



How are utilities scaling their low-income programs?

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When designing their low-income demand-side management (DSM) portfolios, most utilities work with local Weatherization Assistance Program (WAP) partners, largely to reduce program costs by piggybacking on the administrative roles these groups play, including program marketing, intake and eligibility verification, quality assurance, contractor training, and consideration of health and safety issues within the home. Yet utilities report that WAP partners often leave dollars on the table, citing their inability to hire contractors because of their primary reliance on federal grant dollars that wax and wane.

We suggest a few strategies to overcome this hurdle and bring programs to scale, including:

- Working with other partners in addition to WAP to augment service or serve customer segments such as multifamily, residents of mobile homes, or nonprofits that WAP partners aren't as familiar with
- Expanding eligibility to serve customers outside of the standard 200% federal poverty-level band
- Using a statewide entity to coordinate broadly with WAP partners to streamline program rules and ensure that funds are spent effectively
- Creating a for-profit limited liability company (LLC) with WAP partners, enabling the Community Action Partnership (CAP) agencies to hire contractors and serve more customers above and beyond the US

Department of Energy (DOE)-funded program

- Conducting community-based weatherization blitzes to reach specific groups and reduce program costs
- Expanding their contractor networks by offering workforce development and training options to increase their pool of contractors that can complete weatherization projects
- Matching grant funds or using crowdsourcing platforms to help weatherization program administrators serve more customers and reduce program costs
- Exploring offerings such as behavioral programs for low-income customers who may be on long waiting lists

Utility low-income program examples

We handpicked some examples of program administrators that are using one or more of these strategies to scale their low-income programs.

TVA

To address the high energy burden of low-income customers in its service territory, Tennessee Valley Authority (TVA), along with a group of stakeholders, launched a comprehensive effort to scale weatherization services for its income-qualifying customers. The initiative began with the Extreme Energy Makeover (EEM) in 2015, which consisted of seven community-based weatherization projects to implement whole-home retrofits for income-qualifying homes with the goal of achieving 25% electric savings. The project resulted in the weatherization of 3,426 homes at a cost of \$42.1 million.

In 2018, TVA and its partners, seeking to expand on the EEM program and create a more sustainable source of funding to serve more customers, launched the [Home Uplift](#) pilot. This effort featured a few key components that helped improve its reach:

- *Targeting key neighborhoods.* Like its predecessor, the Home Uplift pilot targeted specific neighborhoods, including the metro areas of Chattanooga, Huntsville, Knoxville, Memphis, and Nashville, as well as a few rural areas. The metro areas offered more bang for the buck than the rural areas because of the density of income-qualifying neighborhoods and the ease of finding contractors.
- *Dollar-to-dollar matching grants.* To engage other funding sources, TVA announced that it would honor a dollar-to-dollar match for any contributions to the program. The utility contributed \$6 million to the program and received \$9 million in matching funds from public and private sources. This approach enabled TVA to have a greater reach within the valley.
- *WAPez platform.* To help streamline fieldwork and administrative reporting, TVA developed the WAPez system. The program works heavily with local WAP partners, many of whom had outdated systems that relied on a lot of paperwork to track and report projects. Read more about WAPez in the Home Energy Magazine blog post [Tennessee's WAP Teams Up with TVA to Reduce Operational Friction, Serve More](#).
- *Home energy workshops.* TVA launched a series of home energy workshops designed to help income-qualifying customers learn low- and no-cost do-it-yourself weatherization techniques through interactive demonstrations.
- *Minority workforce development pilot.* TVA launched this pilot in 2019 in collaboration with the

Tennessee Urban League Affiliates to provide job training and foster employment opportunities for minorities to enter the weatherization field.

- *Community challenge.* Another enhancement to the Home Uplift pilot came in 2019 with a challenge-based component. TVA partnered with Nashville Electric Service to pilot the [Community Power Challenge](#), an energy education and engagement program for low-income multifamily residents. The program employs some of the core components of strategic energy management through a series of events, including DIY workshops, fairs, and other venues. Buildings receive site assessments and energy managers attend cohort-style trainings to help multifamily properties develop personalized energy management plans.

Duke Energy

Like many utilities, Duke Energy sometimes struggled to spend all of its low-income DSM dollars through traditional WAP partners. To stop leaving money on the table, the utility launched a neighborhood-based blitz program that tackles the work WAP partners can't do. The utility finds small and large neighborhoods where at least half of the residents qualify for low-income weatherization service. Once a neighborhood is designated eligible, Duke Energy kicks off the event with a mailer and involves community leaders to engage residents and make them aware of the free services. The utility and its contractors then go door to door over 8 to 10 weeks to install low- and no-cost items in homes. For example, the team replaces incandescent bulbs with LEDs.

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The program launched in 2007 in Florida, but the utility now serves 21,000 homes each year across all six state service territories. Our contact at Duke Energy explained that the utility has had great success with this program model, but added that "most of the low-hanging fruit is gone." Duke Energy recently filed to augment the program to provide a weatherization upgrade (insulation and duct and air sealing) for customers who have high energy usage and aren't part of a qualifying neighborhood but qualify individually for the low-income program.

CenterPoint Energy

CenterPoint Energy reports the highest volumetric savings (3.3 million therms) and lowest acquisition costs (\$1.06/therm) of the low-income portfolios we reviewed. We interviewed the utility's low-income program manager in July 2019 and they told us that diversifying the utility's offerings to address many different low-income customer types has been key to achieving such high performance. CenterPoint works with WAP partners for some programs, but it has expanded to work with other partners in areas where WAP doesn't focus.

CenterPoint’s [Income-Qualified Programs](#) feature several offerings designed to reach low-income customer segments. We’ve summarized the components:

- CenterPoint partners with local CAP organizations to deliver whole-home weatherization.
- Home Energy Squad, an energy audit and direct-install offering, is administered jointly with Xcel Energy.
- Low Income Rental Efficiency, a shared-cost program, targets small one- to four-unit multifamily buildings in which at least half of the renters meet income qualifications. The program offers a free energy audit and pays 50% of the cost of qualifying upgrades. CenterPoint works with the Energy Cents Coalition to deliver the program.
- Multi-Family Building Efficiency, offered in partnership with Xcel Energy, provides a free energy audit and free direct install of low-cost in-unit and common-area items. The program encourages deeper upgrades by offering tiered incentives based on the level of energy savings expected from the project, which can include up to 80% of the improvement cost.
- Non-Profit Affordable Housing Rebates, available for one- to four-unit new construction and retrofit projects, is offered in partnership with affordable-housing organizations.
- Low Income Heating System Tune-Up, delivered by local CAP partners, includes a free heating system tune-up with safety checks.

CenterPoint’s [2018 Conservation Improvement Program Status Report](#) (PDF) gives a sense of the various program contributions (**figure 1**). The weatherization program achieves the highest savings and is the most cost-effective offering in the low-income portfolio with a Societal Cost Test (SCT) value of 1.04.

Figure 1: CenterPoint Energy’s low-income offerings

In an effort to serve all types of low-income customers, CenterPoint Energy offers programs for multiple property types. Some are more cost-effective than others.

Low-income market segment	Project spending (\$)	Project participation	Energy savings (Dth)	Cost per unit of energy saved (\$/Dth)	Societal Cost Test results
Low-Income Weatherization	2,801,152	887	20,537	136.39	1.04
Low-Income Rental Efficiency	201,335	81	671	299.93	0.35

Note: Dth = dekatherms. © E Source; data from CenterPoint Energy

Low-income market segment	Project spending (\$)	Project participation	Energy savings (Dth)	Cost per unit of energy saved (\$/Dth)	Societal Cost Test results
Low-Income Free Heating System Tune-Up	117,764	1,242	2,713	43.41	0.29
Non-Profit Affordable Housing Rebates	611,254	948	4,136	147.80	0.85
Low-Income Multi-Family Housing Rebates	60,979	7	862	70.73	0.52
Overall	3,792,484	3,165	28,919	131.14	0.92

Note: Dth = dekatherms. © E Source; data from CenterPoint Energy

National Grid

After CenterPoint's, National Grid's low-income portfolio has the highest volumetric savings of gas offerings and it also achieves large electric savings. The utility has a long history of hitting high energy-savings targets of more than 2% retail sales, many of which come through its low-income program. We spoke with a contact at National Grid in Massachusetts and learned that the key to the utility's success has been developing a strong statewide platform to deliver the program at scale through WAP partners.

Specifically, the state created the Low-Income Energy Affordability Network (LEAN) in 1997 to coordinate low-income weatherization efforts across the state. The group is made up of community action agencies (grant recipients of the DOE's WAP funds), utilities, and other stakeholders and led by a nonprofit that has worked with low-income populations to provide other welfare programs. The group has a few key responsibilities, including:

- Coordinating low-income weatherization among all electric and gas utilities
- Coordinating among all DOE WAP partners
- Coordinating with vendors outside of the WAP network
- Overseeing evaluations of low-income weatherization programs for continuous improvement
- Acting as lead trainer for the program
- Providing regulatory support for issues related to the program

This statewide model with a leading coordinator has enabled the state to scale its delivery and offer streamlined programs to low-income customers. Our National Grid contact said that “having a lead organization that is familiar with low-income customers has been key to our success. They have built trust with CAP agencies and streamlined our offerings and they understand the low-income community beyond energy efficiency and disconnects.”

The key to National Grid’s success has been developing a strong statewide platform to deliver the low-income program at scale through WAP partners.

LEAN integrates program dollars from the DOE, utilities, and other sources while ensuring that funding source guidelines are adhered to. Most importantly, LEAN offers customers a one-stop, comprehensive program. According to the ACEEE report [Making a Difference: Strategies for Successful Low-Income Energy Efficiency Programs](#) (PDF), LEAN’s lead vendor has dedicated staff that work closely with CAP agencies to provide training and quality assurance. LEAN hosts a Low-Income Best Practices Working Group each quarter where stakeholders work to continuously improve the program by addressing key challenges and implementing solutions broadly across the state. For example, the group is working on finding ways to address vermiculite in low-income homes because this has previously been cost-prohibitive and has resulted in deferred projects.

Another secret to National Grid’s success has been the state’s commitment to serve low-income populations. The state’s Green Communities Act of 2008 requires that at least 10% of electric and 20% of gas expenditures go to low-income programs. This commitment made it essential to lead a coordinated effort. In Massachusetts, utility commitment to efficiency is so high that our contact said federal funds represent only 5% of weatherization spending in the state. This has given the utility a bigger seat at the table in influencing program direction through the LEAN group.

See the [2017 Income Eligible Process Evaluation Findings](#) (PDF) for more information on the program partnership model.

Xcel Energy

Xcel Energy’s low-income portfolio consists of three programs: single-family weatherization, multifamily weatherization, and a nonprofit-based program that subsidizes costs to retrofit buildings owned by 501(c)(3) organizations. A few components have enabled success of the program in terms of the utility’s ability to generate a lot of savings at relatively lower acquisition costs compared to other utilities. Although Xcel Energy still struggles to spend all of its low-income dollars, having a central coordinator to administer the program has helped.

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Xcel Energy contracts with Energy Outreach Colorado (EOC), a nonprofit dedicated to serving low-income customers. EOC manages all three of Xcel Energy's programs and helps serve as a single point of contact between local CAP agencies, the state energy office (which receives DOE funding and distributes it to CAP agencies), and other stakeholders. According to a program manager at the utility, working with an entity like EOC has helped Xcel Energy augment its capabilities and simplify coordination efforts. For instance, EOC works directly with CAP agencies to contract a large portion (approximately 80%) of Xcel Energy funds to the WAP partners. Like other utilities, Xcel Energy said that the CAP agencies can't do as much work as they would like, so EOC works separately with independent contractors to augment their capabilities. Within the single-family weatherization program, 80% of funds go to WAP to enhance the DOE program and 20% go to the heating bill assistance program, which enables Xcel Energy to serve low-income customers that are above the 200% federal poverty-level threshold.

Idaho Power

After the enactment of the American Recovery and Reinvestment Act of 2009 (ARRA), which dramatically increased funding to low-income weatherization through WAP partners, the CAP agencies in Idaho faced a lot of layoffs, which would have resulted in reduced capacity to serve low-income customers, even with Idaho Power funds. Like many other utilities, CAP agencies often don't hire based on utility dollars and instead grow based primarily on the federal dollars they receive. To combat this decline, Idaho Power created another WAP program that operates outside of these funds. This program still uses WAP partners to deliver programs, but operates through a separate, for-profit arm. The CAP agencies created an LLC, allowing them to receive Idaho Power funding above and beyond what they can handle through the DOE-funded WAP portion of the program.

Not only did this approach help the CAP agencies avoid layoffs, but it also enabled them to reach underserved customers. In Idaho, WAP partners prioritize serving customers based on energy savings as well as other factors, such as whether there are children or people with disabilities in the home. The partners often can't get to customers on the bottom of their prioritization list, but through this LLC contractor network, they're now able to do more work.

Expanding programs to include moderate-income customers

Many utilities are looking to expand their service to customers who fall just outside of the income-qualification band. These programs traditionally target moderate-income customers by either providing tiered rebate incentives or offering direct installation of energy-efficiency measures. Another path for serving moderate-income customers is offering financing designed to ensure that moderate-income customers qualify. The following are some examples we're tracking.

Tiered rebates

Energy Trust of Oregon's [Savings Within Reach](#) program is a textbook example of a tiered rebate offering for moderate-income customers. It provides enhanced incentives that closely mirror standard incentive offerings.

Rebates are available for customers whose income exceeds the limits for Oregon's [Weatherization Programs Income Guidelines](#) but falls below an upper limit based on household size.

OUC takes a slightly different approach. Instead of providing tiered rebates for specific measures, the utility offers tiered rebates for a percentage of the total cost of measures installed as part of its [Efficiency Delivered](#) program. Customers and their contractors can select from a preapproved list of energy- and water-saving measures based on what will provide the most benefit.

Financing

Most financing offerings don't specifically target moderate-income customers, and many have terms and conditions that make them inaccessible to moderate- and low-income applicants. However, the State and Local Energy Efficiency Action Network outlines how energy efficiency can be an effective tool for reaching low- and moderate-income customers in its report [Energy Efficiency Financing for Low- and Moderate-Income Households: Current State of the Market, Issues, and Opportunities](#) (PDF). The report notes that although most financing programs don't focus on low- and moderate-income households, there's an opportunity for "certain financing products and financing product features [to] help address barriers to the uptake of efficiency measures in [low- and moderate-income] households and facilitate greater demand". It describes how utilities can improve affordability for low- and moderate-income customers who pursue financing, including:

- Offering credit enhancements and buy-downs
- Minimizing program costs
- Putting in place cash flow-positive rules in which loan payments must be less than or equal to projected savings on energy bills, also known as bill neutrality
- Extending loan terms

So far, tariffed on-bill financing programs, in which the loan is tied to the meter rather than the customer, are most commonly highlighted for serving otherwise-excluded groups. These programs often also require bill neutrality.

Ouachita Electric's HELP PAYS (Pay As You Save), a tariffed on-bill program, provides financing and immediate net savings for customers without requiring the participant to take on new debt.

Proponents often cite the success of Ouachita Electric Cooperative, which serves areas of persistent poverty in

southern Arkansas. The utility offers [HELP PAYS \(Pay As You Save\)](#), a tariffed on-bill program that provides financing and immediate net savings for customers without requiring the participant to take on new debt. According to Ouachita Electric's report [Opening Opportunities with Inclusive Financing for Energy Efficiency: Preliminary Results of the Ouachita Electric HELP PAYS Program](#) (PDF), because it's an on-bill tariff, the program can "serve all customers, regardless of income, credit score, and renter status." The report explained that the program saw immediate gains in participation compared to the more traditional financing program it replaced.

Manitoba Hydro also complements its [Home Energy Efficiency Loan](#) program with [PAYS Financing](#) designed to serve renters and other customers who fall through the qualification cracks.

HERs for low-income customers

Home energy reports (HERs) can be an effective engagement tool for low-income customers for several reasons:

- HERs can reach large numbers of customers without the waiting lists or delays in service that are common with other low-income programs.
- HERs help low-income customers feel that their utility is attempting to help them save on their bills, increasing satisfaction with the utility.
- After an initial ramp-up period, HERs for low-income customers can be cost-effective.

A key resource in understanding the impact of HERs in low-income populations is a Cadmus paper prepared for the 2017 International Energy Program Evaluation Conference, [Home Energy Reports of Low-Income vs. Standard Households: A Parable of the Tortoise and the Hare?](#) (PDF). The report covers a PPL Electric Utilities low-income HER program started in 2014. Here are some takeaways from the paper:

- Low-income customers reported higher satisfaction with HERs and with the utility than standard residential customers.
- They also reported higher belief in the accuracy of the neighbor comparison than standard residential customers.
- They saved only slightly less than standard residential customers, at 1.3%. Savings ramped up less quickly for low-income customers than they did in the standard residential program.
- Customer surveys revealed that low-income customers were significantly more likely to face a barrier of limited Internet access at home, making email reports less valuable. This barrier may be changing as levels of smartphone ownership increase.

An Opower presentation prepared for the 2014 National Energy and Utility Affordability Coalition conference, [Low Income Engagement: Beyond Efficiency](#) (PDF), showed that low-income customers receiving HERs saved similarly to standard customers. Further, it explained that low-income customers were more likely to take efficiency actions as a result of receiving the reports.

Five utilities send HERs specifically to low-income customers: AEP Ohio, Berkshire Gas, DTE Energy, Eversource, and KCP&L. Low-income customers represent less than 10% of all HER participants and receive reports that are identical except for more-specifically targeted marketing modules, which cross-promote other low-income programs and provide low- or no-cost energy-saving tips. Savings from low-income segments vary widely.

- *AEP Ohio.* AEP Ohio's HER program is open to any customers and includes a specific low-income targeted segment that accounts for less than 10% of its total HER participants. According to the utility's [Home Energy Reports Program: Program Year 2012 Evaluation Report](#) (PDF), the low-income segment averaged savings of 1.25% per household, compared to 2.19% to 2.35% from the high-usage target segment. It's important to note that the savings differences are not necessarily due to the group identifiers.
- *Berkshire Gas.* Berkshire Gas launched its HER program with Opower in October 2014. In the [Berkshire Gas Home Energy Report Program Evaluation](#) (PDF), the utility's Opower rep indicated that in a study for another utility, Opower found that lower-income customers are more likely to respond well to the report and implement some of the energy-saving tips. Berkshire Gas has not compared savings from low-income and market-rate customers, though program managers are considering that in the future.
- *Eversource.* The utility's [2016-2018 Electric and Natural Gas Conservation & Load Management Plan](#) (PDF) outlines a plan to expand the HER target market to include 40,000 limited-income customers in 2016.
- *KCP&L.* The utility's HER program targets one wave to low-income customers. KCP&L couldn't prove that low-income customers save differently than at-cost customers, so low-income participants are considered similar in savings estimates. In customer engagement studies completed through third-party surveys, the utility found that low-income HER customers are more satisfied than at-cost customers about receiving the reports. Customers report that they appreciate getting tools to help reduce energy costs rather than not getting any help at all. Stakeholders also appreciate this low-income focus.

Prepaid billing for DSM

Another source of behavior-based savings that some utilities are exploring for low-income and market-rate customers is using prepaid billing as a DSM program. These efforts often confront concerns from low-income advocates, but utilities such as Arizona Public Service and SRP get high customer satisfaction ratings from low-income customers who enroll in prepaid billing. Conversations with program managers pointed to four major reasons that customers appreciate prepay billing and the usage notifications that come along with it:

- They have greater control over their energy budgets.
- They have a better understanding of their energy usage.
- They find it easier and more convenient than standard monthly billing.
- They enjoy the greater flexibility.

Addressing the mobile home market

A number of utilities target mobile homes through their low-income programs. One advantage of this is that

utilities can quickly verify eligibility of entire mobile home parks and take a neighborhood-based approach to quickly scale savings. These programs take a few different shapes, including:

- Incentivizing manufacturers to build homes with high-efficiency features
- Offering incentives for homeowners to purchase an efficient model
- Encouraging early replacement of older mobile homes

Efficiency Vermont. Through its [Mobile Home Replacement](#) program, Efficiency Vermont partners with [Vermod Homes](#), a builder of zero-energy modular homes. The company offers a [Subsidies & Incentives](#) page that describes financial help for low- and moderate-income Vermonters.

AEP Ohio. The utility's 2017–2019 New Energy Efficient Manufactured Home request for proposal includes incentives to “outfit new manufactured homes at the plant with high-efficiency equipment, appliances, lighting and electronics” and site them within the AEP Ohio territory. According to the utility's [New Manufactured Homes](#) program web page, energy-efficient manufactured homes can be purchased from a growing list of builders, retailers, and manufacturers available through AEP Ohio's [EfficiencyCrafted](#) microsite.

Kentucky Power. In 2017, Kentucky Power offered a New Manufactured Homes Program that gave buyers of new manufactured homes a \$1,200 incentive for purchasing a new ENERGY STAR–certified mobile home and a \$450 incentive for purchasing one with Zone 3 insulation levels and a high-efficiency heat pump.

Idaho Power. Via Idaho Power's [New ENERGY STAR Manufactured Homes](#) program, customers can receive a \$1,000 incentive to purchase a new manufactured home and sales consultants can earn a \$200 incentive for selling an ENERGY STAR–certified manufactured home to a residential customer.

Rocky Mountain Power. The utility's [Wattsmart](#) program offers builders the opportunity to receive cash incentives for including high-efficiency products and features in new single-family and manufactured homes. For new-construction manufactured homes, incentives are scaled:

- 15% to 29.9% above California's energy code (\$1.00/kilowatt-hour [kWh] saved with a maximum of \$2,500)
- 30% to 44.99% above code (\$1.10/kWh saved with a maximum of \$3,500)
- 45% and more above code (\$1.20/kWh saved with a maximum of \$5,000)

Energy Trust of Oregon. The aforementioned Savings Within Reach program offers incentives for insulation, water heating, and HVAC equipment to moderate-income customers who don't qualify for Oregon's WAP. The program is available to both renters and homeowners living in single-family or manufactured homes. Eligibility varies based on household size, but the program is designed to serve households whose income falls between approximately 60% and 107% of the state median.

Energy Trust's [New Manufactured Homes program](#) for trade allies “offers incentives to retailers that sell qualifying new manufactured homes and ductless heat pump upgrades, as well as business development

funds to help offset the costs of advertising [ENERGY STAR–certified] manufactured homes and their energy-efficient features.”

The Energy Trust consumer-facing website notes that the program uses eco-rated certification as a benchmark. It offers residential customers a [Find a New Manufactured Homes Retailer](#) tool. The [Manufactured Home Replacement Pilot Fact Sheet](#) (PDF) explains the program’s focus:

To deliver durable savings to a segment of the rural housing stock where few practical, lasting options exist, Energy Trust launched a pilot program to retire aging manufactured homes and replace them with code-exceeding energy-efficient new manufactured homes. In addition to refining the costs and benefits, the pilot aims to build partnerships to establish a replicable model that integrates energy, poverty alleviation and affordable housing investments.