4 common barriers to LMI heat-pump adoption and strategies to overcome them

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Installing electric heat pumps and heat-pump water heaters (HPWHs) in homes is one of the most promising strategies for residential building electrification. And low- and moderate-income (LMI) customers stand to benefit the most from the nonenergy benefits and efficiency savings from heat pumps.

But heat pumps have high up-front costs that create a barrier to adoption, especially for LMI customers. This presents a challenge for utilities to supply equitable electrification benefits for all. To meet energy equity and decarbonization goals, utilities need to implement innovative strategies to reduce the barriers to heat-pump adoption for LMI customers.

In this blog post, we'll share a few tried-and-true strategies. Members of the E Source Distributed Energy Resource Strategy Service can check out the rest of our suggested strategies in the report How to increase heat-pump adoption among low- and moderate-income customers.

How to address barriers through incentives, targeted messaging, partnerships, and more

LMI customers are unable to access the benefits of heat pumps for several reasons, including:

- Up-front costs
- Low awareness
- Split incentives
- Housing quality

Utilities can address these barriers through incentives, targeted messaging, training, and partnerships. The following strategies can help reduce barriers to heat-pump adoption for LMI customers and other customers. But these strategies alone may not make heat pumps cost-effective for LMI customers, depending on your region. The level of energy and cost savings from installing heat-pump technologies will vary by climate, region, electricity prices, and natural gas prices.

Barrier: High up-front costs and low flexible income

Retrofitting a new HPWH typically costs at least $2,000. A heat-pump retrofit can cost from about $4,000 to over $10,000, according to the 2022 American Council for an Energy-Efficient Economy ACEEE report Building Decarbonization Solutions for the Affordable Housing Sector (PDF). And this doesn't include the potential costs of home weatherization and electrical system upgrades. Some homes would require these basic upgrades to be able to support a heat-pump system. LMI customers with little or no flexible income won't be able to afford these energy upgrades.

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Strategy: Offer higher incentives and reduce barriers to participation

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Con Edison. Con Edison's Switch to Electric Heating and Cooling program provides incentives for income-eligible customers who switch from oil or propane. They can receive a heat pump, HPWH, and home weatherization. Con Edison makes it easy for customers to take part by allowing them to meet the income-eligibility requirements in several ways:

- Meet the income requirements for the EmPower New York Program
- Enroll in the Weatherization Assistance Program
- Meet the Income Guidelines for Assisted Home Performance with ENERGY STAR and complete the New York State Energy Research and Development Authority's Income Screening Application (PDF)

SMUD. The utility added home electrification measures to its existing energy assistance program for low-income customers. The utility looks for electrification opportunities while already in low-income customers' homes for an energy audit or weatherization service. SMUD then installs electrification measures at no cost to customers enrolled in the energy assistance program. The utility will also upgrade the customer's panel if necessary to accommodate the new measures.

According to the 2022 ACEEE report Building Electrification: Programs and Best Practices (PDF), more than 80% of SMUD's program participants have switched fuels. These electrification projects typically cost $10,000 to $15,000.

Barrier: Low awareness of heat pumps

Most LMI customers aren't familiar with heat pumps and their benefits. And contractors and distributors need training and incentives to be able to understand, stock, install, and advise customers about the technology.

> **Sharing information with consumers about heat-pump technology and its benefits is a key step to increase adoption.**

Strategy: Increase consumer awareness

Consumers are hesitant to trust a technology they don't understand. And they won't seek out a technology they're unfamiliar with. Sharing information with consumers about heat-pump technology and its benefits is a key step to increase adoption.

Start by understanding your customers' motivations and barriers to buying heat-pump technologies. According to data from the E Source 2021 Residential Electrification Survey, cost is the top reason low-income customers don't purchase heat-pump technology. Based on this data, your messaging should focus on the affordability and cost savings of heat pumps.

About 43% of low-income respondents said they were most concerned about the expense of buying and maintaining an HPWH. And 44% said the same for heat pumps. Respondents also reported being satisfied with their current system and not wanting to deal with the hassle of changing. Fewer respondents mentioned being satisfied with their current space heating system compared to their current water heating system as a barrier to purchase.

Barrier: Split incentive for renters and multifamily property owners to electrify

Property owners may not have an incentive to make energy efficiency improvements in a rental unit if the tenant is the one paying the utility bill. Or they may be reluctant to make energy improvements the tenants won't see. Tenants may not be interested in investing in energy efficiency because they might move before

seeing a return on their investment. This split incentive is a barrier for your LMI customers who live in rental housing.

Strategy: Engage tenants and offer incentives to property owners

Start by building good relationships with property owners and tenants in the buildings you're targeting. Understand each party's needs and design your program to provide long-term solutions that address these needs. Offering low- or no-cost direct-install measures for tenants is one way to reduce the split incentive. Tenants don't have to worry about seeing a return on a larger investment and still reap the benefits.

> **Start by building good relationships with property owners and tenants in the buildings you're targeting.**

PECO. PECO's multifamily program offers enhanced heat-pump rebates to multifamily properties where 66% or more of residents are at or below 150% of the poverty level. The property owner applies to receive incentives for energy efficiency measures in the building's common areas.

Available heat-pump measures include air-cooled heat pumps and air-conditioning heat pumps. PECO also offers free residential in-unit direct-install measures as part of the program. The property owner can indicate on the Multifamily Solutions application (PDF) if they want to add the in-unit measures.

SMUD. SMUD offers incentives for heat pumps and HPWHs for all multifamily properties through its Multifamily rebates program. It offers a bonus 25% incentive for properties where 50% or more of tenants are enrolled in the utility's low-income rate. The program offers incentives for heat-pump upgrades in units and common areas.

The program website explains that the property owner is "required to participate in SMUD's effort to engage directly with the building tenants during various phases of the project." These engagement efforts include apartment visits, on-site educational events, and community newsletters.

Barrier: Homes may require weatherization or a new electrical system before electrifying

A successful LMI heat-pump program should include incentives for weatherization or other home improvements they need before electrifying. According to the ACEEE building decarbonization solutions report, "many existing homes will require upgrades to electric service panels" before installing a new heat pump or HPWH. Homes need to be well insulated for a heat pump to run efficiently and provide the full benefits of the technology.

> **All customers can save money on their utility bills from installing a heat pump or HPWH. But LMI customers, who have a greater energy burden, will benefit the most.**

Strategy: Include weatherization as part of your heat-pump program

LMI customers often live in older, inefficient homes. Electrification programs for LMI customers should tackle weatherization before making HVAC upgrades.

Seattle City Light. Seattle City Light's HomeWise weatherization program is a direct-install program for weatherization and energy efficiency improvements directed at low-income customers. Participants receive a free home energy audit to identify energy improvements. Weatherization measures include insulation and duct and air sealing. Renters and homeowners with electric heat can also get a free ductless heat pump through the program.

Con Edison. As previously mentioned, Con Edison includes weatherization as part of its Switch to Electric Heating and Cooling program before installing new heat pumps and HPWHs for income-eligible customers. The utility upgrades insulation and seals air leaks to help increase home efficiency and comfort.

Lighten the energy burden for LMI customers

All customers can save money on their utility bills from installing a heat pump or HPWH. But LMI customers, who have a greater energy burden, will benefit the most. Replacing an inefficient HVAC system with a high-efficiency, electric heat pump provides decarbonization and energy efficiency benefits alike.

Utilities that are prioritizing energy equity—enabled by flexibility around program cost-effectiveness requirements—must act boldly and creatively in incentivizing the adoption of heat pumps by LMI customers. Although many of the emerging strategies and case studies we've highlighted have not been evaluated for efficacy or cost-effectiveness, utilities can consider them as they begin making inroads in building electrification in this underserved customer sector.