

Beyond Weatherization: How Innovative Program Strategies Can Enhance Core Low-Income Programs

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Introduction

Weatherization — the practice of implementing efficiency measures in order to reduce energy consumption, particularly around seasonal weather fluctuations — is a key component of low-income energy efficiency portfolios across the country.¹

Low-income families tend to live in older, less efficient homes, rendering weatherization even more critical to reducing energy intensity.^{2,3} While average energy consumption among low-income households can vary significantly from state to state, the average energy intensity for low-income households is notably higher than for non-low-income households.⁴ Given that the energy burden of low-income households is 4.6 times greater than for non-low-income customers, weatherization can play a crucial role in making homes more efficient and comfortable for the families who need it most.^{5,6}

Weatherizing homes drives a wide range of benefits for customers, including lower utility bills, higher levels of comfort, and healthier, safer living spaces.⁷ The improved quality of life these programs deliver help all families, but they are especially valuable to low-income families. And thanks to concerted efforts from utilities and community organizations, the past decade has seen significant progress in the weatherization of low-income homes.

But, in spite of these successful efforts, the need for weatherization among low-income communities is growing. Poor economic conditions and record-breaking weather have disproportionately impacted low-income households, who are under ever-increasing strain to ensure their homes are warm in the winter and cool in the summer. A 2015 survey found that four in ten utility customers with annual incomes under \$50,000 have trouble paying their utility bills “at least once in a while.”⁸ Further, federal funding for the Low Income Home Energy Assistance Program (LIHEAP) has steadily declined since 2010, preventing many families from obtaining important assistance to reduce their energy bills.⁹ These hurdles present real challenges. But they also represent an opportunity to build on previous efforts and accelerate the evolution of weatherization programs.

To foster this progression, program administrators should employ technology-driven engagement strategies tailored for low-income households at key inflection points in the weatherization process.¹⁰ By increasing customer awareness before households participate in weatherization — and continuing education after measures have been installed — low-income households can unlock the full value of weatherization programs.

Additionally, as more households take advantage of weatherization, a new set of opportunities is emerging to drive participation in other low-income energy efficiency programs. This augments the value of weatherization programs and drives even greater benefits for low-income households, utilities, community organizations, and weatherization contractors alike.

Securing new funding for energy efficiency programs remains essential to meeting the needs of low-income communities. But, alongside those efforts, technology-driven programs represent a critical new opportunity to wring more value out of existing weatherization programs.

The Low-Income Enrollment and Engagement Gaps

The progress made in weatherizing homes across the nation has substantially improved the lives of millions of low-income families. Community organizations, utilities, and the federal government have helped reduce customer bills while increasing comfort and financial independence through decades of successful weatherization initiatives. Since its inception in 1976, the Federal Weatherization Assistance Project (WAP) has weatherized 7 million homes. Between 2009 and 2012 the program weatherized an astounding 1 million homes, largely through American Recovery and Reinvestment Act (ARRA) funding.¹¹

Evidence has shown that weatherization is highly cost-effective; for every \$1 invested, it delivers \$1.80 worth of benefits from energy savings alone, and \$2.51 when societal benefits are included (See Figure 1).^{12,13} Alongside and in concert with WAP, utilities across the country also have implemented billions of dollars of ratepayer-funded low-income energy efficiency programs, including weatherization.^{14,15,16}

Investment in Weatherization is Highly Cost-Effective



FIGURE 1. EVERY \$1 INVESTED IN WEATHERIZATION ELICITS \$2.51 WORTH OF BENEFITS IN THE FORM OF REDUCED ENERGY BILLS AND POSITIVE SOCIETAL OUTCOMES (E.G., INCREASED LOCAL EMPLOYMENT, REDUCED UNCOLLECTABLE UTILITY BILLS, HIGHER LEVELS OF HEALTH AND SAFETY), RENDERING WEATHERIZATION HIGHLY COST-EFFECTIVE.

Source: Weatherization Assistance Program Technical Memorandum Background Data and Statistics 2010.

“The increase in WAP activity during 2009–2012, achieved partly through \$5 billion of ARRA grants that have been fully allocated and spent, is equivalent to 2.5 percent of 2014 weatherization-eligible households.”

While these milestones represent laudable achievements, there is still significant progress to be made. In 2014, 39.5 million households, representing 35 percent of total American households, were income-eligible for weatherization under WAP guidelines.¹⁷ The increase in WAP activity during 2009–2012, achieved partly through \$5 billion of ARRA grants that have been fully allocated and spent, is equivalent to 2.5 percent of 2014 weatherization-eligible households.^{18,19} In order to reach their full potential, weatherization programs must build on existing community and in-home energy education efforts to further cement a concerted focus on the occupants of the household. Deploying this approach in tandem with weatherization can bridge this engagement gap and maximize the value of these programs.

The gap associated with weatherization programs can be addressed by focusing on key enrollment inflection points before weatherization has occurred, and engagement inflection points during and after weatherization has occurred. Technology-based programs are key to addressing these gaps. For example, home energy reporting programs leverage data analytics to provide personalized engagement through no-cost/low-cost tips that help low-income households reduce consumption.

Technology-driven programs can support traditional energy education and community-based engagement efforts to increase awareness of, and boost enrollment in, weatherization.²⁰ Deploying traditional and technology-based approaches in tandem can ensure that every eligible customer is aware of the efficiency opportunities available to them and can easily contact the right organization to enroll in weatherization and other programs.

Educating customers on making the most of their homes' new, more efficient measures once weatherization has occurred, and contextualizing their consumption with that of comparable households, can help unlock weatherization's full value. Employing advanced engagement strategies in combination with person-to-person outreach to increase adoption of installed-measure upgrades allows families to make the most of weatherization for greater comfort and financial independence.

Boosting Awareness and Participation

The first step in addressing the enrollment gap is to boost awareness of weatherization programs. Sub-optimal awareness of efficiency programs among low-income customers has been a key hurdle impeding higher levels of participation.²¹ However, generating awareness has proven to be challenging. A study of NV Energy's low-income population, for example, found that low-income customers were generally less aware of efficiency programs compared to their non-low-income counterparts (See Figure 2).²² Driving awareness of efficiency programs among the tens of millions of income-eligible households in need of weatherization is therefore critical to increasing participation. Surmounting this hurdle may seem daunting, but the rewards are well worth the effort.

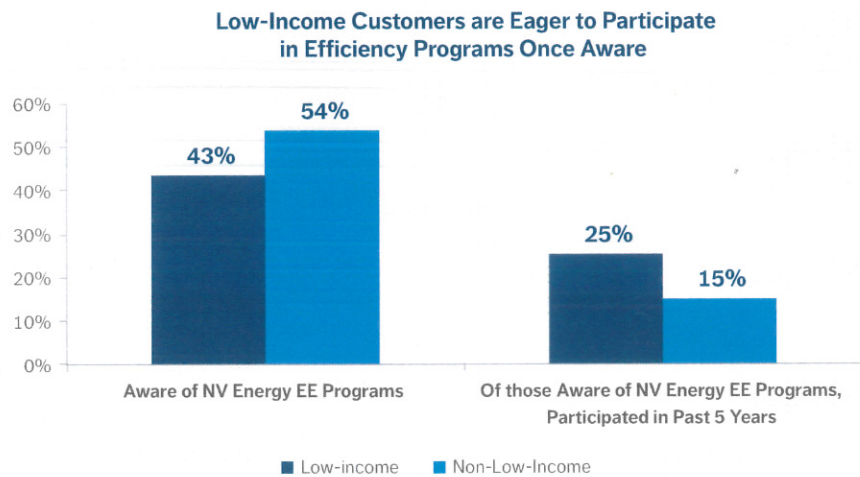


FIGURE 2. LOW-INCOME CUSTOMERS TEND TO BE LESS AWARE OF EE OPPORTUNITIES THAN NON-LOW-INCOME CUSTOMERS, BUT ARE MORE LIKELY TO PARTICIPATE ONCE AWARE.

Source: Tetra Tech 2012.

“Employing technology-driven customer engagement programs alongside more traditional energy education initiatives facilitates higher levels of participation in weatherization and other low-income focused programs, enhances customer education, and drives greater program impacts.”

The next step in addressing the enrollment gap is building on increased awareness to drive participation. Evidence suggests that low-income households are eager to participate in efficiency programs once aware. An evaluation of a behavioral program serving customers across income levels at an investor-owned utility in the Carolinas found that low-income customers were more receptive to installed-measure upgrades upon receiving behavior-based communications from the utility.²³ While this is notable in its own right, the report further demonstrated that low-income customers were even more likely than non-low-income customers to implement installed-measure upgrades, suggesting a significant opportunity to increase participation in efficiency programs through technology-driven messaging (see Figure 3).²⁴ By fostering awareness of the availability of installed-measure upgrades through a credible source (in this case, the utility), the behavioral program bridged the engagement gap to elicit a strong response from customers.

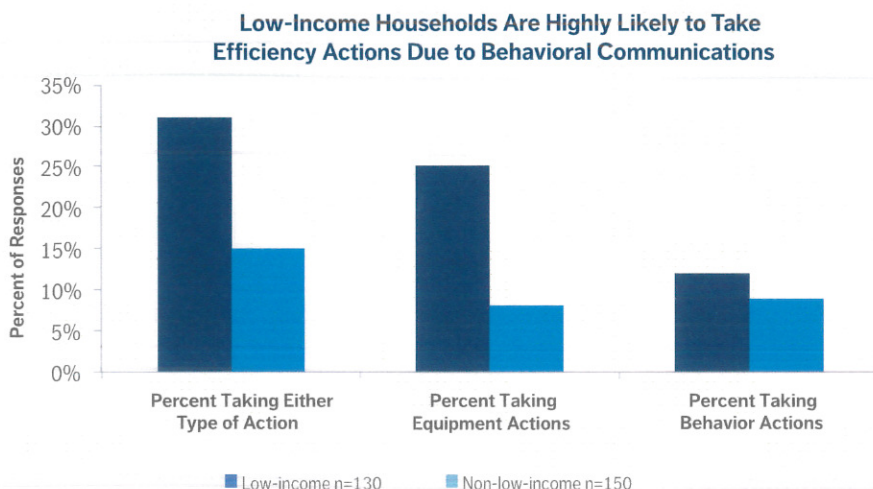


FIGURE 3. ACTIONS TAKEN IN RESPONSE TO BEHAVIORAL COMMUNICATIONS DEMONSTRATING CUSTOMERS' INCREASED RECEPTIVITY TO INSTALLED-MEASURE UPGRADES FOLLOWING PERSONALIZED ENGAGEMENT.

Source: Navigant 2012a.

Employing technology-driven customer engagement programs alongside more traditional energy education initiatives facilitates higher levels of participation in weatherization and other low-income focused programs, enhances customer education, and drives greater program impacts.²⁵ Coordinating pre-weatherization customer engagement between traditional energy education and data-driven programs increases the number of contact points a customer has to enroll in efficiency programs, increasing the likelihood of enrollment.

For example, using data analytics to pinpoint and engage income-eligible customers can increase participation. Figure 4, a demonstration of Opower's Visual Segmentation analytics platform, provides a high-level overview of how technology-driven programs maximize the

value of weatherization by optimizing program outreach before and after weatherization. After applying standard filters to ensure communications are targeted only to active, eligible households, Opower’s platform divides households into categories that help communicate the value of weatherization and other energy efficiency actions.

For families whose homes have not yet been treated, the platform pinpoints those with especially compelling reasons to weatherize, so utilities and community organizations can deploy personalized messaging that addresses each household’s opportunity to save. For example, the “neighbor rank” characteristic allows the platform to identify homes that are inefficient compared to nearby homes with similar square footage and parcel characteristics (e.g., heat type, utility-provided fuels at the home, and single-family vs. multi-family). These homes may receive materials via mail, email, or text message emphasizing that their energy use is unusually high, presenting weatherization as one option to bring their bills down.

Technology-Driven Programs Facilitate Targeted Outreach for Weatherization Communications

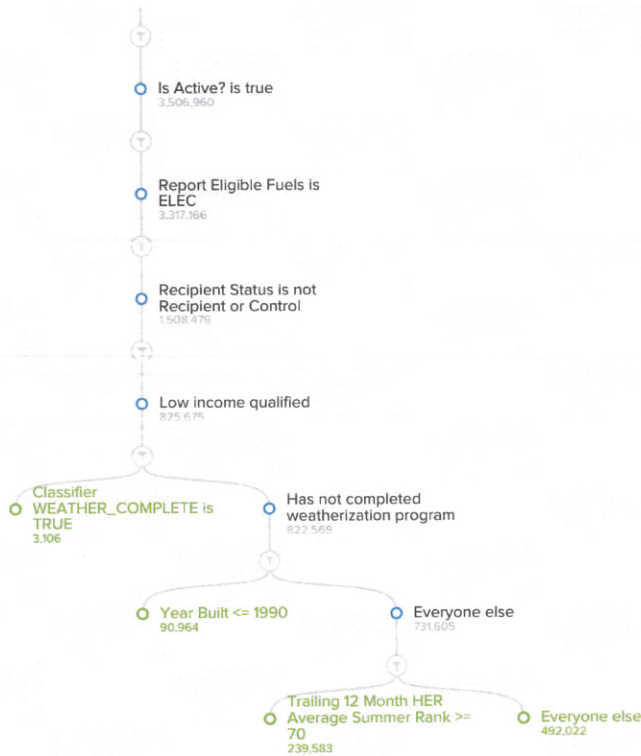


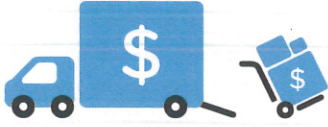
FIGURE 4: TECHNOLOGY-DRIVEN PROGRAMS USE DATA ANALYTICS TO TARGET OUTREACH FOR INCOME-QUALIFIED HOUSEHOLDS BOTH PRE-WEATHERIZATION TO INCREASE AWARENESS, AND POST-WEATHERIZATION TO DEEPEN SAVINGS.

Once households are identified as eligible, further segmentation and targeting may be deployed to hone the personalized message sent to each household. See Figure 5 for an example of a message designed to increase participation in a low-income energy savings kit program. Personalized messaging can promote a wide range of programs, including weatherization, energy savings kits, and appliance replacement programs, depending on the goals of the program implementer.

“...data-driven programs maintain and advance the momentum achieved through the weatherization process, ensuring households remain engaged with their energy consumption.”

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FIGURE 5. AN EXAMPLE OF A TECHNOLOGY-DRIVEN COMMUNICATION DESIGNED TO INCREASE PARTICIPATION IN IN-HOME ENERGY AUDITS. THIS COMMUNICATION WOULD BE SENT TO INCOME-ELIGIBLE HOUSEHOLDS THAT AND ARE NOT ALREADY PARTICIPATING IN THE PROGRAM.

Further, deploying data-driven programs to households prior to weatherization can act as a form of energy education, allowing customers to gain a full understanding of how their consumption is likely to change as a result of the weatherization process.²⁶

Deepening Post-Weatherization Engagement

Technology-driven programs can also play an important role in deepening the impact of weatherization once it has been implemented. Building on the foundation of community-based energy education, data-driven programs can help customers understand how weatherization has affected the consumption profile of their home, and introduce strategies for taking full advantage of the related installed-measure upgrades. Technology-driven weatherization follow-up with customers is particularly valuable in light of WAP directives that prohibit using DOE funds to revisit homes that have already been weatherized.²⁷ Further, data-driven programs maintain and advance the momentum achieved through the weatherization process, ensuring households remain engaged with their energy consumption.²⁸ Employing these program strategies compounds the savings that would already have occurred through installed measures, thereby further lowering bills and increasing energy savings.

Serving households with technology-driven programs after weatherization has occurred can deepen energy savings by habituating efficient behavioral actions. As depicted in Figure 4 above, program implementers can use technology-driven platforms to quickly identify families whose homes have already been weatherized. Analysis of meter data, household characteristics, and localized weather data allows technology-driven programs to provide information customized for each household. Designing communications to be as relevant as possible for each home — including personalized tips specially tailored to coach households toward energy-efficient habits and cost-effective purchases — translates into adoption of more efficient behaviors.²⁹

Research into low-income household preferences regarding efficiency programs has identified individualized communications as highly desirable.³⁰ This is borne out in practice, as customized communications have been demonstrated to impact customer behavior across demographics and income groups, with low-income households saving energy at levels commensurate with non-low-income households.³¹ Communications can also provide information regarding additional efficiency opportunities such as rebate programs and rate assistance initiatives, empowering low-income households to take maximum advantage of resources available to them.

Deploying technology-driven engagement programs following weatherization has the potential to boost and deepen the value of the weatherization activities that represent the core of low-income portfolios across the country. When employed as part of a broader engagement strategy that focuses on key inflection points before, during, and after weatherization, these programs build on the foundation laid by community-based initiatives to form a cohesive customer experience. This holistic process drives crucial bill savings for low-income customers while maximizing the value of each dollar invested by utilities, community-based organizations, and ratepayers alike, benefitting all parties in the efficiency ecosystem.

Recommendations for Increasing Weatherization Program Impact

In order to maximize the value of weatherization, it is necessary to employ novel program strategies that address the engagement gap. In doing so, utilities and community-based organizations can fulfill the full potential of weatherization. Tackling the engagement gap will have many permutations, and should be the focus of creative solutions on the part of utilities, community-based organizations, and other key weatherization stakeholders. This paper provides three recommendations that can help accelerate the process.

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1. INCREASE AWARENESS TO DRIVE PARTICIPATION IN PROGRAMS

A focus on driving awareness prior to weatherization by targeting low-income-likely households with strategic communications targets a key hurdle in ensuring income-eligible households participate in weatherization programs. Employing technology-driven engagement strategies to provide these households with the information they need to enroll in a clear, easy-to-follow process can “prime” families for the next step in weatherization. When they contact their local community agency or utility, their enhanced understanding of the enrollment and participation procedure can facilitate a quicker sign-up, ensuring that they can be enrolled as efficiently as possible.

2. CONTINUE TO ENGAGE HOUSEHOLDS AFTER WEATHERIZATION TO DRIVE GREATER VALUE

Once a low-income household has enrolled in weatherization, employing technology-driven engagement strategies — including behavioral programs alongside critical in-person energy education — creates a mutually beneficial arrangement. Behavioral programs can provide a data-driven component that allows in-person educators to home in on key areas of consumption within a household, while the familiar faces of community-based organizations make the data more relatable. The combination of these strategies is a more impactful weatherization approach that can remain engaging and relevant over time.

3. COORDINATE ACROSS ENGAGEMENT MEDIUMS

Engagement can come in many forms. In-person, community-based, and technology-driven engagement strategies are all crucial to ensuring low-income households reap the full benefits of weatherization. Deploying these strategies in concert and in close coordination with one another is key to maximizing the value of weatherization and overcoming the engagement gap. For example, a utility could send individualized consumption reports to a low-income household prior to weatherization, which a local weatherization contractor and/or an energy educator could use when conducting an in-home energy evaluation to show how bills can be reduced. Once weatherization has occurred, the household would continue receiving individualized consumption reports, allowing them to fully understand how weatherization has affected the home, habituate more efficient behaviors, and enroll in additional efficiency programs.

The individual interactions low-income households have with the weatherization process may be months apart. Making the most of each step by coordinating engagement across mediums can cement the idea of a holistic cycle of weatherization in the minds of families. This process ensures low-income households take full advantage of their newly-weatherized homes while simultaneously deepening the value of visits from contractors and energy educators.

Conclusion

Optimizing engagement strategies around key inflection points in the weatherization process and coordinating across mediums ensures low-income households, community-based organizations, contractors, and utilities maximize the value of each dollar spent on weatherization. These recommendations represent the starting point of a conversation around implementing novel program strategies for deepening engagement. The symbiotic relationship that technology-driven engagement offers to core low-income programs is a momentous opportunity to facilitate the next chapter in the decades-long success story of weatherization and residential energy efficiency.

Endnotes:

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