly confident that the program will make or exceed its 2011 goals.

The program was first implemented in 2009. Initially, Xcel Energy proposed a 2.0 GPM showerhead, but before the program launched, the DSM stakeholder group encouraged a more efficient model. Xcel Energy instead offers a 1.5 gpm showerhead as the key equipment for this program.

Program Delivery

Program staff described the program delivery as follows: in the early months of the program year, Xcel Energy designs BRCs that promote the program and develops the mailing schedule and customer lists. EFI prepares the showerheads in specially designed mailing tubes and sends out the initial BRC mailing. EFI fields responses in the form of returned BRCs or phone calls. The majority of responses come by mail (88%), and the remaining 12 percent come by phone. Most responses are received within one to three weeks of the initial mailing. EFI then verifies eligibility by reviewing the customer responses to questions on the BRC and by confirming that the respondent is on the customer list provided by Xcel Energy. EFI enters the verified respondents into a database, which generates an order for fulfillment. EFI then processes the orders and mails out each showerhead with an Xcel Energy branded brochure.

EFI reports the number of respondents to Xcel Energy for tracking purposes. At the end of the program year, Xcel Energy conducts a follow-up survey with showerhead recipients to determine whether or not they have installed the measure.

The BRCs are the primary, if not exclusive, channel for marketing the program. Messaging refers to the showerhead as “*efficient*” rather than “*low-flow*.” Xcel Energy has an obligation to service their entire Colorado customer service area by offering the showerhead to everyone. The mailings are distributed across the service territory to achieve sending over 30,000 units per year. Given the size of the Xcel Energy customer population and the amount of BRCs mailed each year, the program mailings will cycle back to customers that received the initial mailing after six years. As this is the third year of program implementation, Xcel Energy expects an ongoing 16 percent response rate to the mailing, consistent with previous years. The implementer indicated that a 16 percent response rate may be low compared to similar programs.

Program Tracking

The program maintains the customer responses to four questions on the BRC. Beyond these responses, the primary tracking and reporting involves identifying the number of customers that opted to receive the showerhead.

The technical assumptions Cadmus used to calculate savings from the program are supported primarily by two studies. The most important variable in the savings calculations is the install rate, followed by the assumptions used for shower length. Currently, the program assumes an average shower time of seven minutes. Another assumption in which supporting data are varied is the temperature of ground water, which affects the amount of energy required to heat it. The program claims a small amount of energy savings, but the primary benefit is in water savings. Water savings is the key variable in the modified total resource cost test (TRC), making the program highly cost-effective.

Challenges and Opportunities

The showerhead installation rate is the greatest barrier to achieving more energy savings. Almost half (43%) of those who received the showerhead had not installed it when Xcel Energy conducted the year-end survey in 2010. The Xcel Energy M&V survey determined the installation rate was 67% in 2009 and 57% in 2010. Because the unit is free, customers feel less urgency to install it compared to measures in which an investment is required. The primary reason customers have previously cited for not installing the showerhead was that they had not gotten around to doing it.² Xcel Energy staff believe that a proportion of those participants eventually install the showerhead at some point after the year-end survey. To address the installation barriers, program staff plan to conduct an earlier mailing campaign to maximize the time between the showerhead being received and the follow-up survey being conducted.

As this is a relatively newer program, the staff did not anticipate making changes to the program design for 2011. The largest adjustment in 2011 was transitioning the program management to a new Xcel Energy staff member.

² Xcel Energy. *2009 Xcel Energy Showerhead Study*. 2009.

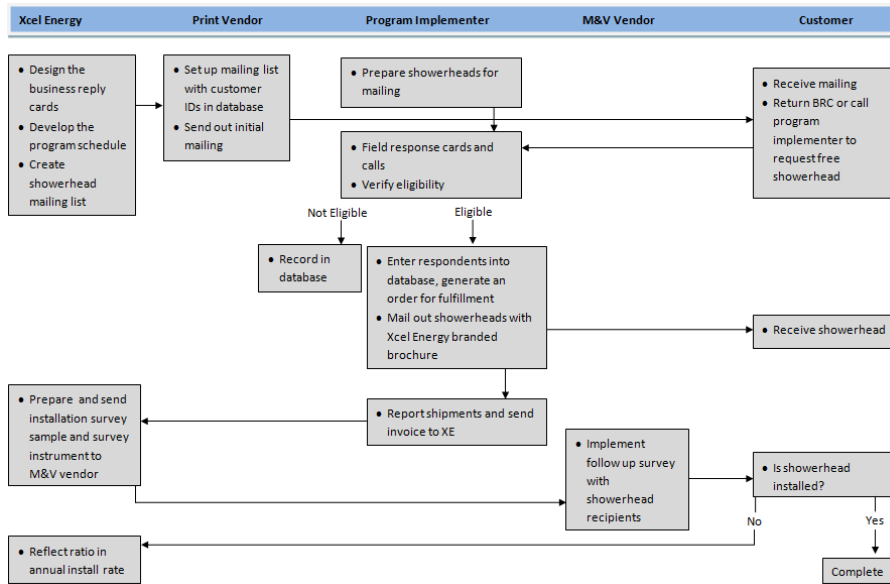
All staff members indicated that the program is functioning very well. The greatest challenge for both Xcel Energy and EFI is the timing for the mailings. As EFI has limited storage for the showerhead units, they ramp up production a few weeks before the planned mailing. In 2011, the program plans involved implementing two mailings early in the year to maximize time for installation.

The potential for increasing program equity includes exploring opportunities to include multifamily and commercial buildings as eligible recipients. An opportunity for improving the install rate could be met through direct install efforts.

Process Flow Diagram

Figure 1 is the process flow diagram of the Colorado Showerhead program. Cadmus designed the diagram for Xcel Energy to provide to new program staff. For other, more complex Xcel Energy programs, a process flow diagram will clarify program intricacies and show opportunities to improve program efficiency.

Figure 1. Colorado Showerhead Program Process Flow Diagram

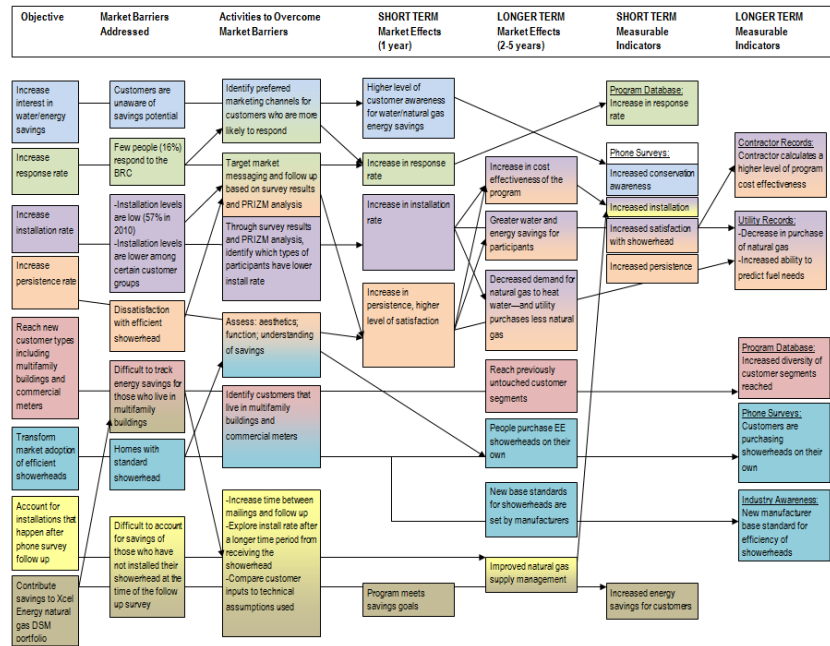


Logic Model

The Colorado Showerhead program logic model is shown as Figure 2. This logic model is a tool for achieving program objectives. The logic model identifies program goals and then outlines the barriers that are currently preventing program goals from being achieved. The model shows identified activities to overcome the market barriers, and links short-term and long-term market effects as the outcome of those activities. Finally, the model shows measurable indicators, which are used to understand whether the program objectives have been achieved. Data from the measurable indicators can be used as trend data for this ongoing process.

For the purposes of readability, Cadmus assigned each objective in the model with a color, and that objective's corresponding market barriers, activities, market effects, and measurable indicators have the same color. The arrows elucidate the process flow.

Figure 2. Colorado Showerhead Program Logic Model



4. Task 3. Participant and Nonparticipant Surveys

With the assistance of a market research firm, Population Research Systems, Cadmus had telephone surveys conducted with Xcel Energy's Colorado customers that received a BRC to participate in the program in either 2009 or 2010. The telephone surveys gave us data to assess program awareness, showerhead installation, satisfaction with the free energy-efficient showerhead and the program, and reasons for those who did not participate in the program.

These phone surveys were completed in June and July of 2011 with 274 participants and 145 nonparticipants.

Summary of Key Survey Findings

- **Program awareness.** A majority of participants was aware that the free showerhead they received was through an Xcel Energy program (83%, Figure 3) and most learned about the program through the BRC they received in the mail (83%, Figure 4).
- **Showerhead installation.** By the time of the year-end survey, 70 percent of participants had installed their free Xcel Energy showerhead (Figure 6). Among those participants, 84 percent had installed the showerhead within one month of receiving it (Figure 7).
- **Satisfaction.** The majority of participants were satisfied with the showerhead they received (87%, Figure 15). Among those who were dissatisfied, the most common issue raised was a dislike of the low-flow feature.
- **Nonparticipants.** When we asked nonparticipants why they did not participate, 24 percent replied that they already have an efficient/low-flow showerhead. The largest category response for this question was "Other." The majority of those answers consisted of not getting around to responding to the postcard, although they care about the offer (Figure 19).
- **Participants vs. Nonparticipants.** Among the survey questions that overlapped between the program participants and nonparticipants,³ there were no discernable differences in responses between the two groups.

Participant Detailed Findings

Program Awareness

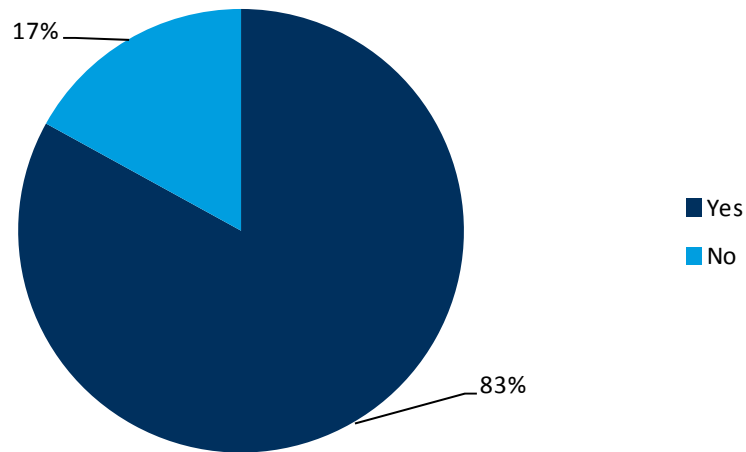
The majority of participants (83%) were aware that the free showerhead was through an Xcel Energy program before they received the showerhead (Figure 3). The most common means through which participants learned about the program was the mailed BRC (83%), followed by a TV advertisement (3%, Figure 4).

Over one-third of participants (37%) said that saving water was the main reason they decided to respond to the postcard offer for an efficient showerhead. Other reasons given for participation

³ Overlapping questions included technical assumptions and demographic questions.

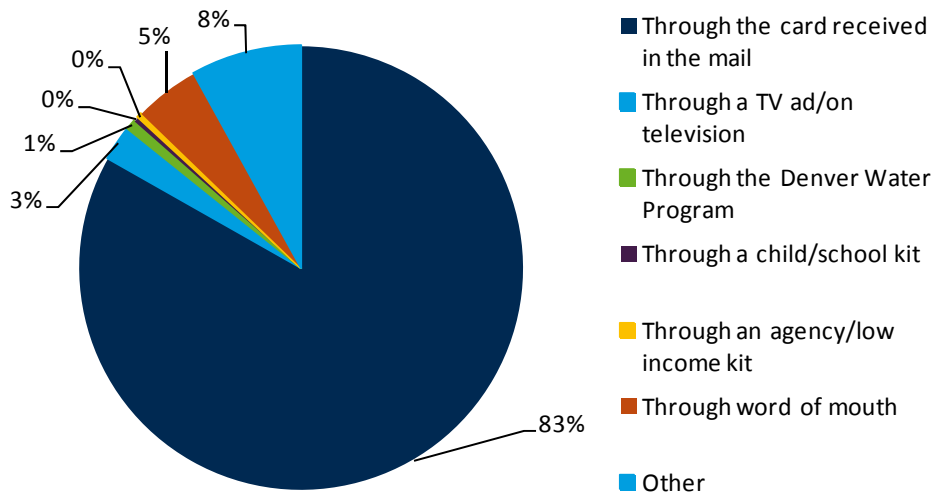
included that the showerhead was free (22%) and participants either wanted or needed a new showerhead (19%, Figure 5).

Figure 3. Participant Awareness That the Free Showerhead was Through an Xcel Energy Program



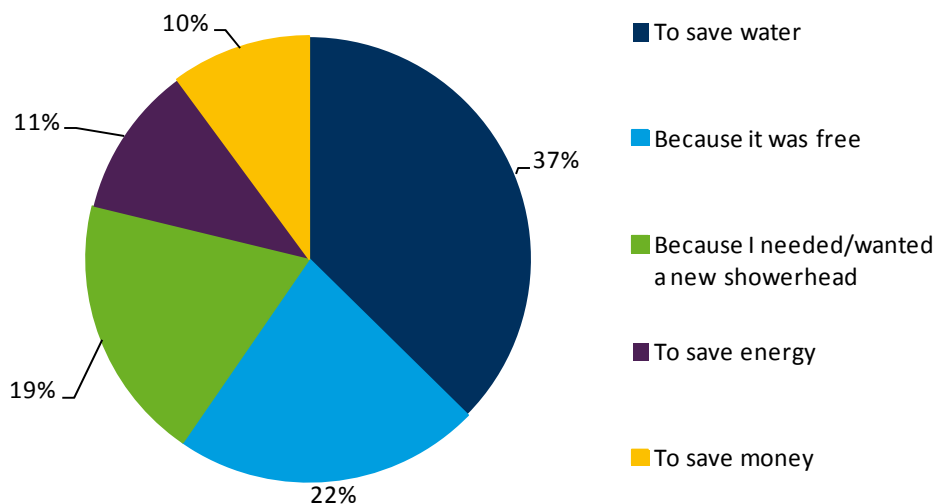
Source: Q5. Were you aware that the free showerhead you received was through an Xcel Energy program before you received it? (n=260)

Figure 4. How Participants First Learned About the Program



Source: Q6. How did you first learn about the program? (n=274)

Figure 5. Main Reasons for Responding to BRC



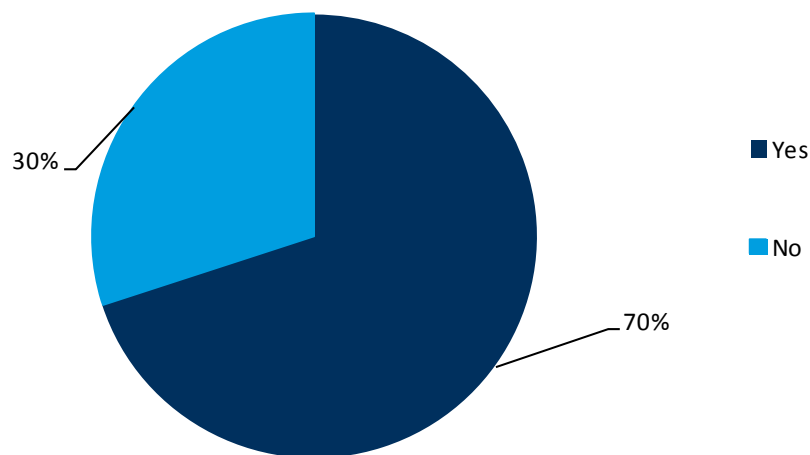
* Chart reflects respondents' top response.

Source: Q7. What was the main reason for your decision to respond to the postcard offer for the efficient showerhead? (n=211)

Showerhead Installation

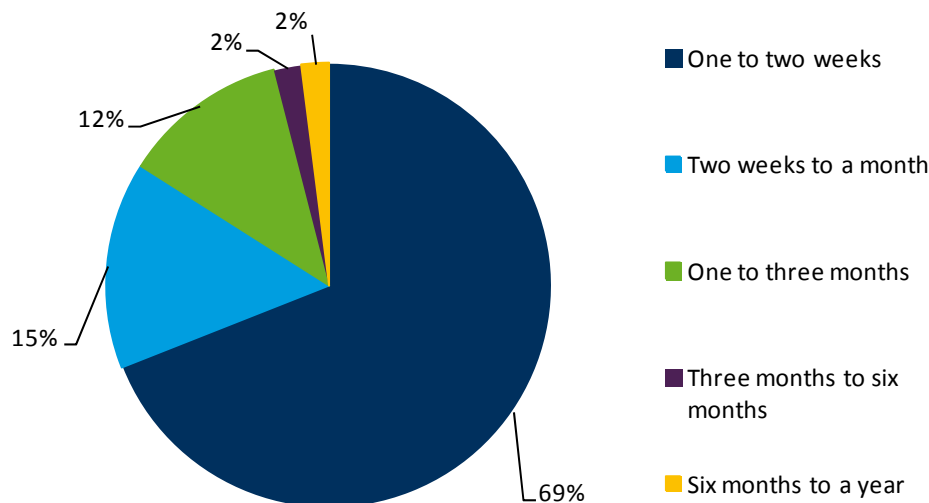
Most participants (70%) said the program showerhead was currently installed in their home (Figure 6). The majority of participants (69%) installed their showerhead within one to two weeks of receiving it. This was followed by two weeks to a month (15%) and one to three months (12%, Figure 7).

Figure 6. Participants with the Showerhead Currently Installed



Source: Q8. Is the showerhead currently installed in your home? (n=273)

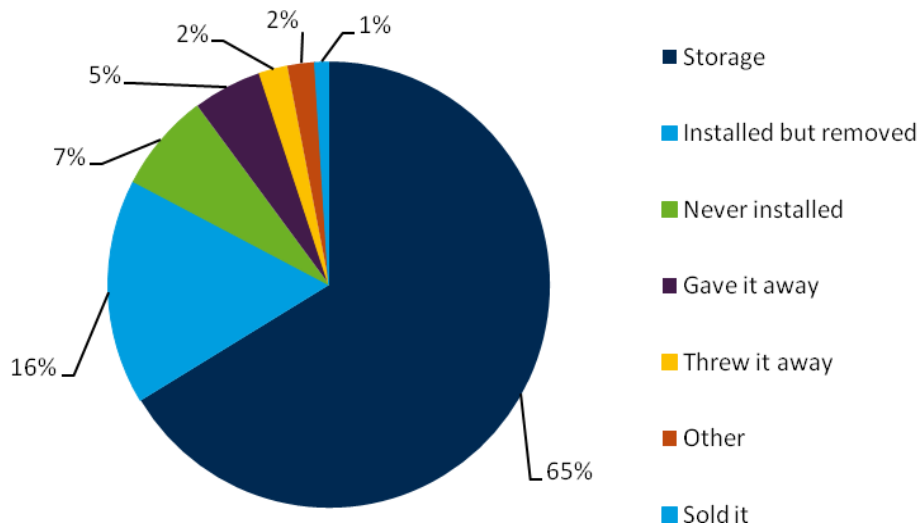
Figure 7. Among those who Installed the Showerhead, Amount of Time between Receiving and Installing the Showerhead



Source: Q9. After you received the showerhead in the mail, how much time passed until you installed it? (n=184)

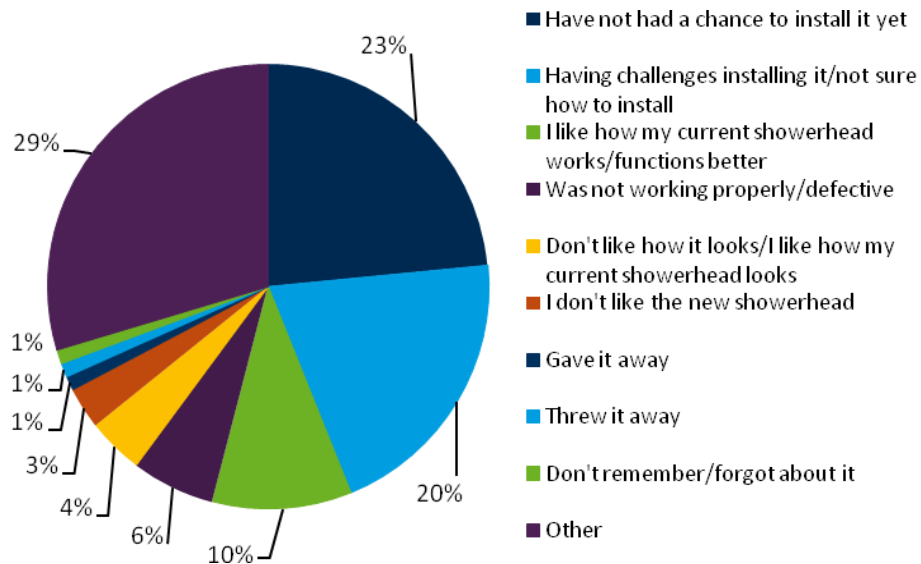
Among those who did not install the showerhead, 65 percent put the showerhead in storage. Another 16 percent installed the showerhead and later removed it (Figure 8). Among those 13 respondents who removed the showerhead, five did so because they didn't like the low water pressure. The remaining reasons varied from "Didn't work properly" to "Needed a handheld for our toddler." Eleven respondents answered the question "What did you replace the showerhead with." Five said "a new high efficiency showerhead," five said "my old showerhead," and one said "a new, less efficient showerhead." The main reason cited for not installing the showerhead was that they hadn't had a chance yet (23%). The second most commonly cited reason was that they were having challenges installing it or were not sure how to install it (20%, Figure 9).

Figure 8. Use of Showerhead if Not Installed



Source: Q10. Of those who did not install the showerhead, what have you done with the showerhead? (n=81)

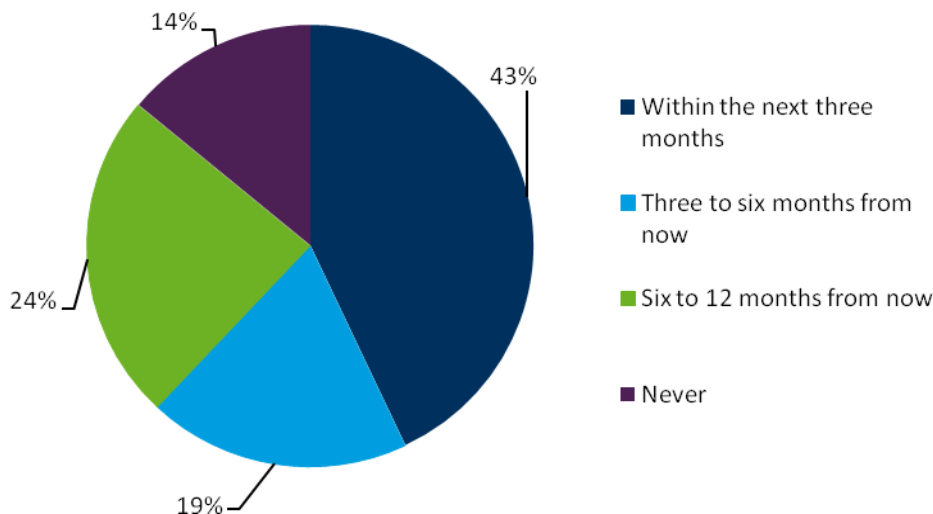
Figure 9. Main Reasons for Not Installing the Showerhead



Source: Q13. Of those who did not install the showerhead, what is the main reason you decided not to install the showerhead? (n=69)

Those who hadn't installed the showerhead were asked when they think they will install it, and 43 percent estimated within the next three months (Figure 10).

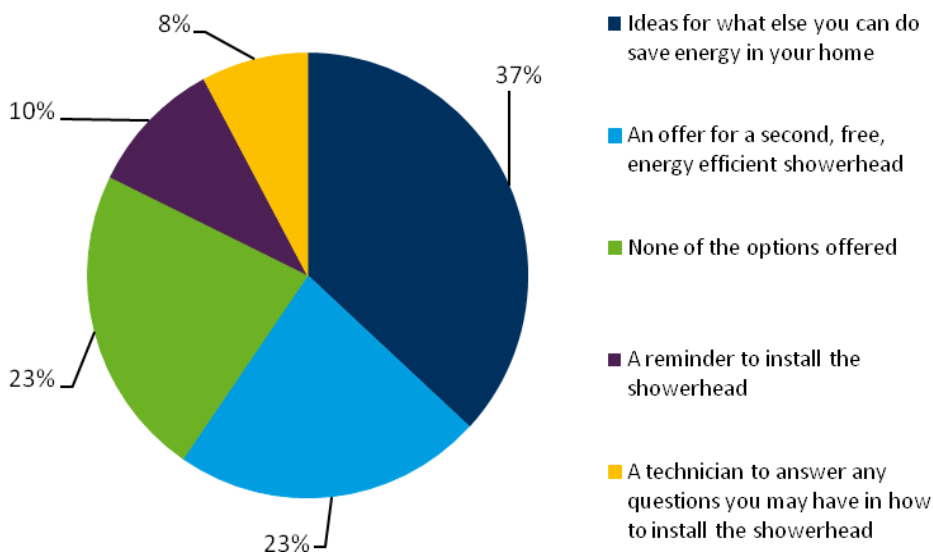
Figure 10. When Participants Plan to Install the Showerhead



* This question was asked of the participants who responded to Q13 with one of the following responses: "Have not had a chance to install it yet;" "Having challenges installing it/not sure how to install it;" and, "Don't remember/forgot about it."
 Source: Q14. When do you think you will install the showerhead you were given from Xcel Energy? (n=21)

When asked what kind of follow-up respondents would find helpful, 37 percent said that home energy-saving ideas would be helpful. Twenty-three percent would like an offer for a second free energy-efficient showerhead (Figure 11). Among those who expressed interest in receiving a reminder to install the showerhead, the majority would like to receive the reminder in a postcard, followed by a phone call.

Figure 11. Helpful Follow-Up Options

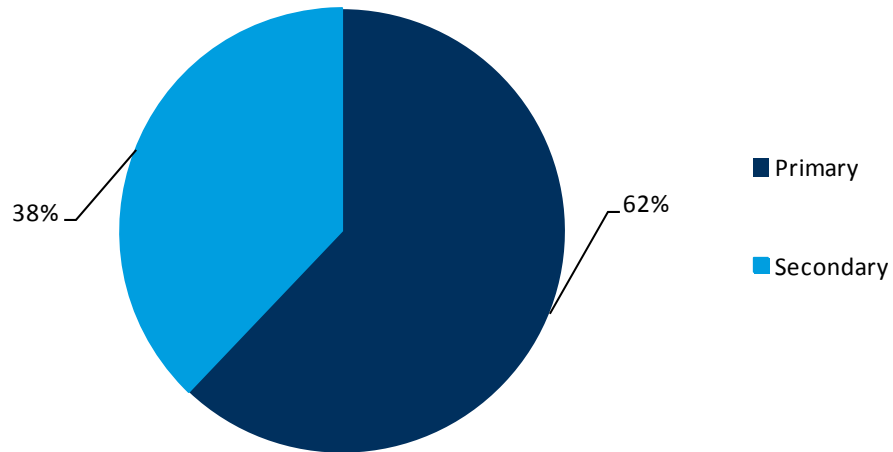


Source: Q15. If Xcel Energy were to offer any kind of follow-up, which of the following options would you find helpful? Multiple response, (n=141)

Over half of all participants installed the showerhead in their primary bathroom (62%, Figure 12). Only one of the 191 respondents to this question said they do not intend to keep the showerhead in the bathroom where it is currently installed. While 76 percent said that they would have continued to use the replaced showerhead if a new efficient one had not been offered (

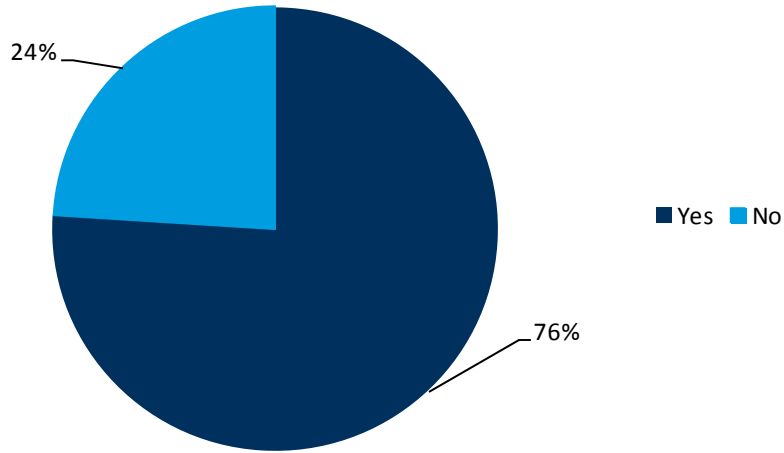
Figure 13), 40 percent installed a similar efficient showerhead before receiving the free showerhead from Xcel Energy (Figure 14).

Figure 12. Bathroom of Installed Showerhead



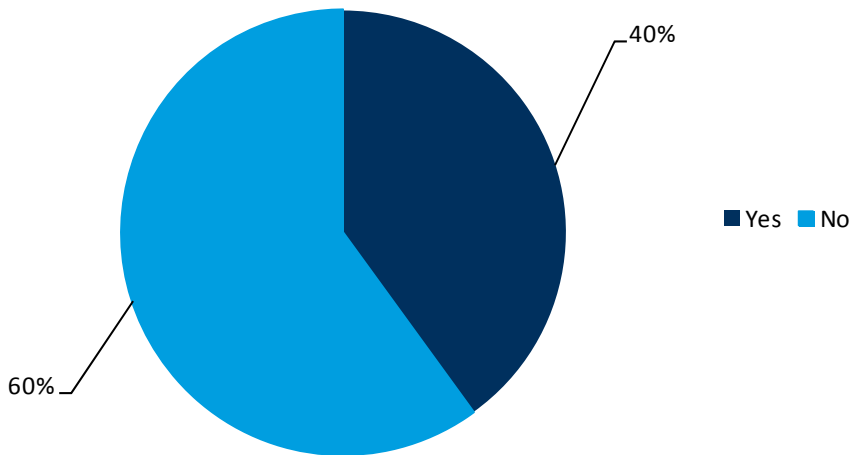
Source: Q17. Is the showerhead installed in your primary or secondary bathroom? (n=191)

Figure 13. Participants that Would Have Continued to Use the Replaced Showerhead without New Efficient Showerhead Offer



Source: Q19. Would you have continued to use the showerhead you replaced if a new efficient one had not been offered by the program? (n=252)

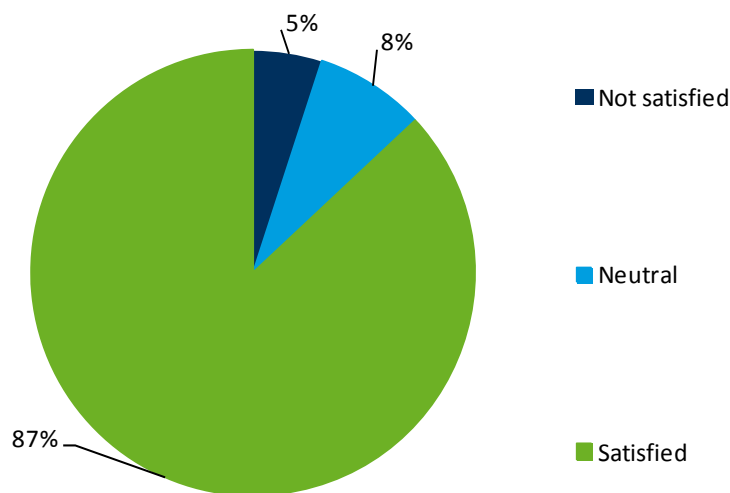
Figure 14. Respondents that Installed Similar Showerhead Before Receiving the Program Showerhead



Source: Q23. Before receiving the showerhead from Xcel Energy, had you ever installed a similar efficient showerhead? (n=266)

Respondents were asked to rate their level of satisfaction with the showerhead received. The majority (87%) indicated that they were satisfied with the showerhead. Only five percent were not satisfied (Figure 15),⁴ most often because they do not like the low-flow feature. The majority of respondents said that the showerhead itself and the time it took to receive the showerhead met their expectations (91% and 92%, respectively; Figure 16). Ninety-one percent of respondents said that they are likely to recommend the program (Figure 17). Forty-two percent of respondents said that they would take the showerhead with them if they move, which also supports a strong level of satisfaction with the showerhead (Figure 18).

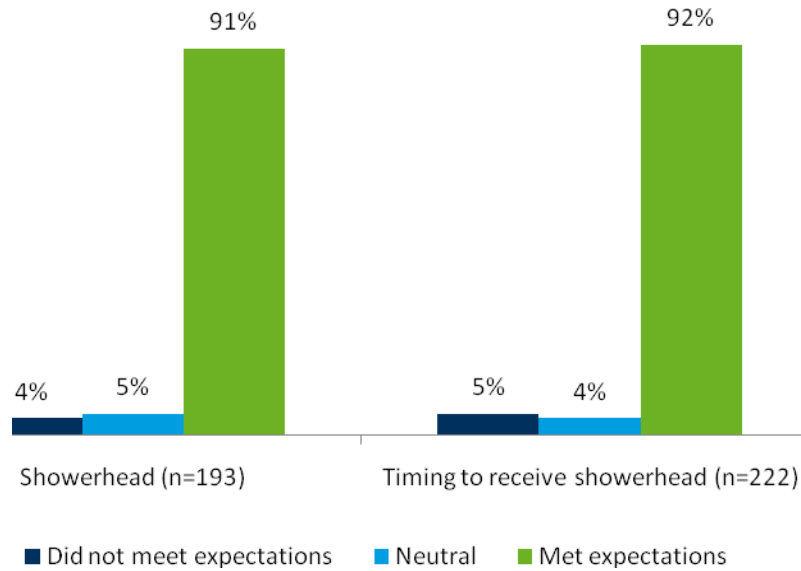
Figure 15. Participant Satisfaction with the Showerhead



Source: Q27. How satisfied are you with the showerhead you received?
(n=234)

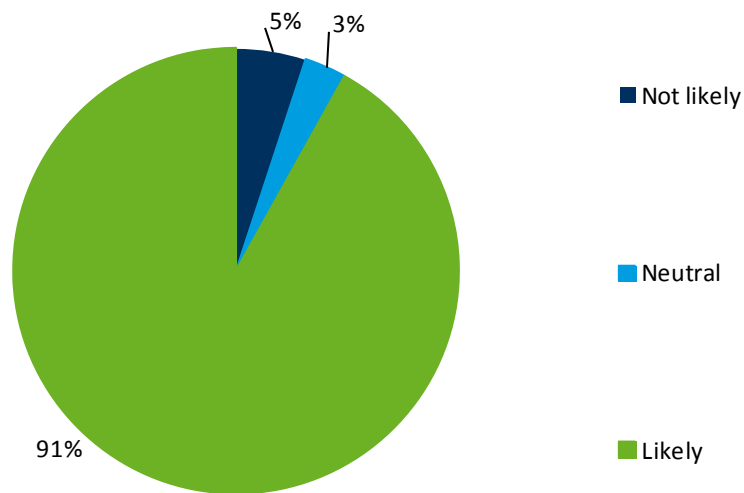
⁴ We had participants rank their level of satisfaction on a scale from zero to 10, where zero indicates being not at all satisfied and 10 indicates being very satisfied. For the purposes of this figure, we categorized responses from zero to four as not satisfied, five as neutral, and six to 10 as very satisfied.

Figure 16. Expectation Regarding Showerhead and Delivery Time

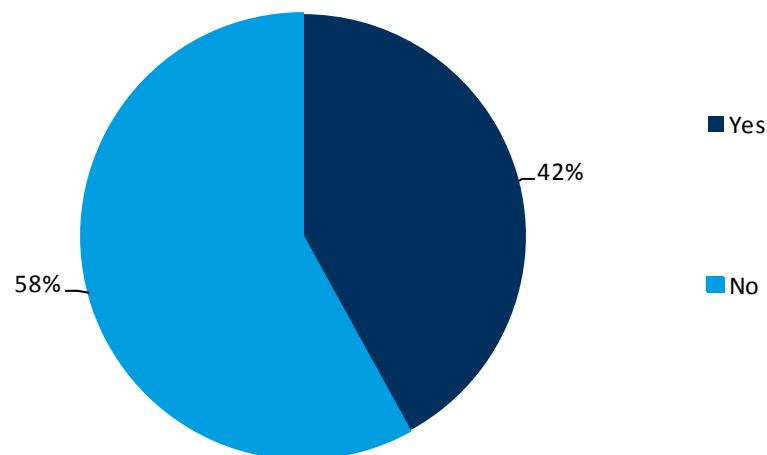


Source: Q29 How well did the showerhead meet your expectations? (n=193).
 Q30. How well did the timing in which it took to receive the showerhead meet your expectations? (n=222)

Figure 17. Likelihood of Recommending the Program



Source: Q34. How likely would you be to recommend this program to another person? (n=263)

Figure 18. Respondents who Would Take the Showerhead if They Moved

Source: Q35. If you were to move, would you take the showerhead with you?
(n=252)

Participant Demographics

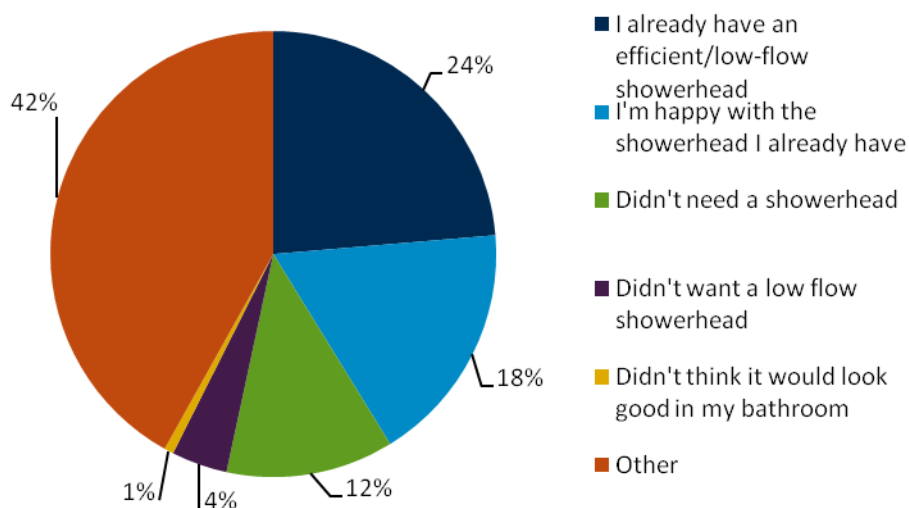
The majority of participants own their home (93%). The dominant housing type is a single family detached home (89%), followed by a single family attached home (8%) and a condo/apartment (2%). Sixty-two percent of those surveyed have one to two people living in their home on a full-time basis. Eighteen percent have four or more individuals living in the home. Among those surveyed, 60 percent have at least one person in their home with a bachelor's degree or more education.

Nonparticipant Detailed Findings

Reason for Not Participating

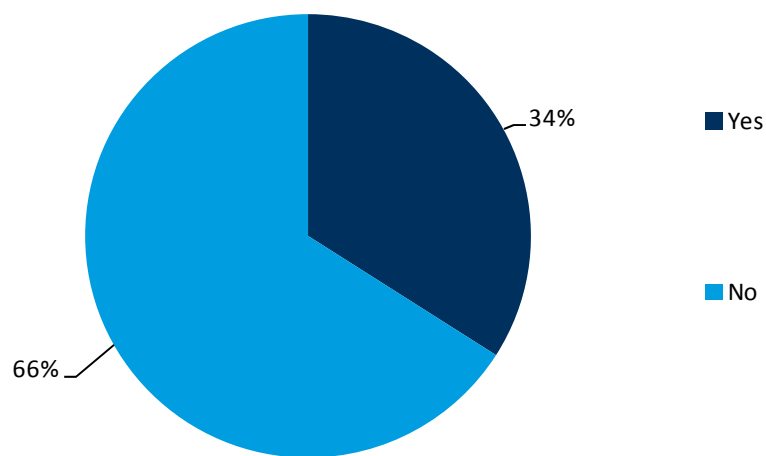
Reasons for not participating in the program included already having an efficient/low-flow showerhead (24%), being happy with their current showerhead (18%), and not needing a showerhead (12%, Figure 19). Among those in the "Other" category, common responses were "Didn't get around to it," "Forgot to respond," "Lost the postcard," and "Offer had expired." The majority of nonparticipants (66%) did not have an energy-efficient showerhead installed before receiving the program card (Figure 20).

Figure 19. Main Reason for Not Responding to BRC



Source: Q5. What is the main reason for your decision not to respond to the postcard offer? (n=136)

Figure 20. Nonparticipants That Already had Energy-Saving Showerhead Installed



Source: Q6. Before receiving the offer for the free showerhead, did you have an energy-saving showerhead already installed? (n=91)

Nonparticipant Demographics

The majority of program nonparticipants own their home (91%). The dominant housing type is a single family detached home (88%), followed by a single family attached home (10%). Sixty-one percent of those surveyed have one to two people living in their home on a full-time basis.

Twenty-one percent have four or more individuals living in their home. Among those surveyed, 57 percent have at least one person in their home with a bachelor's degree or more education.

PRIZM Segments

Xcel Energy uses customer marketing segmentation to identify customer types, better understand its customers, and it enables them to target customers that may be more inclined to act on specific promotions. Xcel Energy uses the PRIZM segmentation scheme with the following 11 life stage categories: Young Achievers, Young Accumulators, Striving Singles, Cautious Couples, Mainstream Families, Sustaining Families, Midlife Success, Conservative Classics, Accumulated Wealth, Affluent Empty Nests, and Sustaining Seniors.

Cadmus analyzed some of the survey questions by PRIZM segments to observe differences between groups.⁵ Table 1 shows the breakout of participants and nonparticipants by PRIZM codes.⁶

Table 1. PRIZM Codes for Participants and Nonparticipants*

PRIZM Code	Participants	Nonparticipants
Y, Midlife Success	34	23
Y, Mainstream Singles	12	4
Y, Striving Singles	9	2
F, Accumulated Wealth	17	7
F, Young Accumulators	31	24
F, Mainstream Families	29	15
F, Sustaining Families	7	1
M, Affluent Empty Nests	36	18
M, Conservative Classics	43	23
M, Cautious Couples	34	19
M, Sustaining Seniors	18	7

*The letters (Y, F, and M) before each PRIZM code serve as a guide for the figures in this chapter. Because the n's are often too low to be conclusive, we often summed the groups into these three larger categories.

Among program participants, awareness that the free showerhead was through an Xcel Energy program was highest among the Midlife Success, Mainstream Singles, and Striving Singles group (Figure 21). When asked their main reason for responding to the postcard offer for a free showerhead, saving water was the most common reason among all segments. The fact that the showerhead was free was an equally large motivator for the Midlife Success, Mainstream Singles, and Striving Singles group (Figure 22).

The showerhead installation rate was highest among Sustaining Families and Mainstream Singles,⁷ and was lowest among Young Accumulators and Cautious Couples (Figure 23).

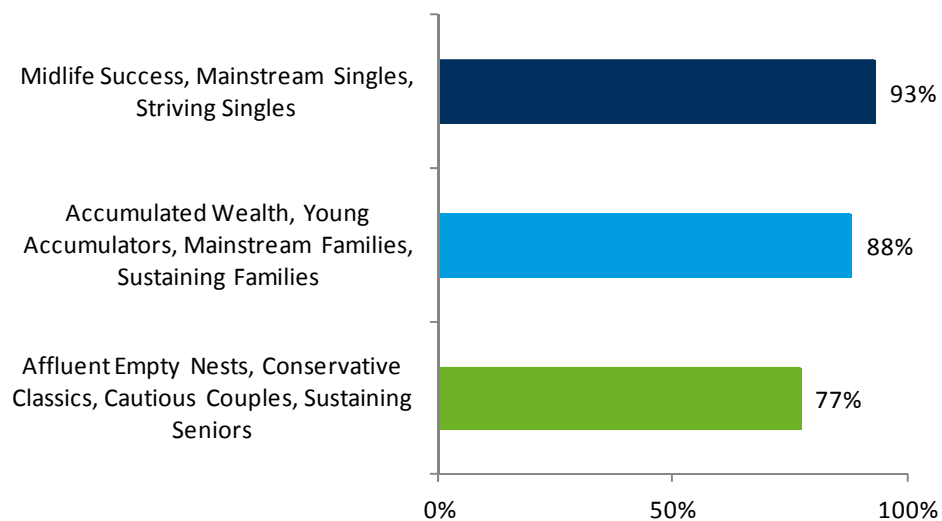
⁵ We used the p-test to verify statistical significance at the 90 percent confidence level. The null is that the distribution across the PRIZM segments is the same. Therefore, statistical significance indicates there is a small probability (less than 10 percent) of responses being the same.

⁶ Note: the total n's are slightly less than the total survey n's, because we could not identify a PRIZM group for some survey respondents and removed those individuals from our cross-tab analyses.

Figure 24 shows the types of follow-up offers participants thought would be helpful by PRIZM code. Receiving energy-saving ideas was the most popular option among all PRIZM segments, especially among the Midlife Success, Mainstream Singles, and Striving Singles group.

Figure 25 shows the reasons people opted not to respond to the postcard offer for a free showerhead by PRIZM segment. The most common reason for not participating, according to the majority of these open-ended answers, centered on the fact that the respondents simply did not get around to responding.

Figure 21. Participants Aware That the Showerhead was Through an Xcel Energy Program Before Receiving it

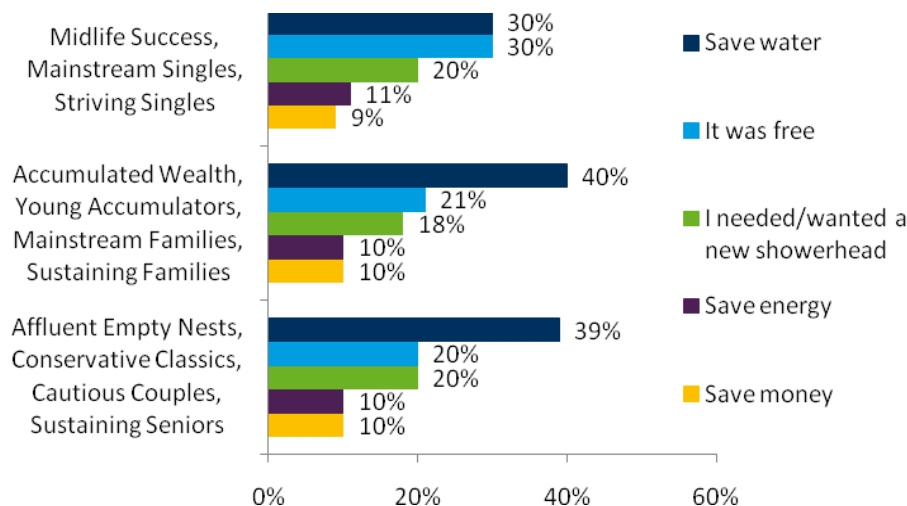


Source: Q5. Were you aware that the free showerhead you received was through an Xcel Energy program before you received it? (Y=54, F=78, M=124)⁸

⁷ Some caution should be taken when considering these results, as the 'n' for Sustaining Families and Mainstream Singles was less than 20.

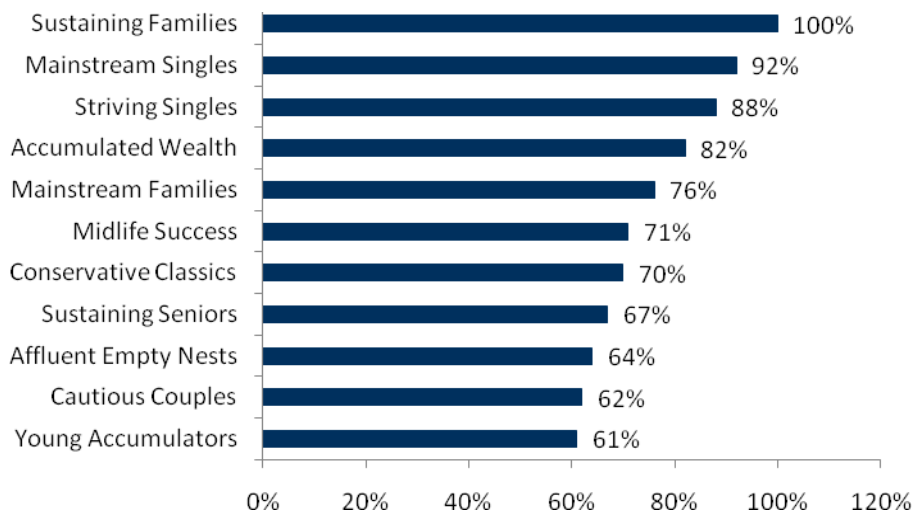
⁸ Y = Midlife Success, Mainstream Singles, and Striving Singles; F = Accumulated Wealth, Young Accumulators, Mainstream Families, and Sustaining Families; M = Affluent Empty Nests, Conservative Classics, Cautious Couples, and Sustaining Seniors. Y and F are statistically different from M.

Figure 22. Participants Main Reason for Responding to the BRC



Source: Q7. What was the main reason for your decision to respond to the postcard offer for the efficient showerhead? (Y=44, F=67, M=98)

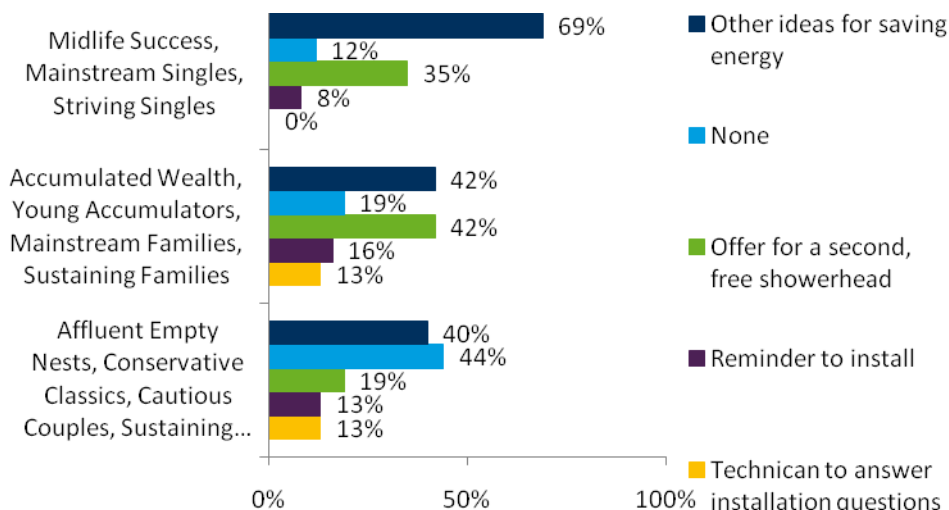
Figure 23. Participants who Installed the Showerhead



Source: Q8. Is the showerhead currently installed at your home? (Sustaining Families=7, Mainstream Singles=12, Striving Singles=8, Accumulated Wealth=17, Mainstream Families=29, Midlife Success=34, Conservative Classics=43, Sustaining Seniors=18, Affluent Empty Nests=36, Cautious Couples=34, Young Accumulators=31)⁹

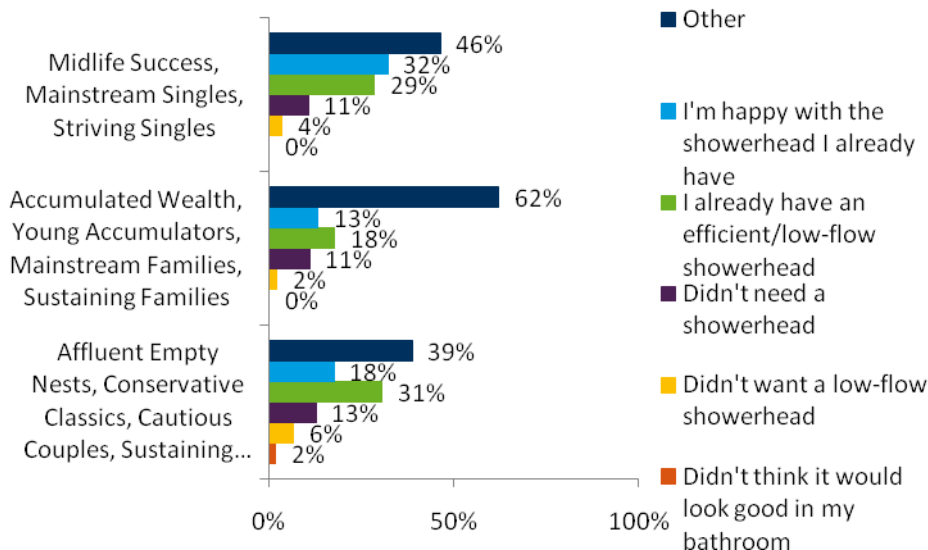
⁹ Mainstream Singles are statistically different from Young Accumulators, Affluent Empty Nests, and Cautious Couples.

Figure 24. Participants' Follow-Up Offers That Would be Helpful



Source: Q15. Would you find the following follow-up offers from Xcel Energy helpful? (Y=26, F=31, M=52)¹⁰

Figure 25. Nonparticipants' Main Reasons for Not Responding to the BRC



Source: Q5. What was the main reason for your decision not to respond to the postcard offer? (Y=28, F=45, M=62)¹¹

¹⁰ Other ideas for saving energy: Y is statistically different from F and M. None: M is statistically different from Y and F. Offer for a second, free showerhead: F is statistically different from M. A technician to answer installation questions: F is statistically different from Y and M is statistically different from Y.

¹¹ Respondents could give more than one reason. Didn't want a low-flow showerhead: M is statistically different from F. Other: F is statistically different from Y and M.

5. Task 5b. Validated and Recommend Net -to-Gross

Xcel Energy's recommended formula for measuring the Colorado Showerhead Program's NTG value is shown below. This chapter discusses each variable in the equation and its relevance to a NTG recommendation that can be applied to future program years.

NTG Recommendation =

(1 - Freeridership) + Spillover + Program Changes + Benchmarking

Cadmus recommends using a NTG of 0.99. This is based on calculated¹² values for freeridership and spillover, with consideration given to program changes, and benchmarking.

Freeridership

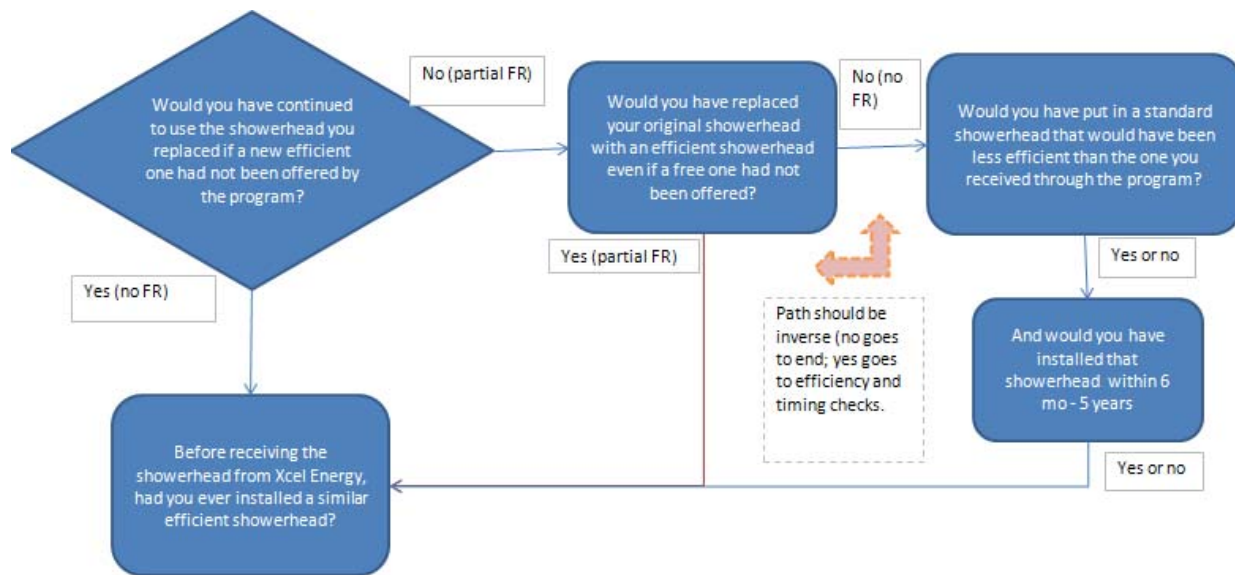
Methodology

We determined freeridership, the percent of savings that would have occurred in the absence of the program, through results of the telephone surveys of 274 program participants from PY2009 and PY2010. We calculated freeridership for both program years, but only used the PY2010 freeridership in the final NTG calculation.

During these surveys, several questions were asked to determine the level of influence the Xcel Energy Colorado Showerhead Program had on a respondent's decision to acquire an efficient showerhead. The questions we used to determine freeridership were a modified version of the California Self-Report NTG approach (California SRP).¹³ Although Cadmus started with the California SRP, we adapted the questions to accommodate specifics of Xcel Energy's program and customer base. Figure 26 is a visual representation of the question and answer flow we used in our analysis.

¹² Cadmus calculates NTG as 100 percent minus freeridership plus spillover.

¹³ California Self-Report method as Cadmus provided to Xcel Energy in 2010.

Figure 26. Freeridership Methodology

This battery of freeridership questions was completed by 177 PY2010 participants, though only 123 participants had installed the measure and we only calculated freeridership for respondents that installed the measure. Cadmus applied a scoring algorithm to each of the participant responses to derive a freeridership score. This scoring algorithm can be found in the form of a matrix in Appendix A.

The survey included skip patterns in the freeridership questions designed to ensure that each participant was only asked the follow-up questions necessary for their given responses, omitting questions that were not used for freeridership calculations. While fielding the survey, Cadmus modified the standard battery of freeridership questions to address the fact that most showerhead recipients were not in the market to replace their showerhead when the program offer was made. This change resulted in an unintended skip pattern, and was likely to slightly increase freeridership by disallowing calculation of a partial freerider; however, the impact appears minor and freeridership is low. Additional details on the freeridership results are discussed in more detail in the Results section below.

Results

The freeridership analysis results, presented in Table 2, yielded a freeridership score of 18 percent for PY2010 and 23 percent for PY2009 (indicating that freeridership decreased).¹⁴ An overall freeridership score of 18 percent signifies that approximately one in five of the program participants would have installed an efficient showerhead without the Xcel Energy program.

¹⁴ We will include statistical analysis on error bands in the final report.

Table 2. Freeridership Percentages by Year and Overall

Year	Count	Freeridership
2009	69	0.23
2010	123	0.18
Overall	192	0.20

Spillover

Spillover is defined for this Program as the evaluation-measured natural gas and electric savings attributable to the purchase of additional energy-efficient measures. Such measures include additional efficient showerheads, faucet aerators, gas water heaters, ENERGY STAR dishwashers, and ENERGY STAR clothes washers. Cadmus analyzed survey responses to measure the Colorado Showerheads Program's influence on the actions of participants to install these energy-efficient measures.

Participant Methodology

A total of 274 participants were surveyed for the evaluation, spanning across PY2009 and PY2010 program years. Of these, 177 were PY2010 participants, and 97 were PY2009 participants. Cadmus calculated spillover for each year separately. The PY2009 population served to further validate our PY2010 findings, but we only used the PY2010 savings value in the final NTG calculation for the PY2010 program.

Of the 177 participants from PY2010, 121 respondents claimed they had installed an additional 161 water saving measures in their home since participating in the program. Cadmus discounted these measures in two ways: if the participant received some other source of funding for the measures, or if the participant did not attribute the program's influence on their decision to install the additional measures (rated influence on a scale of 0-5 or "didn't know").

Although Cadmus reports participant results regarding the self-reported influence of the program, spillover measures affecting NTG only include showerheads. Cadmus acknowledges that this approach is conservative, since including additional measures could affect spillover by several percentage points. After applying the qualification screenings, the number of claimed additional showerheads dropped from 36 to 21. These 21 showerheads from the survey population are the basis for the spillover quantification below.

Figure 27 shows the distribution of all the qualifying spillover measures by type.¹⁵

¹⁵ Qualifying measures are defined as measures that would have a direct impact on water heating savings.

Participant Results

Figure 27. Distribution of Qualifying Participant Spillover Measures

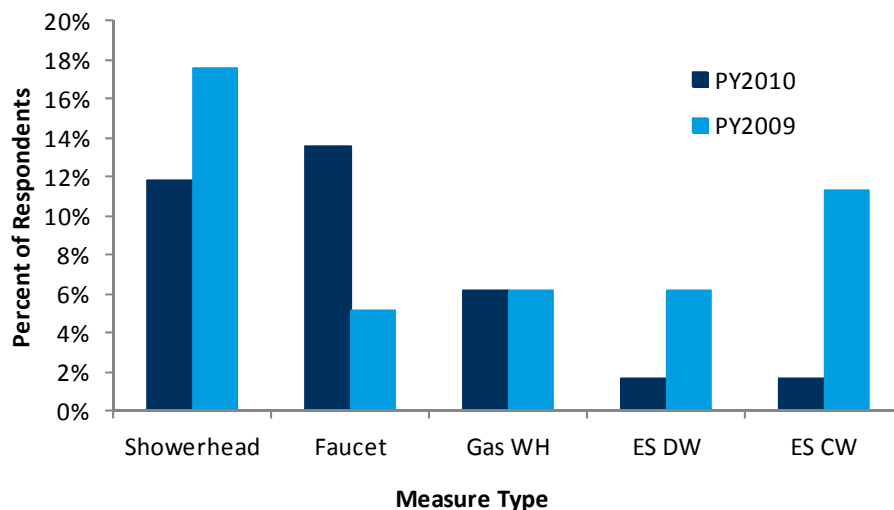


Figure 27 shows a fairly consistent distribution of measure types over the two years. Note that with more survey respondents from 2010, we found greater numbers of the lower cost measures. Also, the additional time may account for higher installation rates of larger measures among PY2009 respondents, such as clothes washers and dishwashers.

It is also important to note that although there are fewer spillover measures for PY2009 than PY2010, the proportion of qualifying measures to respondents is actually greater for PY2009, at 61 measures for 97 respondents (63 percent) compared to 81 measures for 177 respondents (46 percent). This holds with expectations, as more time had passed for PY2009 participants to install new measures, and participants stated that the program influenced their decision is also important.

Participant Spillover Quantification

Cadmus targeted several types of spillover measures with the participant surveys.¹⁶ The measures and their potential savings are shown in Table 3. Other than showerhead spillover savings, we did not include any of these measures in our spillover calculation. We applied this conservative approach to ensure maximum defensibility of the evaluation findings and consistency with the evaluation methodology for Xcel Energy's business programs. The savings values for each measure are shown for reference. The showerhead savings values are those derived from Xcel Energy's reported savings.

¹⁶ Note that only *participant* spillover is calculated as part of NTG. Activities undertaken by nonparticipants may be the result of market transformation, but do not affect spillover because these impacts cannot be attributed to the program.

Table 3. Spillover Savings Values¹⁷

Type	Electric Savings kWh/Unit	Gas Savings Dth/Unit
Showerhead	316	1.5
Faucet	99.95	0.56
Gas Water Heater	0	0.94
ENERGY STAR Dishwasher - Electric	74.0	0
ENERGY STAR Dishwasher - Gas	32.6	0.19
ENERGY STAR Clothes Washer - Electric	182.5	0.15
ENERGY STAR Clothes Washer - Gas	60.4	0.76

In our spillover analysis, Cadmus used Xcel Energy's technical assumption that 85 percent of the population has gas water heating and the remaining 15 percent have electric heating.

Of the 21 showerhead measures reported by 177 participants that qualified as spillover, we divided the savings by fuel type, and shown in Table 4 and Table 5. We calculated the average electric and gas savings at the customer level as 5.62 kWh and 0.15 Dth per customer in the survey population. These values sum to 994 kWh and 27.2 Dth electric and gas savings for the survey population, respectively. Because we surveyed 177 of the total 62,556 participants, the projected savings to the entire population of participants yielded 351,460 kWh and 9,613 Dth annually.

For electricity, the savings values incorporate Xcel Energy estimated line losses at 7.14 percent.

Net savings values were reported using a NTG value of 70 percent, so we calculated the reported gross savings for use in our spillover calculation. With a total gross generator savings for the program of 2,073,523 kWh, the amount of savings due to spillover is 17 percent of the program total gross savings. Line losses are not used for gas savings, and therefore of the 56,720 Dth reported gross savings, the spillover quantification results in 17 percent of savings.

Table 4. PY2010 Participant Spillover - Electric

	Step	Value
Survey Population (177)	Average Electric Savings/Participant	5.62 kWh
	Total Survey Savings	994 kWh
Total Population (62,556)	Extrapolation Multiplier	353.4
	Spillover Population Savings	351,460 kWh
Total Program	Total Program Reported Gross Savings at Generator	2,073,523 kWh
	Spillover Percentage	17%

¹⁷ Although gas dishwashers and clothes washers use gas heat to warm the water that they use, the operation of the appliances requires electricity energy. This is why these ENERGY STAR appliances have electric savings.

Table 5. PY2010 Participant Spillover - Gas

	Step	Value
Survey Population (177)	Average Gas Savings/Participant	0.15 Dth
	Total Survey Savings	27 Dth
Total Population (62,556)	Extrapolation Multiplier	353.4
	Spillover Population Savings	9,613 Dth
Total Program	Total Program Reported Gross Savings	56,720 Dth
	Spillover Percentage	17%

We performed similar calculations for the PY2009 spillover measures, resulting in 21 percent electric spillover and 21 percent gas spillover from calculated gross reported savings. Again, we expected this higher spillover for earlier program years because more time has elapsed since participation occurred.

Spillover Results Discussion

The spillover analysis results are notably high for this program. The frequent spillover claims could be due in part to showerheads being inexpensive and easy to install. The numerous additional measures could also be attributed to the broad scale of the program and it potentially serving as an effective marketing channel for energy efficiency. Spillover values are tied to Xcel Energy reported gross savings. Cadmus has provided a memo to explore how data collected could be viewed to adjust gross savings and thus attributing to a higher spillover value.

As noted earlier, we included additional spillover measures in our survey and spillover analysis. For comparison purposes, when incorporating other measures into the analysis, the spillover calculation results in 29 percent spillover for electric 32 percent for gas measures.

Nonparticipant Spillover

To address the possibility of nonparticipant spillover, we asked nonparticipants if they had purchased and installed an efficient showerhead since receiving the offer from Xcel Energy. Seven (5%) said they had installed an efficient showerhead. None of the nonparticipants said the program offer had any influence on their decision to install the efficient showerhead. While these showerhead installations may be considered “naturally occurring,” the lack of attributable program influence does not make any incremental change to the recommended NTG.

Program Changes

At the present time, Xcel Energy is not considering any program changes that would substantially affect program delivery. Thus, we did not consider program changes in our recommended NTG.

Benchmarking

In the Task 5c. Verify Technical and Baseline Assumptions

For the Colorado Showerhead Program, it was determined mid project that verifying the Technical and Baseline assumptions fell outside the scope of the study.

Task 6. Peer Utility Benchmarking chapter in this report, Cadmus compared the Colorado Showerhead Program design elements to those of other utility programs across the United States that provided low-flow showerheads. Among the nine programs reviewed, only one, Seattle City Light, had a similar program design; however, an evaluated NTG for that program was not available. Unlike the Colorado, Minnesota, and Seattle City Light showerhead programs, the other programs Cadmus reviewed offered multiple measures and operated through different channels.

Among the programs with an evaluated NTG, the highest value Cadmus found was 1.0. Cadmus believes that the programs we reviewed should not be used as a direct comparison for adjusting the NTG value of the Xcel Energy program, due to their different structures.

Market Transformation Considerations

Market Transformation in its entirety is not included in the NTG calculation, but warrants a discussion due to the high volume of showerhead give-aways. The Xcel Energy Colorado Showerhead Program could have a transformative impact on the market within a few years.

According to definitions established in collaboration with Xcel Energy, market transformation indicators were defined as follows:

1. Increased saturation of households with low-flow showerheads
2. Increased retail sales and stocking of low flow showerheads [Retail market share]
3. Increased use of efficient showerheads in new construction and multifamily units, independent of the program [Wholesale market share]
4. Proportion of efficient showerheads to all other types of manufactured showerheads.

For the first indicator, Xcel Energy provided a saturation rate of efficient showerheads from a Colorado 2010 potential study. Findings from the potential study revealed that 62 percent of single-family homes had an energy efficient showerhead. The nonparticipant survey in this evaluation, which interviewed those who were sent a BRC card but did not take advantage of the offer for a free showerhead, found that 52 percent already had an energy saving showerhead installed. Although there are significant methodological differences between the two measures, the data do not support a measurable indication of market transformation.

Data collection for the remaining three indicators was outside the scope of work for this evaluation but could be measured in the future. As each indicator is based on a measurable increase, the first step for measuring market transformation is to establish a baseline against which future measures can demonstrate change.

Since the program has been implemented for only a couple of years and the rate of freeridership decreased from 2009 to 2010, it is unlikely that the program has had a significant influence on market transformation to date. However, due to the ambitious program goals, the program will likely affect the market within the next few years. Now is an ideal time to establish a baseline so that the effect of the program can be measured in the future.

The subsection below outlines our proposed plan for establishing this baseline, along with future steps that we recommend Xcel Energy implement to measure the program's affect on market transformation.

Establishing a Baseline

To establish a baseline, we propose collecting information on two metrics:

- The first metric is the number of homes with efficient showerheads installed. These data could come from results of the participant and nonparticipant showerhead surveys. By assessing the results of future surveys, it can be determined whether the saturation rate for efficient showerheads has changed.
- The second metric is the percent of efficient showerheads among all showerheads types in stores by channel. These data could be collected through a phone interview. In the future, similar phone interviews could be used to track how stocking patterns have changed, and to assess why stores think the change occurred and to what extent the program contributed to the change.

Measuring Indicators of Market Transformation

Once the baseline is established, future data collection would contribute to trend data, enabling us to track whether the market is transforming and to what extent. To measure the extent of market transformation, we propose calculating the percent change in stores' ratio of low-flow showerheads to non-low-flow showerheads. The percent change for each store channel could also be weighted by sales volume in relation to volume of sales among all store channels. These values could then be anchored by the install rate collected through program participant surveys. Additionally, we could track the use of efficient showerheads in new construction and multifamily rental units that are independent of the program. This would address a change in the wholesale market share as an indicator for market transformation.

Net-To-Gross Ratio

For the reasons mentioned above, we recommend measuring the NTG ratio by discounting freeridership and crediting spillover attributable to the program. In the future, market transformation will be added to this equation below.

NTG Recommendation =

(1 - Freeridership) + Spillover + Program Changes + Benchmarking

Table 6 shows the freerider and spillover percentages and the resulting NTG percentage. As shown above, we determined that the program can attribute a high percentage of gross program savings to spillover measures (17 percent for electric and gas each), thereby adding significant savings to the final NTG percentage.

We calculated freeridership as 18 percent for PY2010, meaning that roughly one in five of those who received and installed the showerhead would have bought the same unit had the program not existed. Combined with the spillover, this finding indicates that 99 percent of Xcel Energy's claimed gross savings for both gas and electric showerheads can be attributed to the Colorado Showerhead Program. We applied these NTG percentages to the gross verified savings calculated above.

Table 6. Freerider, Spillover, and NTG Findings¹⁸

Fuel	FR	SO	PC	B	NTG
Gas	18%	17%	0	0	99%
Electric	18%	17%	0	0	99%

¹⁸ FR=freeridership. SO=spillover. PC=program changes. B=benchmarking.

6. Task 5c. Verify Technical and Baseline Assumptions

For the Colorado Showerhead Program, it was determined mid project that verifying the Technical and Baseline assumptions fell outside the scope of the study.

7. Task 6. Peer Utility Benchmarking

Cadmus completed a benchmarking study to compare the Colorado Showerhead program design elements to those of other utility programs across the United States that provided low-flow showerheads. Because programs rarely offer showerheads as the only program measure, we also considered programs that offer showerheads as one of several available measures. Table 7 shows the locations of where the comparison programs were implemented.

Table 7. Comparison Showerhead Programs

Program State	Utility/Organization
Washington	Seattle City Light
New Mexico	New Mexico Gas Company
Pacific Northwest	Bonneville Power Administration
Oregon	Energy Trust of Oregon
Ohio	Vectren Energy Delivery of Ohio
California	San Diego Gas and Electric

The key program design elements we compared were implementation, eligibility requirements, incentives, and program success. Due to limited available program information and scopes of studies that were not specifically focused on showerheads, we were unable to address all program design elements for each comparable program.

Findings

The studies we reviewed varied greatly in their program structure. While some programs, like the Xcel Energy program, used a program implementer to send a free, low-flow showerhead to customers' homes, others were designed as point-of-purchase, direct install, or rebate programs that lowered the cost of the low-flow showerhead. Additionally, many programs included additional energy saving measures such as faucet aerators, insulation, CFLs, and energy-efficient appliances. All programs required participants to be customers of their utility, though some programs had additional requirements such as a certain income status, homeownership status, or dwelling type status.

Not all of the evaluation studies mentioned education as a component of their program. However, programs that offer an energy audit provided an opportunity for homeowners to learn ways to save energy by improving their home's efficiency. Programs that included energy-efficiency tips disseminated information to customers online or through leave behind materials or mailers.

Many water utilities have showerhead programs. These programs tend to be exchange-based, where customers bring their old showerhead to a designated site and exchange it for a new energy-efficient showerhead.

Implementation

Similar to Xcel Energy's program, the Seattle City Light program offered free, low-flow showerheads to all customers in single family homes and duplexes throughout their service area

in 2007. Seattle City Light worked with a program implementer, who sent the program material to participating households.

As a part of their DSM portfolio, the New Mexico Gas Company (NMGCO) has a residential Low-Flow Showerhead Program (LFSP). The program is designed to help customers reduce their energy consumption by providing a \$7 point-of-purchase instant rebate on any type of ultra low-flow showerhead.¹⁹ Participating retailers provide an instant discount and then submit coupons to the program implementers for reimbursement.

In 1992, the Bonneville Power Administration launched a Residential Appliance Efficiency Program. One component of this program included a showerhead measure. This program was unique in that it provided utilities with a menu of program delivery options instead of a single, prescribed program design. This design increased the likelihood of utilities adopting the program and provided end users with a variety of showerhead designs and models; however, this program design made it difficult to evaluate.

From 2007-2008, the Energy Trust of Oregon had a Home Energy Solutions Program that provided cash incentives to Oregon households to encourage the adoption of energy-efficiency measures. Under the program, single family homes that participated in a free in-home audit received a free low-flow showerhead. For multifamily buildings that received a building assessment, auditors could provide tenants with free showerheads. Pacific Power customers could also request a free Energy Saver Kit. Kits for customers with an electric water heater included a showerhead. The kits also included a checklist of low-cost actions that could be taken around the house to save energy.

Through Vectren Energy Delivery of Ohio's (VEDO) Home Performance Program, customers are offered an on-site home energy audit and discounted, energy-efficiency, weatherization home improvements, which includes low-flow showerheads. The program targets single family homes, built before 1980, using gas in excess of 1,000 Ccfs per year, and that are not qualified under any of VEDO's income-qualified programs.

VEDO also has a Residential Online Audit Program that offers customers a free Web-based energy audit tool and a free home energy savings kit. By completing the level-three energy audit, customers may receive a free energy savings kit, which includes water savings measures (such as a low-flow showerhead) and a coupon for a programmable thermostat.

San Diego Gas and Electric (SDGE) has two programs that include showerheads. The first is their Comprehensive Manufactured/Mobile Home Program (CMMHP), which is geared towards producing cost-effective, long-term peak demand reductions and annual energy savings in the residential market sector. SDGE also has a Multifamily Rebate Program (MFRP) that offers rebates to encourage owners and managers of multifamily properties to install energy-efficient products in individual apartments and common areas.

Customer Outreach

The Seattle City Light program operated by sending a solicitation brochure to customers that included a response postcard. Unlike the Xcel Energy program, the Seattle City Light program

¹⁹ This is defined as a showerhead that is rated at 1.5 GPM or lower.

sent out two reminder postcards to increase customer participation and to reduce the number of customers that had never heard about the showerhead offer.

The most common means through which customers learn about NMGCO's showerhead program is through in-store advertisements. Other advertising sources NMGCO implements include bill inserts, newspaper or magazine articles, and the utility Website. According to survey results, the majority of program participants learn about the LFSP at the same time as deciding to purchase a low-flow showerhead. This only contributes to freeridership for participants intending to purchase a showerhead before entering the store.

VEDO's Home Performance Program uses a direct mail campaign to target customers. During the evaluation period, the program implementer, WECC, sent mailings to inform targeted customers about the program. This targeted marketing strategy was designed to avoid oversubscription, maximize savings, and improve program cost-effectiveness. However, customers that did not receive a letter but want to participate are included if they have a single family home and are not qualified under one of VEDO's income-qualified programs. The letters provide a toll-free number for customers to schedule an audit, and a BRC to return to WECC indicating their program interest. The WECC call center puts customers on a three-way call with VEDO's call center to confirm they receive gas from VEDO and to obtain the customer's verbal permission for VEDO to release their consumption data. WECC schedules audits during this same call.

VEDO's Residential Online Audit Program targets residential customers, although any customer with a Conservation Connection login can access the audit tool, including small commercial customers. Home energy savings kits are only sent to residential customers. VEDO markets its program through bill inserts, e-mail, and the Conservation Connection Website.

For the CMMHP program, SDGE sends residents of manufactured homes a brochure with information about energy-efficiency measures that can be installed in their home free-of-charge. They provide owners and managers of multifamily properties with information about rebate eligible measures via direct mail, presentations at community housing workshops and at local multifamily association meetings, and on the SDGE Website.

Eligibility Requirements

All customers dwelling in single family homes and duplexes in Seattle City Light's service territory were eligible to participate in the showerhead program. The municipal utility mailed a program brochure to all of these customers.

Unlike Xcel Energy and Seattle City Light, participation in the NMGCO showerhead program occurs at point-of-purchase. Customers who purchase a program showerhead receive an instant rebate. The evaluation report states that implementers send their coupons to the program implementers for reimbursement: it is unclear whether they account for spillover (which is not mentioned in the evaluation).

VEDO's Home Performance Program targets single family homes built before 1980, using gas in excess of 1,000 Ccfs per year, and that are not qualified under any of VEDO's income-qualified programs. However, any single family home that does not qualify for a VEDO low-income program may request to participate. VEDO's Residential Online Audit Program targets residential customers, although small commercial customers may also participate.

SDGE's CMMHP program requires participants to be SDGE customers, low-income qualified, and residents of a manufactured home. SDGE's MFRP program requires participants to be an SDGE customer and be an owner or manager of a multifamily property.

Incentives

Program Measures

Unlike Xcel Energy's showerhead program, Seattle City Light offered additional measures to customers that responded to their program postcard. The program material sent to customers' homes included one showerhead, one bathroom faucet aerator, a strip of Teflon plumbing tape, and informational literature.

The NMGCO LFSP gave customers an instant rebate on any type of ultra low-flow showerhead, defined as being rated at 1.5 GPM or lower.

Because the Bonneville Power Administration's program launched in 1992, showerheads were required to be 2.5 GPM or less; a less stringent requirement than is standard for most showerhead programs today.

VEDO's Home Performance Program was designed for customers to have one low-flow showerhead, one bathroom faucet aerator, and one kitchen faucet aerator installed, and auditors encourage a reduction in water heater temperature settings on an as-needed basis. Measures provided through the program are included as part of the participant's \$50 cost for the on-site audit. This cost is credited back to customers who implement the recommended package of energy-efficient weatherization improvements. The program pays an incentive up to 50 percent of the total installation costs for the comprehensive package of weatherization improvements, which includes measures such as insulation and sealing.

The free energy savings kits in VEDO's Residential Online Audit Program include one energy-efficient low-flow showerhead, two bathroom faucet aerators, one kitchen faucet aerator, one roll of plumber's tape, energy kit installation instructions, and a \$20 rebate.

Participants in SDGE's CMMHP program receive the measures and their installation free-of-charge. The measures include duct testing and sealing; air conditioning diagnostics and tune-ups; CFLs, faucet aerators, low-flow showerheads, and CFL hardwire fixtures; and efficiency upgrades for lighting in common areas of manufactured-home parks.

Participants in SDGE's MFRP program receive rebates for high-efficiency, residential fluorescent lighting fixtures (such as T-8 lamps and exit signs), lighting controls (such as photocells), attic insulation, room air conditioners, gas water heaters, water heater controllers, and low-flow faucet aerators, showerheads, and dishwashers.

Energy Education

As the NMGCO LFSP occurs at the point-of-purchase, customers are not provided with educational materials on ways to implement energy-efficiency practices in their home. However, other NMGCO programs take advantage of such opportunities, such as the Low-Income Weatherization Program.

VEDO's Residential Online Audit Program provides participants with information on ways to save energy. During a follow-up phone interview, 51 percent of respondents said the energy-saving information in the online audit was very useful. Furthermore, 84 percent of participants found the energy saving tips to be very or somewhat valuable, and 81 percent said they plan to implement the energy saving tips learned.

SDGE's CMMHP program provides residents of manufactured homes with general information about energy efficiency and specific information about the energy-efficiency measures installed in their homes. Each customer receives a brochure of energy-efficiency tips and information about other energy-efficiency programs, along with contact information.

Program Success

The Seattle City Light program set high, internal goals which included: complete program implementation within four months of program launch; 40 percent of all single family residential customers installing one or two showerheads; and, obtain over an 85 percent customer satisfaction level with the products and the delivery method. Although the program implementation was extended by three months, program costs did not significantly increase. While customer participation was 27 percent, Seattle City Light later learned that 40 percent was too optimistic; marketing experts they consulted expressed surprise that 27 percent was achieved, stating that most free mail-out promotional programs obtain far fewer participants. Finally, the follow-up customer phone survey revealed that 92 percent of customers were satisfied with the efficient showerheads.

The NMGCO program's rebate is a very motivating factor in respondents' decision to buy a low-flow showerhead. Seventy-four percent said that the rebate was "very important" or "somewhat important" in their decision to purchase the low-flow showerhead.²⁰ Satisfaction with the bathing comfort of the low-flow showerhead is 72 percent, and overall program satisfaction is 78 percent.²¹ The NTG ratio based on technical assumptions was calculated to be 70 percent. However, the evaluator recommended a revised NTG ratio of 60 percent to make up for instances when they determined components for deemed savings estimates to be inaccurate.

The most common reason cited for participating in VEDO's Home Performance Program is to save money on gas bills (33%). This is followed by needing work conducted on their home (30%), the ability to take advantage of Vectren's contribution (27%), and the desire for energy conservation (27%). Among the 32 percent of nonparticipants who were not interested when they learned of the program, 68 percent do not believe their home is in need of an energy-efficiency upgrade. The NTG ratio calculated for the Home Performance Program was 100 percent, since a series of freeridership questions revealed that there were no freeriders among the survey respondents.

Surveyed participants of VEDO's Residential Online Audit Program revealed that their primary reason for participating in the online energy audit was to learn how to reduce their energy use

²⁰ Forty percent said "very important" and 34 percent said "somewhat important."

²¹ In terms of bathing comfort with the low-flow showerhead, 47 percent are "very satisfied" and 25 percent are "somewhat satisfied." In terms of overall program satisfaction, 48 percent are "very satisfied" and 30 percent are "somewhat satisfied."

(49%). Seventy-five percent of survey respondents who received the energy-saving kit in the mail claimed they installed at least one kit measure, and 21 percent installed all of the kit measures. Among respondents who did not install all the measures, the most common reason was that they didn't see the value in installing small measures. Ease of installation was not a program barrier, as the majority of respondents claimed that each of the water-saving measures were easy to install. Overall, the program was a success: 94 percent of respondents expressed satisfaction with the online audit program, and there was a 49 percent installation rate for the program showerheads. Since very few, if any, residential customers were expected to seek and purchase such audits outside of the utility program, freeridership for the home energy-savings kit measures was assumed to be zero. In turn, the NTG ratio for the program is 100 percent.

SDGE's CMMHP program claimed that 7,018 showerheads were installed between 2006 and 2008 with a NTG ratio of 0.89. The program evaluation revealed that only 80 percent of the installations were installed or operable, and the NTG ratio was 0.72.

SDGE's MFRP program claimed that 6,684 showerheads were installed with a NTG ratio of 0.89. The MFRP program evaluation revealed that 59 percent of the installations were installed or operable, and the NTG ratio was 0.68.

Table 8. Program NTG Values

Program	NTG Value
Residential Low-Flow Showerhead Program, New Mexico Gas Company	0.7
Home Performance Program, Vectren Energy Delivery of Ohio	1.0
Residential Online Audit Program, Vectren Energy Delivery of Ohio	1.0
Comprehensive Manufactured/Mobile Home Program, San Diego Gas and Electric	0.72
Multifamily Rebate Program, San Diego Gas and Electric	0.68

Recommendations

The following recommendations are also provided in the executive summary of this report.

1. **Follow-up.** Implement one to two follow-up opportunities after sending the BRCs and showerheads to remind customers about the offer and ask them to install the showerhead. This tactic was effective for the Seattle City Light program.
2. **Education.** Once program participants receive the free, low-flow showerhead, Xcel Energy could send them information on other ways to save energy, as they likely already have the customer's attention.
3. **Direct install.** Xcel Energy could consider a direct install effort, as 30 percent of survey respondents had not yet installed their free showerhead by the time of the survey. Other programs we analyzed have used this tactic to secure a 100 percent install rate.
4. **Expand market.** Xcel Energy might want to consider expanding the program to multifamily and commercial buildings, which are markets Xcel Energy previously avoided. Other programs we analyzed have successfully captured a wider customer base

Appendix A: Freeridership Scoring Matrix

Would you have continued to use the showerhead you replaced if a new efficient one had not been offered by the program? <i>(If Yes (No), skip to Q23)</i> 1. Yes (No) 2. No (Yes) 8. Don't Know (Partial) 9. Refused (Partial)	Let me make sure I understand. When you say you would not have continued to use the showerhead you replaced, do you mean you would have replaced your original showerhead with an efficient showerhead even if a free one had not been offered? <i>(If Yes (Yes), skip to Q23)</i> 1. Yes (Yes) 2. No (No) 8. Don't Know (Partial) 9. Refused (Partial)	Again, help me understand. Would you have put in a standard showerhead that would have been less efficient than the one you received through the program? 1. Yes (No) 2. No (Yes) 8. Don't Know (Partial) 9. Refused (Partial)	And, would you have installed that showerhead: [Read list] 1. Within six months? (Yes) 2. Within one year? (Partial) 3. Within one to two years? (No) 4. Within one to two years? (No) 8. Don't Know (Partial) 9. Refused (Partial)	Before receiving the showerhead from Xcel Energy, had you ever installed a similar efficient showerhead? 1. Yes (Yes) 2. No (No) 8. Don't Know (Partial) 9. Refused (Partial)	FR Score
No	x	x	x	No	0.0%
No	x	x	x	Partial	12.5%
No	x	x	x	Yes	25.0%
Partial	x	No	x	x	0.0%
Yes	x	No	x	x	0.0%
Partial	Partial	Partial	Partial	Yes	12.5%
Yes	Yes	x	x	Yes	100.0%
Yes	Yes	x	x	No	75.0%
Yes	Partial	Yes	Yes	No	50.0%
Yes	Partial	Partial	Yes	No	12.5%
Yes	Partial	Partial	Partial	Partial	12.5%
Yes	Partial	Partial	Partial	No	0.0%
Yes	No	Yes	Partial	No	12.5%
Yes	No	Partial	Yes	No	0.0%

Appendix B: Participant Survey

Introduction

1. Hello, my name is _____, from **[FIRM]**, and I'm calling on behalf of Xcel Energy. May I speak with **[INSERT PARTICIPANT'S NAME]**?
 - a. Yes
 - b. No **[Thank and terminate]**

2. Our program records indicate that you received **[one/ two]** free efficient showerhead/s from Xcel Energy in [2009/2010]. Do you recall receiving this/these?
 - a. Yes **[Skip to Q5]**
 - b. No

-98 Don't know

-99 Refused

3. Is it possible that someone else in your household would know about receiving the showerhead/s?
 - a. Yes
 - b. No, don't remember this **[Thank and terminate]**
 - c. No, we definitely never received the showerhead we requested **[Thank and terminate]**

-98 Don't know **[Thank and terminate]**

-99 Refused **[Thank and terminate]**

4. May I please speak with that person?
 - a. Yes **[Restart survey at Q2]**
 - b. No **[Thank and terminate]**

-98 Don't know **[Thank and terminate]**

-99 Refused **[Thank and terminate]**

Awareness

The showerhead you received from Xcel Energy was an energy efficient showerhead because it emits only two gallons per minute.

5. Were you aware that the free showerhead you received was through an Xcel Energy program before you received it?
 - a. Yes
 - b. No

-98 Don't know

-99 Refused

6. How did you first learn about the program? **[Do not read responses]**
- a. Through the card received in the mail
 - b. Through a TV ad/on television
 - c. Through the Denver Water Program
 - d. Through a child/school kit
 - e. Through an agency/low income kit
 - f. Through word of mouth
 - g. Other **[Specify]**
- 98 Don't know **[Thank and terminate]**
-99 Refused **[Thank and terminate]**
7. **[Skip if Q6 ≠a]** What was the main reason for your decision to respond to the postcard offer for the efficient showerhead? **[Do not read responses, accept only top response if more than one reason is given]**
- a. To save money
 - b. To save energy
 - c. To save water
 - d. Because it was free
 - e. Because I needed/wanted a new showerhead
- 98 Don't know
-99 Refused

Installation Verification

8. Is the showerhead currently installed at your home?
- a. Yes
 - b. No **[Skip to Q10]**
- 98 Don't know **[Skip to Q10]**
c. -99 Refused **[Skip to Q10]**
9. After you received the showerhead in the mail, how much time passed until you installed it?
- a. One to two weeks **[Skip to Q17]**
 - b. Two weeks to a month **[Skip to Q15]**
 - c. One to three months **[Skip to Q15]**
 - d. Three months to six months **[Skip to Q15]**
 - e. Six months to a year **[Skip to Q15]**
 - f. More than a year **[Skip to Q15]**
- 98 Don't know **[Skip to Q15]**
-99 Refused **[Skip to Q17]**
10. **[If not installed/Q8≠a]** What have you done with the showerhead? **[Do not read responses]**

- a. Storage **[Skip to Q13]**
 - b. Threw it away **[Skip to Q13]**
 - c. Gave it away **[Skip to Q13]**
 - d. Sold it **[Skip to Q13]**
 - e. Installed but removed
 - f. Never installed **[Skip to Q13]**
 - g. Other **[Specify]** **[Skip to Q13]**
- 98 Don't know **[Skip to Q13]**
-99 Refused **[Skip to Q13]**
11. **[If Q10=e]** Why did you remove the showerhead? **[Do not read responses]**
- a. Equipment failed
 - b. Didn't work properly
 - c. Wrong size
 - d. Didn't like low water pressure
 - e. Didn't like style, color, look, etc.
 - f. Other **[Specify]**
- 98 Don't know
-99 Refused
12. What did you replace the showerhead with?
- a. A new high efficiency showerhead **[Skip to Q15]**
 - b. A new less efficient showerhead **[Skip to Q15]**
 - c. My old showerhead **[Skip to Q15]**
 - i. Old showerhead is less efficient than program showerhead
 - ii. Old showerhead is as or more efficient than program showerhead
 - iii. Don't know
 - iv. Refused
 - d. Other **[Specify]** **[Skip to Q15]**
- 98 Don't know **[Skip to Q15]**
-99 Refused **[Skip to Q15]**
13. What is the main reason you decided not to install the showerhead? **[Do not read responses]**
- a. Have not had a chance to install it yet
 - b. Having challenges installing it/not sure how to install it
 - c. Gave it away **[Skip to Q19]**
 - d. Threw it away **[Skip to Q19]**
 - e. Don't remember/forgot about it
 - f. Was not working properly/defective **[Skip to Q19]**
 - g. Don't like how it looks/I like my current showerhead looks better **[Skip to Q19]**

- h. I like how my current showerhead works/functions better **[Skip to Q19]**
 - i. I don't like the new showerhead **[Skip to Q19]**
 - 98 Don't know
 - 99 Refused
14. **[If Q13=a,b,e]** When do you think you will install the showerhead you were given from Xcel Energy?
- a. Within the next three months
 - b. Three to six months from now
 - c. Six to 12 months from now
 - d. More than a year from now
 - e. Never
- 98 Don't know
-99 Refused
15. If Xcel Energy were to offer any kind of follow-up, which of the following options would you find helpful? **[Read options. More than one option may be chosen. Responses should appear in random order]**
- a. A reminder to install the showerhead
 - b. A technician to answer any questions you may have in how to install the showerhead
 - c. An offer for a second, free, energy efficient showerhead
 - d. Ideas for what else you can do save energy in your home
16. **[Ask if Q15=reminder to install the showerhead. Otherwise, skip to Q17]** What kind of follow-up would you have found most helpful? **[Read list, multiple responses are fine]**
- a. A phone call
 - b. An email
 - c. A post card
 - d. A text message
 - e. Something else **[Specify]**
17. **[Skip to Q19 if Q8=b]** Is the showerhead installed in your primary bathroom or a secondary bathroom? *[Primary is the one most used. It can be in a bedroom or out of the way location if it used most.]*
- a. Primary
 - b. Secondary (includes any bathroom that is not primary)
 - c. Other **[Specify]**
- 98 Don't know
-99 Refused
18. Do you intend to keep the showerhead in the bathroom where it is currently installed?

- a. Yes
 - b. No
 - i. What will you do with it? **[Record response verbatim]**
- 98 Don't know
-99 Refused

Freeridership Questions

19. Would you have continued to use the showerhead you replaced if a new efficient one had not been offered by the program?
- a. Yes **[Skip to Q23]**
 - b. No
- 98 Don't know
-99 Refused
20. Let me make sure I understand. When you say you would not have continued to use the showerhead you replaced, do you mean you would have replaced your original showerhead with an efficient showerhead even if a free one had not been offered?
- a. Yes **[Skip to Q23]**
 - b. No
- 98 Don't know
-99 Refused
21. Again, help me understand. Would you have put in a standard showerhead that would have been less efficient than the one you received through the program?
- a. Yes
 - b. No **[Probe for what is meant here. Record response _____]**
- 98 Don't know
-99 Refused
22. And, would you have installed that showerhead: **[Read list]**
- a. Within six months?
 - b. Within one year?
 - c. Within one to two years?
 - d. Within three to five years?
- 98 Don't know
-99 Refused
23. Before receiving the showerhead from Xcel Energy, had you ever installed a similar efficient showerhead?
- a. Yes

- b. No
- 98 Don't know
- 99 Refused

Spillover

24. Since receiving the efficient showerhead, have you installed any of the following in your home?

[Read list but only follow-up on the number if they indicated yes to any of the lettered list]

- a. Another efficient showerhead that was not a free showerhead
 - i. How many have you installed? **[Record number]**
 - b. A low flow toilet
 - i. How many have you installed **[Record number]**
 - c. A faucet aerator that decreased your water flow for saving energy
 - i. How many have you installed **[Record number]**
 - d. An energy efficient gas water heater **[Be sure this is gas and not electric]**
 - i. How many have you installed **[Record number]**
 - e. A water heater timer with temperature set-backs
 - f. An ENERGY STAR Dishwasher
 - g. An ENERGY STAR Clothes Washer
- 98 Don't know
-99 Refused

25. **[Ask Q25 for each piece of equipment (a-g) installed above in Q24]** Did you receive a rebate from another utility or program for any of the additional equipment installed?

- a. Yes
 - i. Which utility or program? **[Record verbatim]**
 - b. No
- 98 Don't know
-99 Refused

26. **[Ask Q26 For each of the equipment a-g installed above in Q24]** On a scale of 0 to 10, where 0 = "not at all important" and 10 = "very important," please indicate how important your participation in the showerhead program was in your decision to install additional energy efficiency measures at your home? **[Record rating__]**

Satisfaction

27. On a scale of zero to 10 with zero being not at all satisfied and 10 being very satisfied, how satisfied are you with the showerhead you received?

- a. Recording rating **[If rating is from 5-10, skip to Q29]**

-98 Don't know **[Skip to Q29]**

-99 Refused **[Skip to Q29]**

28. What is the top reason for your rating? **[Don't read responses]**

- a. Don't like low flow feature
- b. Don't like the appearance
- c. Preferred my old showerhead
- d. Didn't work properly
- e. Other (specify)

-98 Don't know

-99 Refused

29. On a scale of zero to 10 with zero being not at all and 10 being completely, how well did the showerhead meet your expectations once it was installed?

a. **[Record rating]** ____

-98 Don't know

-99 Refused

30. Using the same scale, how well did the timing in which it took to receive the showerhead meet your expectations?

a. **[Record rating]** ____

-98 Don't know

-99 Refused

31. On a scale of zero to ten with zero being not at all likely to ten being very likely, how likely would you be to recommend this program to another person?

a. **[Record rating]** ____

-98 Don't know

-99 Refused

32. If you were to move, would you take the showerhead with you?

a. Yes

b. No

-98 Don't know

-99 Refused

Technical Inputs

In this study, we are trying to estimate the average amount of water and energy use required for a typical shower. The next questions will help us calculate these estimates. All responses will be combined so as not to identify any individual or household.

33. Does your water heater run on natural gas?

- a. Yes
- b. No
- 98 Don't know
- 99 Refused

34. How many people use the shower in which this showerhead is installed? **[Do not read responses. If showerhead is installed in a guest bathroom that is rarely used, still have respondent speculate on number of guest that may typically visit]**

- a. One
- b. Two
- c. Three
- d. Four
- e. Five
- f. Six
- g. Seven
- h. Eight
- i. Nine
- j. Ten or more
- 98 Don't know
- 99 Refused

35. **[Depending on the number of people given as an answer to 34, ask Q35 and Q36 for every person mentioned]** For the **[insert number]** person who uses this shower, how often, typically, does the shower get used per day?

- a. One
- b. Two
- c. Three
- d. Four
- e. Five
- f. Six
- g. Seven
- h. Eight
- i. Nine
- j. Ten or more
- k. Other **[If guest bathroom that gets used rarely, put in number of time per week, month, or year and note time frame]**

-98 Don't know

-99 Refused

36. For the **[insert number]** person who uses this shower, what would you say is their average shower length? [Record in minutes]

a. **[Record number of minutes]** ____

-98 Don't know

-99 Refused

37. Has the length of a typical shower, in your home, changed since the program showerhead was installed?

a. Yes

b. No **[Skip to Q39]**

-98 Don't know **[Skip to Q39]**

-99 Refused **[Skip to Q39]**

38. Has the length of your shower:

a. Increased

i. By how many minutes has it increased? **[Record number of minutes]**

b. Decreased

i. By how many minutes has it decreased? **[Record number of minutes]**

39. If you were to buy the same showerhead you received at a store, how much do you think it would cost?

a. Less than \$5

b. \$5-10

c. \$10-15

d. \$15 or more

-98 Don't know

-99 Refused

40. If you were to purchase another low flow showerhead, how much would you be willing to pay for a new one?
- a. Nothing, I wouldn't
 - b. Less than \$5
 - c. \$5-10
 - d. \$10-15
 - e. \$15 or more
- 98 Don't know
-99 Refused

Demographics

41. Which of the following types of housing units would you say best describes your home? It is a ...
[READ ALL, THEN RECORD]
- a. Single-family detached house
 - b. Single-family attached house (duplex, townhouse, row house)
 - c. Condo/apartment
 - d. Mobile or manufactured home
- 98 Don't know
-99 Refused
42. When was your home built? Was it...
- a. After 2008
 - b. 2005-2008
 - c. 2001-2004
 - d. 1980-2000
 - e. Before 1980
- 98 Don't know
-99 Refused
43. Do you, or members of your household, own this home or do you rent?
- a. Own/buying
 - b. Rent/lease
 - c. Occupied without payment of rent
 - d. Other **[Specify]**
- 98 Don't know
-99 Refused

44. What is the approximate square footage of your home?

- a. Less than 1,000 square feet
- b. 1,000 to 1,499 square feet
- c. 1,500 to 1,999 square feet
- d. 2,000 to 2,499 square feet
- e. 2,500 to 2,999 square feet
- f. 3,000 to 3,999 square feet
- g. 4,000 or greater

-98 Don't know

-99 Refused

45. What is the highest level of education completed by someone in the household?

- a. High school graduate or less
- b. Some college (including Associate's degree)
- c. Bachelor's degree
- d. Graduate study or degree

-98 Don't know

-99 Refused

46. I am going to read a list of age ranges, please stop me when I reach your age range.

- a. 18-29
- b. 30-39
- c. 40-49
- d. 50-59
- e. 60-69
- f. 70 or older

-98 Don't know

-99 Refused

47. Including yourself, how many people normally live in this house on a full time basis? **[If respondent has a hard time understanding the question, you may say "Please include everyone who lives in your home whether or not they are related to you and exclude anyone who is just visiting or children who may be away at college or in the military."]**

- a. **[Record number of people]** ____

-98 Don't know

-99 Refused

48. Those are all the questions I had. May we share your individual responses with Xcel Energy so they can serve their customers better? **[RECORD QUESTION VERBATIM]**

a. Yes **[Record response]**

b. No

-98 Don't know

-99 Refused

49. **RECORD:** Male – 1 Female - 2

This concludes the survey. Thank you very much for your time and participation.

Appendix C: Nonparticipant Survey

Introduction

1. Hello, my name is _____, from **[FIRM]**, and I'm calling on behalf of Xcel Energy. Our program records indicate that you received a postcard in the mail to receive a free, energy-saving showerhead from Xcel Energy. Do you remember receiving this postcard?
 - a. Yes
 - b. No **[Skip to Q3]**
 - 98 Don't know
 - 99 Refused

2. Did you reply to this postcard?
 - a. Yes **[Thank and terminate. Some may have been determined ineligible to participate and some may have not received a showerhead in the mail. For those who did not receive their showerhead in the mail, please let them know that this information will be forwarded to Xcel Energy. Note: by forwarding their name that does not guarantee that they will receive a showerhead only that Xcel Energy will look into the matter. It could be that they did not receive a showerhead last time because they were ineligible. A person would be determined ineligible if they were not an Xcel Energy customer and if they did not have a natural gas water heater.]**
 - i. **[Record if explanation offered, do not ask]** Respondent was determine ineligible
 - ii. **[Record if explanation offered, do not ask]** Respondent did not receive showerhead in the mail
 - b. No **[Skip to Q5]**
 - 98 Don't know
 - 99 Refused

3. Is there anyone else in the house I may speak with that might remember receiving this postcard?
 - a. Yes
 - b. No **[Thank and terminate]**
 - 98 Don't know **[Thank and terminate]**
 - 99 Refused **[Thank and terminate]**

4. May I please speak with that person?
 - a. Yes **[Restart survey at Q1]**
 - b. No **[Thank and terminate]**
 - 98 Don't know **[Thank and terminate]**
 - 99 Refused **[Thank and terminate]**

5. Our records also indicate that you did not opt to receive the free showerhead? What was the main reason for your decision not to respond to the postcard offer? **[Don't read responses. Multiple responses are fine.]**
- a. Didn't need a showerhead
 - b. I'm happy with the showerhead I already have
 - c. I already have an efficient/low-flow showerhead **[Skip to Q7]**
 - d. Didn't want a low flow showerhead
 - e. Didn't think it would look good in my bathroom
 - f. Other **[Specify]**
- 98 Don't know
-99 Refused **[Thank and terminate]**
6. **[Skip if Q5 = c]** Before receiving the offer for the free showerhead, did you have an energy-saving showerhead already installed?
- a. Yes
 - b. No
- 98 Don't know
-99 Refused

Spillover Section

7. Since receiving the showerhead offer, have you installed any of the following items in your home? **[Read list]**
- a. An efficient showerhead that you purchased
 - i. How many have you installed? **[Record number]**
 - b. An efficient showerhead you received from a different source
 - i. How many have you installed? **[Record number]**
 - c. A low flow toilet
 - i. How many have you installed? **[Record number]**
 - d. A faucet aerator that decreased your water flow for saving energy
 - i. How many have you installed? **[Record number]**
 - e. An energy efficient gas water heater
 - i. How many have you installed? **[Record number]**
- 98 Don't know
-99 Refused
8. **[Ask Q8 if answered yes to any of the items mentioned in Q24. Otherwise, skip to Q9]** Was your decision to install **[insert items mentioned in Q24]** influenced by the free showerhead offer you received from Xcel Energy? **[Do not read responses. Record yes or no to any applicable item]**
- a. An efficient showerhead that you purchased **[Y/N]**
 - b. An efficient showerhead you received from a different source **[Y/N]**

- c. A low flow toilet [Y/N]
 - d. A faucet aerator that decreased your water flow for saving energy [Y/N]
 - e. An energy efficient gas water heater [Y/N]
- 98 Don't know
-99 Refused

Technical Inputs

In this study, we are trying to estimate the average amount of water and energy use required for a typical shower. The next questions will help us calculate these estimates. All responses will be combined so as not to identify any individual or household.

9. Does your water heater run on natural gas?
- a. Yes
 - b. No
- 98 Don't know
-99 Refused
10. How many showers are in your home? [It is okay to include showers that are never used, non-functional, or in a mother in law unit that is detached from the house]
- a. [Record number]
- 98 Don't know
-99 Refused
11. How many people use the primary shower in your house? [Do not read responses. The primary shower is the one used most often.]
- a. One
 - b. Two
 - c. Three
 - d. Four
 - e. Five
 - f. Six
 - g. Seven
 - h. Eight
 - i. Nine
 - j. Ten or more
- 98 Don't know
-99 Refused

12. **[Depending on the number of people given as an answer to Q9, ask Q12 and Q36 for every person mentioned]** For the **[insert number]** person who uses the primary shower, how often, typically, does the shower get used per day?
- One
 - Two
 - Three
 - Four
 - Five
 - Six
 - Seven
 - Eight
 - Nine
 - Ten or more
 - Other **[If guest bathroom that gets used rarely, put in number of time per week, month, or year and note time frame]**
- 98 Don't know
-99 Refused
13. For the **[insert number]** person who uses the primary shower, what would you say is their average shower length? **[Record in minutes, if respondent cannot pin down an average number of minutes (option a), allow them to choose one of the following ranges (option b-g)]**
- Number of minutes _____
 - Up to three minutes
 - Three to five minutes
 - Five to 10 minutes
 - 10 to 15 minutes
 - 15 to 20 minutes
 - More than 20 minutes
- 98 Don't know
-99 Refused
14. If you were to buy the same showerhead that was offered for free in the store, how much do you think it would cost?
- Less than \$5
 - \$5-10
 - \$10-15
 - \$15 or more
- 98 Don't know
-99 Refused

15. If you were to purchase an energy-saving showerhead, how much would you be willing to pay for a new one?
- a. Nothing, I wouldn't
 - b. Less than \$5
 - c. \$5-10
 - d. \$10-15
 - e. \$15 or more
- 98 Don't know
-99 Refused

Demographics

For statistical purposes, I have just a few more questions about your home and household.

16. Which of the following types of housing units would you say best describes your home? It is a ...

[READ ALL, THEN RECORD]

- a. Single-family detached house
 - b. Single-family attached house (duplex, townhouse, row house)
 - c. Condo/apartment
 - d. Mobile or manufactured home
- 98 Don't know
-99 Refused

17. When was your home built? Was it...

- a. After 2008
 - b. 2005-2008
 - c. 2001-2004
 - d. 1980-2000
 - e. Before 1980
- 98 Don't know
-99 Refused

18. Do you, or members of your household, own this home or do you rent?

- a. Own/buying
 - b. Rent/lease
 - c. Occupied without payment of rent
 - d. Other **[Specify]**
- 98 Don't know
-99 Refused

19. What is the approximate square footage of your home?

- a. Less than 1,000 square feet
- b. 1,000 to 1,499 square feet
- c. 1,500 to 1,999 square feet
- d. 2,000 to 2,499 square feet
- e. 2,500 to 2,999 square feet
- f. 3,000 to 3,999 square feet
- g. 4,000 or greater

-98 Don't know

-99 REFUSED

20. What is the highest level of education completed by someone in the household?

- a. High school graduate or less
- b. Some college (including Associate's degree)
- c. Bachelor's degree
- d. Graduate study or degree

-98 Don't know

-99 REFUSED

21. I am going to read a list of age ranges, please stop me when I reach your age range.

- a. 18-29
- b. 30-39
- c. 40-49
- d. 50-59
- e. 60-69
- f. 70 or older

-98 Don't know

-99 REFUSED

22. Including yourself, how many people normally live in this house on a full time basis? **[If respondent has a hard time understanding the question, you may say "Please include everyone who lives in your home whether or not they are related to you and exclude anyone who is just visiting or children who may be away at college or in the military."]**

- a. **[Record number of people]** ____

-98 Don't know

-99 Refused

23. Those are all the questions I had. May we share your individual responses with Xcel Energy so they can serve their customers better? **[RECORD QUESTION VERBATIM]**

a. Yes **[Record response]**

b. No

-98 Don't know

-99 Refused

24. **RECORD:** Male – 1 Female – 2

25. **Respondent expressed interest in being sent a free, low flow showerhead [Do not ask this question, just record whether or not they expressed a desire to receive the free showerhead during the course of the survey. If someone asks whether or not they can receive the showerhead, let them know that their request will be forwarded on to Xcel Energy. Xcel Energy will determine whether or not they are eligible and if they are, they can expect to receive the showerhead within 8 to 10 weeks. A person would be determined ineligible if they were not an Xcel Energy customer]**

a. Yes

b. No

-98 Don't know

This concludes the survey. Thank you very much for your time and participation.

Appendix D: Referenced Studies

SBW Consulting, Inc. “Single Family 2007 Showerhead Kit Impact Evaluation.” October, 2008.

ADM Associate, Inc. “DSM Portfolio Evaluation. New Mexico Gas Company. Program year 2010. Measurement & Verification Report.” June 2011.

Pacific Northwest Laboratories, W.M. Warwick. “Bonneville Appliance Efficiency Program: Showerhead Evaluation, Volume 1 & 2.” January 1995.

Opinion Dynamics Corporation. “Process and Impact Evaluation of the 2007-2008 Energy Trust of Oregon Home Energy Solutions Program. Volume 1: Summary Report.” December 2009.

The Cadmus Group, Inc. “Vectren Energy Delivery of Ohio, Inc. Natural Gas DSM Programs Evaluation.” June 28, 2011.

The Cadmus Group, Inc., Itron, Inc., Jai J. Mitchell Analytics, KEMA, PA Consulting Group, Summit Blue Consulting, LLC. “Residential Retrofit High Impact Measure Evaluation Report.” February 8, 2010.