

A Modern Twist on an Old Classic: New Program Designs for Low and Middle Income Residential Weatherization Programs □

Katherine Johnson, Johnson Consulting Group
Gary Grayson, Idaho Power
Jonathan Kleinman, CLEAResult Consulting
Jodie Roberts-Smith, PSNC Energy

ABSTRACT

This paper describes three different utility approaches to reaching low and moderate residential customers through innovative weatherization program models. It highlights both the successes and lessons learned from these unique program twists on the classic whole-house weatherization retrofit model.

PSNC Energy's In-Home Audit Program combines the traditional in-home audit with sales or more complex and difficult energy efficiency measures. The twist is that the auditor also installs these measures, such as attic tents, weather stripping, and programmable thermostats while they are on the audit. This ensures that the measures are installed properly and demonstrates to PSNC Energy customers how even little changes can add up to big savings.

Idaho Power's Weatherization Solutions Program meets a gap in the current residential weatherization market by providing comprehensive weatherization services to customers whose household incomes are too high for the DOE weatherization program, but too low to qualify for cost-shared financing for energy efficiency improvements. Four private contracting firms install comprehensive weatherization program measures. Overall feedback has been positive and Idaho Power is seen as a valuable partner in delivering weatherization services to an under-served community.

Consumers Energy's Building Blocks Program is based on the old adage of "teaching a man to fish." In 2013, this pilot program tested new strategies in participant recruitment and measure installations through a variety of customer outreach strategies including do-it-yourself weatherization classes. The primary goal was transform income-eligible participants into program "partners," who will install their own energy efficiency measures and manage their energy use moving forward.

Introduction

Weatherization and direct install programs have been around for nearly thirty years. However, this paper describes the approaches that three very different utilities have taken to reach out to the traditional low and moderate residential customers. This paper highlights both the successes and lessons learned from these unique program twists on the classic whole-house weatherization retrofit model.

Utility Overview

PSNC Energy, headquartered in Gastonia, N.C., is a regulated public utility engaged primarily in purchasing, transporting, distributing and selling natural gas to approximately 510,000 customers throughout a 28-county service area in 96 cities and communities.¹

With headquarters in Boise, Idaho, and an employee base of approximately 2,000 people, Idaho Power is an electric utility engaged in the generation, transmission, distribution, sale and purchase of electric energy. Its service territory of 24,000 square miles includes southern Idaho and eastern Oregon serving more than 1,000,000 customers.²

Consumers Energy is Michigan's second-largest electric and natural gas utility, providing service to more than 6 million of the state's 10 million residents in all 68 counties in the Lower Peninsula. The utility provides electric service to 1.8 million customers and natural gas service for heating and other uses to more than 1.7 million customers in 44 of the 68 counties in Michigan's Lower Peninsula.³

Program Descriptions

These three utilities have developed innovative approaches to encourage the installation of energy efficiency measures to residential customers. PSNC Energy targets all residential customers who live in homes built before 1993 with natural gas heat or natural gas water heating. Consumers Energy and Idaho Power have developed program specifically targeting lower-income customers. Brief descriptions of these three programs are provided next.

PSNC Energy In-Home Energy Audit

PSNC Energy developed its In-Home Energy Audit Program as a way to address the challenge it faced in delivering cost-effective programs in a non-contiguous service territory.



Figure 1. PSNC energy's service territory. *Source:* PSNC Energy website.

In 2009, the utility implemented its In-Home Energy Audit Program to encourage homeowners to install additional energy savings measures. The program offers customers an in-

¹ <http://www.psnenergy.com/en/about-psnc-energy/>

² <https://www.idahopower.com/AboutUs/CompanyInformation/default.cfm>

³ <http://www.consumersenergy.com/content.aspx?id=2028>

home assessment of their energy usage and provides certain remediation measures at the customer's request. However, the additional energy efficiency items offered for sale are standard products of a size and type that could be installed safely by one person and that would make an immediate impact on the customer's efficiency at a reasonable price. This program is offered to current natural gas residential heating or water heating customers whose homes were built before April 15, 1993.

During the evaluation period of 2010-2011, the in-home energy auditors completed slightly more than 1,000 audits and installed 7,900 measures. The program auditors also had a remarkably high "close rate" in which 88 percent of all in-home audits led to measure installations.

Idaho Power Weatherization Solutions Program

Idaho Power Company (IPC) offers customers for the traditional low-income program an alternative. The Weatherization Solutions Program, which began as a pilot in 2009, serves customers whose household incomes are between 175 percent and 250 percent of the Federal poverty level. This provides a chance to participate for residential customers who are financially unable to participate in cost sharing involved with other residential energy efficiency programs. This program is designed to serve customers who are just slightly over income qualifications traditional low-income programs but are living in similar housing stock where energy savings are greatly needed.

The Weatherization Solutions Program is implemented by four private contracting firms who work either as a division of a Community Action Partner (CAP) agency (contractor) or as a separate LLC entity owned by a CAP which does not leverage any additional weatherization funding (Demand-Side Management 2012 Annual Report, p. 68.) In 2013, the contractors installed 980 measures in 141 projects completed in qualifying homes.

Building Blocks Program

In the first half of 2013, Consumers Energy began implementing a pilot low-income weatherization program to test new strategies in participant recruitment and measure installations. This program was pilot tested with 34 participants in 2013.



Figure 2. Building blocks program lifecycle.

One innovative feature of this program is that it directly rewards customers for positive taking actions that improve energy efficiency in their homes. Throughout the program lifecycle each participant receives, or has the possibility of receiving, the following cash and non-cash incentives including:

- A \$25 bill voucher for each workshop attendance
- Prize opportunities, including a prize ticket for each completed do-it-yourself task
- Weekly drawings for replacement front door
- Grand prize including a “whole home” weatherization

Marketing and Outreach Strategies

All of these programs have developed effective marketing and outreach strategies to attract residential customers to participate in this program, based on the evaluation results. As the following examples illustrate, the marketing strategies have been tailored to reach the specific target audiences. Overall, the program marketing materials provide a clear description of the In-Home Energy Audit and offer customers two different opportunities to schedule an appointment online. The direct mail developed by PSNC Energy specifically for the In-Home Energy Audit Program is visually appealing and highlights key information in an easy to understand way.

The tagline “*Small changes can make a big difference in your home’s energy efficiency*” is successfully integrated in its program outreach both on the website and in the direct mail pieces. The call to action is simple and easy, featuring a tear-off return to schedule a follow-up appointment and overall the program materials are effective at translating a rather difficult and abstract concept of the “energy audit” into an easy to understand process that leads to lasting energy savings.

PSNC ENERGY
Natural Gas. Making Everyday Life Better™

Home | FAQs | Contact Us | Site Map

Account Sign In
Username: _____
Password: _____ **Sign In**
Forgot username or password?
Reserve for an online account

In-home Energy Audit

Our in-home energy audits are available to current residential customers with natural gas heat or natural gas water heat, whose home was built prior to April 15, 1993. Learn what measures you can take to enhance energy efficiency throughout your home with the help of a PSNC Energy professional.

Don't want an in-home energy audit? You can learn how to improve your home's energy efficiency now by completing PSNC Energy's [online energy audit](#).

For just \$25, PSNC Energy will come to your home to assess your home's energy efficiency and recommend steps you can take to improve your home's overall energy usage and ultimately save money on your energy bill. The assessment should take three to four hours.

You must be a PSNC Energy customer to participate in this program.

request an appointment

What's Included?
Should the audit recommend measures and materials to make your home more energy efficient, you can choose to have PSNC Energy make certain improvements for you, at the time of your audit, and apply the \$25 fee as a credit towards the purchase of recommended materials available from our company.

Our thorough energy efficiency assessment includes:

- Doors and windows
- Caulking and weather stripping
- Insulation levels
- Heating and air conditioning unit
- Water heaters
- Your home's thermal efficiency

We can even make improvements for you at the time of your audit. When our audit recommends measures and materials to make your home more energy efficient, we can make certain improvements while at your home. In fact, a majority of our customers choose to do just that for a couple of reasons. It's convenient and at the time of the audit, the customer can apply the audit fee as a credit towards the purchase of recommended materials available from our audit technician.

The average total cost for materials installed by one of our Energy Audit Technicians is approximately \$44. Small changes can make a big difference in your home's energy efficiency.

Don't wait for another winter of severe weather and high energy bills. Now is the perfect time to improve your home's comfort and energy efficiency. [Contact an energy expert today!](#)

PSNC ENERGY
A SCANA COMPANY

Close Window

Request an In-Home Energy Audit

You must be a PSNC Energy customer to participate in this program.

*** Required**

*Name: _____
*Address: _____
*City: _____
*State: North Carolina *Zip: _____
*Email Address: _____
*Phone: _____
Alternate Phone: _____

Preferred time of day for an Appointment: Morning (8 am - 1 pm)

Approximate square footage of home: _____

Year home was built: _____

NOTE: The In-Home Energy Audit is only available to current residential customers whose homes were built before April 15, 1993.

I have the following natural gas appliances in my home:

HVAC Unit Tankless water heater
 Water heater Furnace

Home Type: Brick Apartment Slab
 Siding Condo/Townhome Crawl space
 Modular Rental Home
 Mobile

Existing Fire Place: Select One...

Figure 3. Examples of PSNC energy’s marketing materials.

Idaho Power provides basic information about the Weatherization Solutions Program on its website and provides referrals to the four participating contractors. The utility also developed several other marketing materials including a brochure and a door hanger. In these materials, the income guidelines and measure descriptions are prominently displayed. These materials also allow for co-branding with the four weatherization contractors, which makes it easy for them to leave brochures behind at customers’ homes when they are in the area. Overall, the marketing messages are clear, easy to understand and provide the most critical information and a clear call to action, with the appropriate contact information provided. Examples of these marketing materials are illustrated in Figure 4.



Figure 4. IPC door hanger to promote the weatherization solutions program.

For the Building Blocks program, marketing and outreach activities primarily consisted of a series of face-to-face meetings with local social service agencies that currently serve the low-income population. The agencies, in turn, referred potential customers to the utility for enrollment. The program implementer also leveraged some of its existing marketing materials to promote the program, since there was not sufficient time to create stand-alone marketing materials. Additional outreach activities were also sent to a targeted list of customers who currently participate in the Consumers Energy’s Shut-Off Protection Plan.

Types of Measures Installed

Although these programs are variants of traditional direct install programs, they do include energy efficiency measures that are not typically included in traditional weatherization or direct install programs. For example, as Figure 5 shows, PSNC Energy’s In-Home Energy Audit Program included non-traditional but cost-effective energy savings measures in the program mix including attic tents, gasket covers and door sweeps.

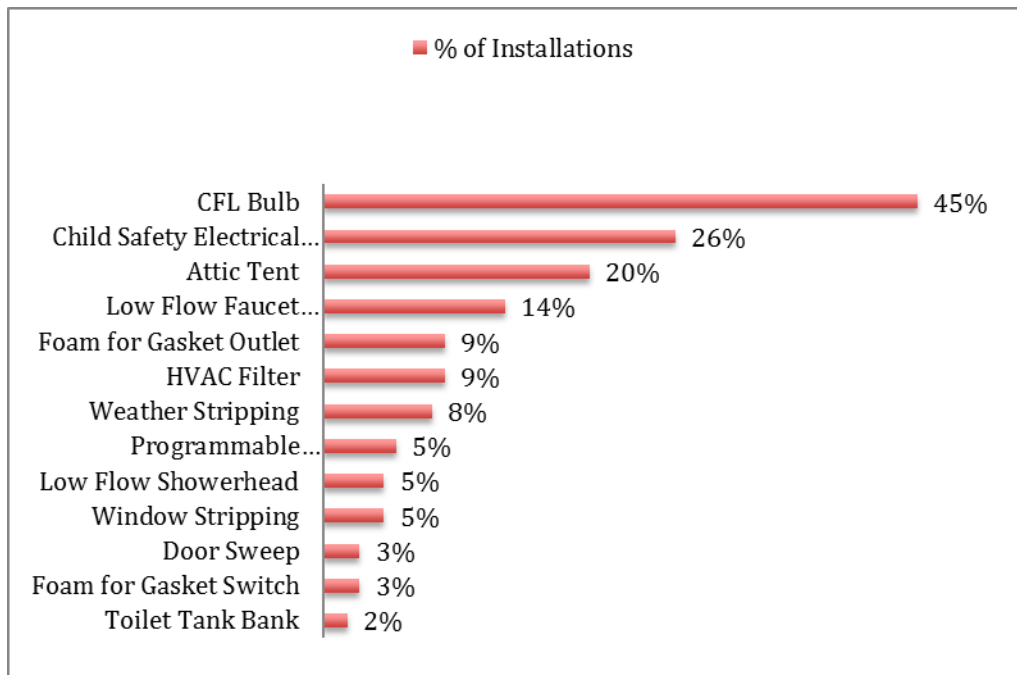


Figure 5. Summary of measures installed in PSNC energy’s in-home audit program.

Source: *PSNC Energy’s In-Home Energy Audit Program Evaluation*, p. 52.

Idaho Power’s Weatherization Solutions Program also focused on making comprehensive “whole house” improvements, including building envelope measures, new heat pumps, and water heaters in addition to installing health and safety measures. According to program records, the four weatherization contractors completed 141 weatherization projects in 2012, installing a total of 980 measures, as illustrated in Figure 6.

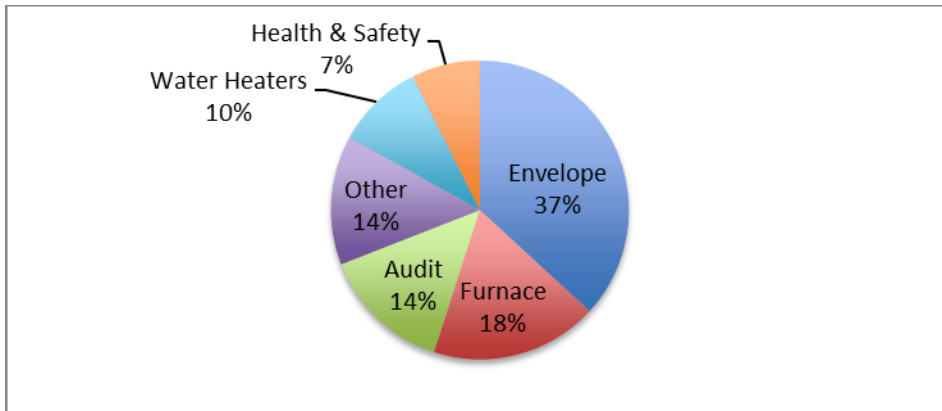


Figure 6. Distribution of measures installed in PY2012 for Idaho Power's Weatherization Solutions Program.

Source: *Idaho Weatherization Solutions Program Evaluation, 2014, p iv.*

However, one of the major challenges with including these “higher ticket” weatherization measures is that the costs of these measures do not always keep pace with the available funding for the program. Several of the participating contractors are worried that this trend may make it difficult to continue including these cost-effective, but expensive measures, in the future as Idaho Power continues to review the overall cost-effectiveness of this program.

The Building Blocks Program focuses on energy efficiency measures that can be installed relatively easily by program participants on their own. As part of the program's educational strategies, participants attend workshops that both introduce the individual measures as well as demonstrate how to install the measures in their own homes. Table 1 summarizes the types of measures that were discussed in the two energy efficiency education workshops. Note that many of these measures are not traditionally associated with typical weatherization programs including digital thermostats, rope caulk, and motion sensors.

Table 1. Summary of measures featured in the building blocks workshops

Measures Received in Workshop 1	Measures Received in Workshop 2
10 CFL bulbs	Indoor/Outdoor caulk with caulking gun
Two LED night lights	Two containers of spray foam
One outdoor motion sensor adaptor	Replacement furnace filter
Kitchen and bathroom faucet aerators	Window wrap kits
High- efficiency showerhead	Door weather-stripping kits
Water heater pipe insulation	Infrared digital thermometer
Hot water thermometer	Rope caulk
Digital refrigerator thermometer	Door bottom form of door sweep
Refrigerator coil cleaning brush	V-seal & press and peel weather-stripping kits
Smart power strip	

Source: *Consumer Energy's Building Block Program Process Evaluation, p.6*

However, the participants did not install every measure provided through these workshops. In particular, while the feedback from the participants was generally positive, a few disliked the new low-flow showerheads, had difficulty installing the measures, or did not like the measure and subsequently removed it (i.e., low-flow showerheads, pipe wrap, low-flow

showerheads, faucet aerators, outdoor motion sensors and door bottom sweeps). A few participants also reported wanting to delay the installation of some measures, such as the window wrap and rope caulk until the fall, when they would seal up the windows for the winter (Consumers Energy’s Building Block Program Process Evaluation, pp. 7-8).

Measure Persistence

But it is not enough to just offer and install new types of weatherization measures; the critical issue is to determine if these measures are well-accepted by program participants. These three programs had relatively high persistence rates for nearly all of the installed measures, despite the type of installation strategy. In other words, the measures installed by the program participants tended to stay in place.

The customer surveys found that most PSNC Energy’s auditor installed measures tended to stay in place after installation. The only exception was for foam gasket outlet covers, as Figure 7 shows.

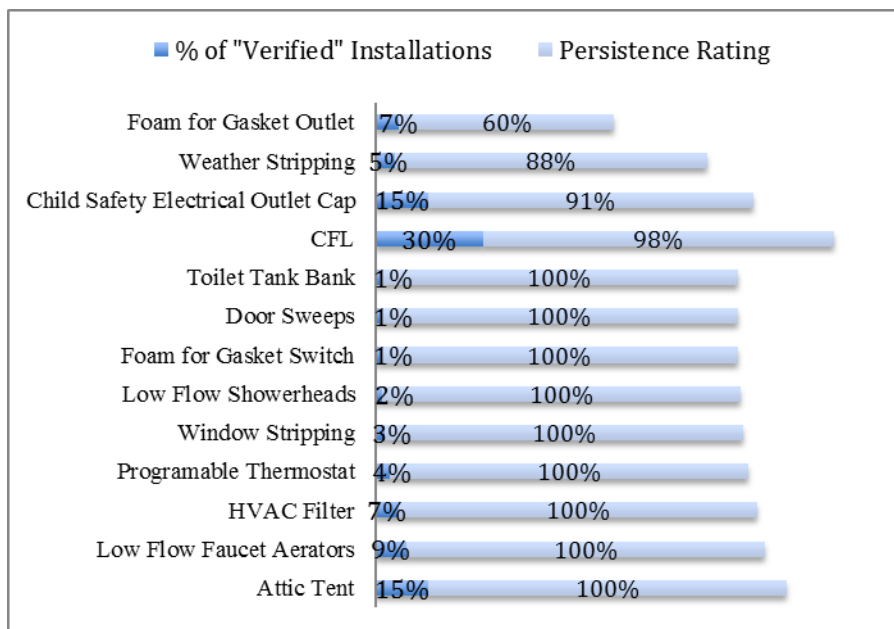


Figure 7. Comparison of verified installations vs. measure persistence rates for PSNC Energy In-Home Program.

Source: PSNC Energy’s In-Home Energy Audit Program Evaluation, p. 53.

Consumer Energy’s Building Block Program also reported relatively high rates of measure persistence for self-installed items, especially for the most familiar and easy-to-install measures featured in Workshop 1. As the measures became more difficult to install, the persistence rate dropped off a bit, as illustrated by the lower measure persistence rates for those measures featured in Workshop 2.

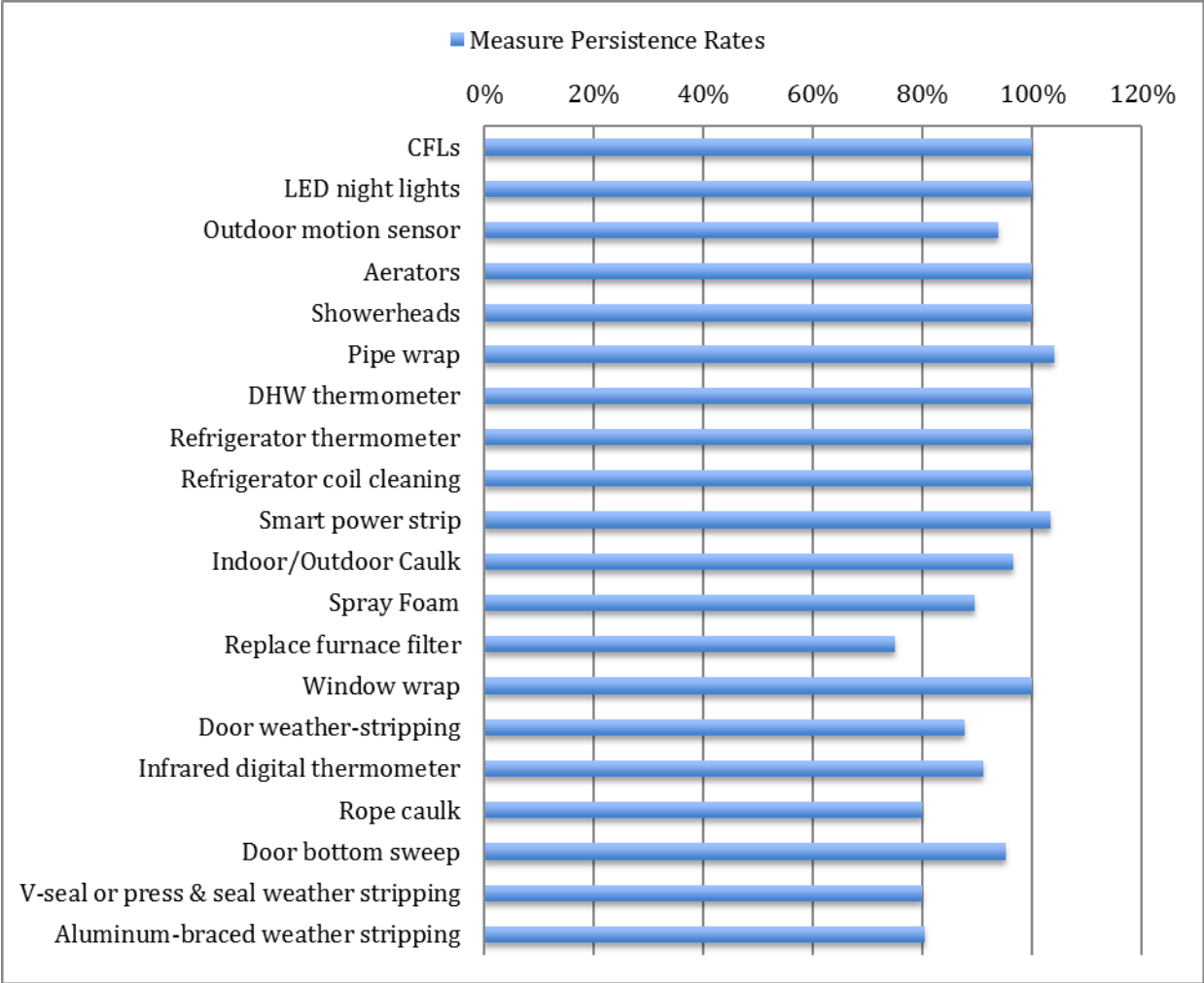


Figure 8. Measure persistence rates for participant-installed measures for the Building Blocks Program
 Source: Consumer Energy’s Building Block Program Process Evaluation, p.7.

Measure persistence rates were also very high based on the qualitative feedback from Idaho Power through interviews with contractors and customer feedback (Idaho Weatherization Solutions Process Evaluation, p. 17).

As an added bonus, both PSNC Energy and Consumer Energy’s program reported high levels of spillover directly attributable to the programs’ educational materials. A sample of program participants (n=100) reported installing a total of 81 additional measures on their own without receiving a rebate. These additional installations ranged from adding caulking, weatherization, additional insulation and purchasing additional lighting (PSNC In-Home Energy Audit Program Evaluation, 2012 p. 59).

The Building Blocks Program also experienced some measure spillover based on the actions reported by program participants. These included conducting maintenance on their current equipment including the refrigerator, freezer or HVAC system, adjusting the temperature set-point on the hot water tank, creating thermostat setbacks, and performing general maintenance and cleaning to enhance airflow around vents, air returns, and registers.

Lessons Learned From Innovative Programs

These three approaches to weatherization programs illustrate that creativity, coupled with good consumer education and outreach, can lead to lasting energy savings for both program participants and the sponsoring utilities. In particular, these programs demonstrate the following key lessons learned that can benefit energy program planners, designers, and implementers.

Innovative Programs Work

First and foremost, successful weatherization programs do not have to rely on a single model or formula to achieve significant savings. Rather these programs demonstrate that by combining in-home audits with hands on education and training will result in not only high installation rates, but also high measure persistence rates. This is especially true for the programs which relied on the in-home auditor to install the measures, such as PSNC's In-Home Audit Program and Idaho Power's Weatherization Solutions Program.

Actions Speak Louder Than (Energy) Words

While there are many ways in which energy organizations seek to educate customers about the benefits of making energy efficiency improvements, the most lasting lessons are those that demonstrate, in simple ways, the tangible benefits that customers receive from these installations. For PSNC Energy, the traditional direct-install program design was enhanced by having the auditor explain, and subsequently install, additional energy savings measures that are often overlooked by most utility programs.

The Building Blocks Program tested the idea that customers would be more inclined to not only install energy measures on their own, but also take additional actions to save energy, once they were taught both how to perform the installation as well as learn about the ways these actions could help them save money.

Energy education was also an important component of the Weatherization Solutions Program. Although the emphasis was on completing "whole-house" measures, Idaho Power also provided additional information on ways in which these senior citizens could further reduce their energy usage through simple low-cost/no-cost tips.

Weatherization Programs Are More than Just Low-Flow Showerheads or Insulation

These program models demonstrated the range of cost-effective measures that can be included in programs targeting lower income customers. Rather than just focusing on traditional insulation measures, both PSNC Energy and Consumers Energy incorporated little-known but highly effective measures such as rope caulking, attic tents, power strips and outlet gaskets. These programs illustrate the creativity the program designers and implementers could incorporate into future weatherization programs targeting low and moderate income customers.

Conclusion

This paper described three different utility approaches to reaching low and moderate residential customers through innovative weatherization program models. These programs also educated customers in a variety of creative ways ranging from in-home demonstrations to workshops that helped teach customers to make other low-cost/no cost measures on their own.

These programs also demonstrated the value that “out of-the-box” thinking has on updating classic program models. Most importantly, these innovative program approaches led both high program installation rates and lasting measure savings.

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