

## Issue Brief

# Helping Low-Income Families Adapt to Rising Temperatures The Role of Weatherization

The Center for Energy Poverty and Climate



Ron Piz, quality control inspector auditor, and furnace technician, for the Energy Resource Center tests for gas leaks and performs combustion analysis in the crawl space of a home in Denver, Colorado. (Photo by Werner Slocum / NREL)

May 2023

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## Acknowledgements

This issue brief was prepared in April 2023 by the Center for Energy Poverty and Climate with support from the ClimateWorks Foundation. The Center would like to thank Larry Dawson for directing the project and – along with Adrian Connor and Shayon Moradi – for conducting interviews, researching options and drafting the final issue brief. In addition, the Center would like to thank Randy Showstack for editing and guiding the development of the final document.

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Special thanks to the following program administrators who generously gave their time and expertise in the development of this paper:

**California:** Mauricio Blanco, CEO, Maroma Energy Services; Armando Valenzuela, Program Director for Weatherization, Merced County Community Action Agency; and Duane Graves, Manager of Weatherization, California Department of Community Services and Development.

**Colorado:** Stephanie Insinna-Sahondo, Director, Weatherization Assistance Program, Colorado Energy Office.

**Illinois:** Leslie Ann Lesko, LIHEAP Manager; Maria Gallardo, Percentage of Income Payment Plan Manager; and Mick Prince, WAP Program Manager, Department of Commerce and Economic Opportunity.

**Maine:** Amanda Roy, Manager of Weatherization, Maine State Housing Authority.

**Massachusetts:** Eric Beaton, Weatherization Program Manager, Massachusetts Department of Housing and Community Development.

**New Jersey:** Angie Armand, Luis Alicea and Mark Schardine, Office of Low-Income Energy Conservation, Division of Housing and Community Resources, New Jersey Department of Community Affairs.

**New York:** Scott Oliver, Program Manager for Equity and Affordability, Housing Decarbonization, Single Family Residential, New York State Energy Research and Development Authority.

**Texas:** Michael DeYoung, Division Director, Texas Department of Housing and Community Affairs.

**Virginia:** Mark Jackson, Vice President of Energy Solutions, Megan MacMillen, Director of Weatherization, Chase Counts, Senior Director of Operations, Community Housing Partners (Virginia WAP provider).

## Executive Summary

Extreme heat events have become more common in the summer months and are occurring even in regions that typically do not experience hot temperatures. Low-income households are particularly vulnerable to extreme heat events because many do not have access to affordable energy efficient cooling systems.

The Weatherization Assistance Program (WAP) administered by the U.S. Department of Energy (DOE) helps low-income families stay cool in the summer by increasing the energy efficiency of their homes while the Low Income Home Energy Assistance Program (LIHEAP), administered by the U.S. Department of Health and Human Services (HHS) provides direct grants to families to help them pay their heating and cooling costs.

Both WAP and LIHEAP were established more than 40 years ago and were primarily designed to address the threat of cold winter temperatures. In addition, both programs have funding that is only sufficient to reach a fraction of the eligible population; and neither program in their current form are equipped to meet the increasing need for cooling equipment to address the threat of warm summer temperatures, nor are they equipped to meet bill payment assistance needs for low-income families.

Recent actions by Congress to address infrastructure and climate needs provide significant new sources of funding that hopefully will set the stage for increased investment in weatherizing low-income housing. Congress in 2022 passed the Inflation Reduction Act (IRA), providing close to \$4.5 billion in grants to State Energy Offices for additional energy conservation and renewable energy programs to help low- to moderate-income families, and an additional \$4.0 billion to help all families install performance-based weatherization measures. In addition, the Infrastructure Investment and Jobs Act (IIJA), approved by Congress in 2021, provided an additional \$3.5 billion to supplement WAP funding.

There is a disconnect between the ambitious policy goals of the IRA, IIJA, and state climate initiatives, and longstanding weatherization implementation programs like WAP. Levels of funding and state policies to retrofit low-income housing are set by state public service commissions, energy officials and legislatures. WAP program officials are often left out of these high-level decisions. However, these officials play an essential role in the delivery of services because they work directly with their local communities. They have a deep understanding of the local housing infrastructure and real-world needs and obstacles to retrofitting low-income houses.

Because of the direct on the ground expertise of these officials, their input into the development and expansion of cooling programs is essential and should be included in the development of climate plans designed to retrofit the low-income housing stock.

This issue brief examines how weatherization – adding energy-efficient improvements to houses – can combine with highly-efficient cooling equipment to provide a wide-scale solution to keep people safe during extreme heat events.

The following recommendations are designed to strengthen the impact of weatherization in delivering access to affordable and energy-efficient cooling to low-income families. These recommendations are based on interviews with weatherization officials in California, Colorado, Illinois, Maine, Massachusetts, New Jersey, New York, Texas, and Virginia regarding their program operations, their approach to household cooling needs, and their perspective on the strategies for ramping up existing efforts to retrofit the nation's low-income housing stock to address rising temperatures and the need for efficient cooling systems as well as efficient heating systems.

- **Develop Strategies to Integrate WAP with Funds Provided by IRA and IIJA.** The funds provided by the IRA and IIJA Acts combined with regular WAP funding provide resources that can serve as a base for retrofitting the nation's low-income housing stock. Federal and state governments should use these funds as an opportunity to integrate federal resources with state and utility funds.
- **Increase Maximum Weatherization Benefits to Include More Energy Efficiency Measures:** Congress should allow DOE to raise the maximum average weatherization cost allowed per unit of housing to increase the number of energy efficiency measures installed in each project to allow for increased investment in high efficiency heating and cooling systems, including heat pumps.
- **Reduce the Number of Houses Deferred from Weatherization Measures Due to Poor Housing Stock:** The backlog of houses that have been deferred from weatherization needs to be significantly decreased through increased funding for pre-weatherization activities.
- **Improve Coordination of Weatherization between Housing, Energy and Utility Programs:** There are multiple programs that are designed to strengthen low-income housing, but often they work in separate silos and never reach their full potential to help low-income families. Working together, these programs could provide comprehensive weatherization while addressing other housing needs including indoor air quality, the addressing of safety hazards, and roof repair and replacement.
- **Create Measurable Weatherization Results:** Federal and state governments should work together to develop a metric to measure the effectiveness of weatherization work. The metric should account for energy savings and tangible health benefits derived from weatherization services – including indoor air quality and the structural integrity of a home – in addition to cost savings.
- **Develop the Weatherization Workforce:** The weatherization workforce – trained contractors, energy auditors, and inspectors – needs to grow to meet increasing demand for weatherization driven by the increase in federal funding. Federal and state governments could help grow the weatherization workforce by establishing apprenticeships, hiring workforce development professionals, and increasing the training capacities of state and local agencies.

## Background: Weatherization Assistance Program

The Weatherization Assistance Program (WAP) and its companion program, the Low Income Home Energy Assistance Program (LIHEAP), provide grants to states to help them increase the energy efficiency of low-income homes and pay homeowner utility bills. The types of weatherization improvements that can be made by WAP include: attic and wall insulation, heating and cooling system repair or replacement, water heater repair or replacement, electric base load reduction (lighting and refrigerator replacement), and ventilation and moisture control measures.

WAP and LIHEAP were enacted by Congress more than 40 years ago and predominately focus on paying for heating-related measures and winter heating bills. As temperatures have increased due to climate change, both programs are increasingly changing their focus from winter heating to year-round heating and cooling.

However, funding remains an issue. Both programs only receive sufficient funds to cover a fraction of the eligible population in need of weatherization measures. In fact, LIHEAP only receives sufficient funds to cover about one out of six eligible families while WAP, on an annual basis, can only address the needs of less than one percent of the eligible population.

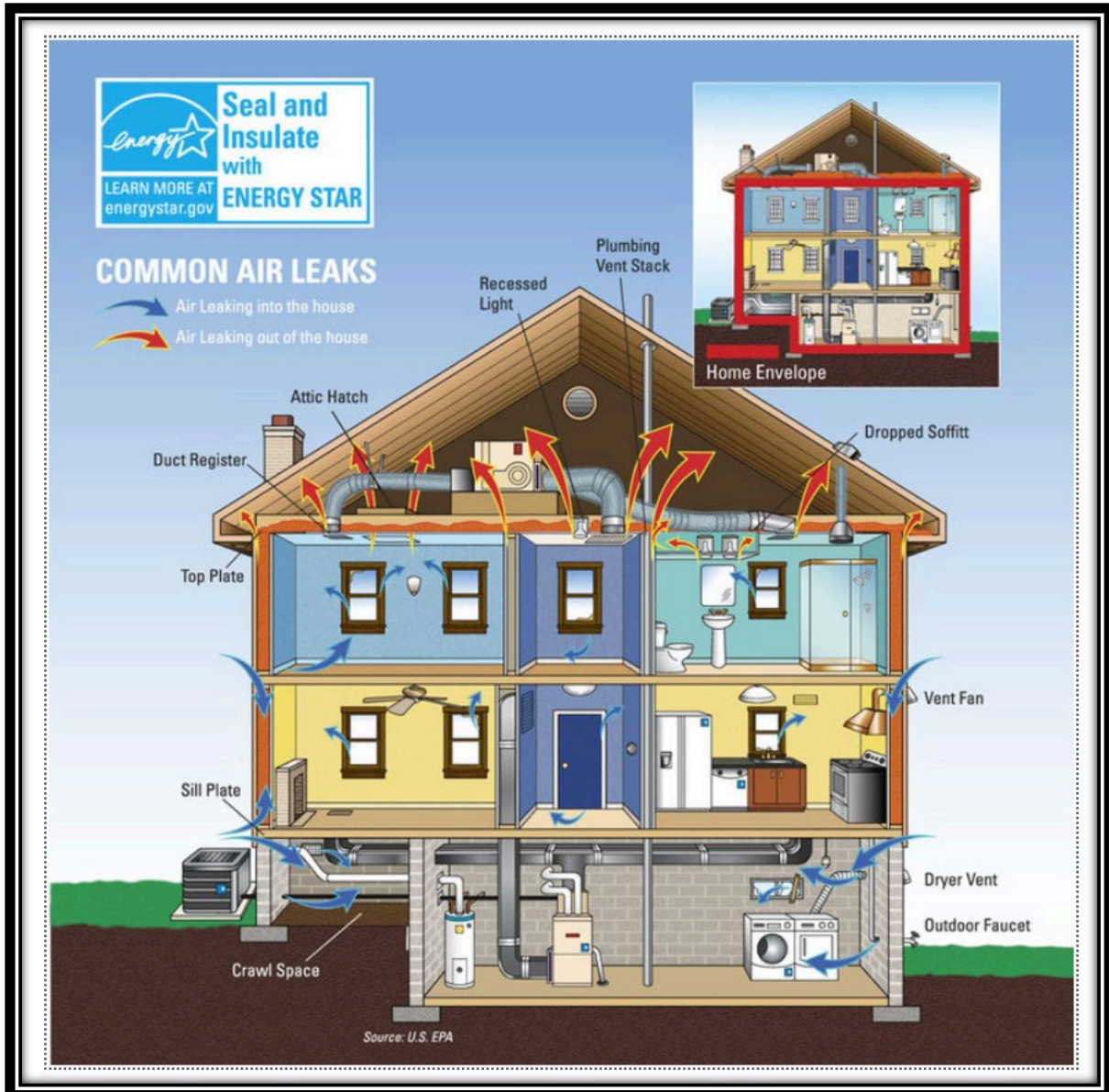
Recent actions by Congress to address infrastructure and climate needs provided significant new sources of funding that hopefully will set the stage for increased investment in weatherizing low-income housing in the years ahead. Congress passed the Inflation Reduction Act (IRA), providing close to \$4.5 billion in grants to states to provide additional energy efficiency programs to help low- to moderate-income families and an additional \$4.0 billion to help all families install performance-based weatherization measures. In addition, the Infrastructure Investment and Jobs Act (IIJA) provided \$3.5 billion to supplement regular WAP funding.

WAP and its companion state and utility programs take a "whole house weatherization" approach that analyzes all building systems – the building envelope, heating and cooling systems, appliances, hot water heating and appliances – through the completion of an energy audit.



A technician insulates the attic space of a home to improve its energy efficiency. (Photo by Community Services Consortium/NREL)





Sealing a building to prevent air leakage is a key part of weatherization work. Cold air leaks in from the ground and through gaps and vents, while warm, heated air escapes through leaky attics and roofs.

Source: U.S. Department of Energy.

## Applying for Weatherization Services

To receive weatherization services, a household must apply directly to a local weatherization agency. In some cases, a client's enrollment in another low-income program, such as LIHEAP, may offer the client categorical eligibility for WAP. Once a household is approved for weatherization services, the household is assigned a priority based on its occupants; minors, elderly people, and disabled people can be given higher priority.

Next, the agency will schedule the energy assessment and administer weatherization work based on a priority list of approved measures, described below, or a trained energy

auditor will visit the house to perform a traditional energy analysis, known as an audit. During an audit, the assessor tests for air leakage, insulation levels, the condition of heating and air conditioning equipment, , and any potential threats to the health and safety of residents or weatherization workers.

An approved list of measures is provided to certified contractors to make house upgrades and any required repairs. Once the upgrades and repairs are completed, a certified inspector reviews the original energy audit and the completed work to ensure that no energy saving measures within the allowable cost per house have been missed, and that all work on the list has been completed and in compliance with State and Federal guidelines.

In some circumstances, the initial energy audit assessment will identify significant house disrepair or conditions that preclude a house from receiving weatherization services until the homeowner addresses that disrepair. These homes are considered “deferred” until they are ready for weatherization work to commence. Solutions for dealing with deferrals, which each year prevent thousands of households from receiving weatherization work, are examined below in the deferrals section of this issue brief.

**MECHANICAL MEASURES**

- Clean, tune, repair, or replace heating and/or cooling systems.
- Install duct and heating pipe insulation.
- Repair leaks in heating/cooling ducts.
- Install programmable thermostats.
- Repair/replace water heaters.
- Install water heater tank insulation.
- Insulate water heating pipes.

**BUILDING SHELL MEASURES**

- Install insulation where needed.
- Perform air sealing.
- Repair/replace windows/doors.
- Repair minor roof and wall leaks prior to attic or wall insulation.

**ELECTRIC & WATER MEASURES**

- Install efficient light sources.
- Install low-flow shower heads.
- Replace inefficient refrigerators with energy-efficient models.

**HEALTH & SAFETY MEASURES**

- Perform heating system safety testing.
- Perform combustion appliance safety testing.
- Repair/replace vent systems to ensure combustion gas draft safely outside.
- Install mechanical ventilation to ensure adequate indoor air quality.
- Install smoke and carbon monoxide alarms when needed.
- Evaluate mold/moisture hazards.
- Perform incidental safety repairs when needed.

**CLIENT EDUCATION ACTIVITIES**

- Educate on potential household hazards such as carbon monoxide, mold & moisture, fire, indoor air pollutants, lead paint and radon.
- Demonstrate the key functions of any new mechanical equipment or appliances.
- Discuss the benefits of using energy-efficient products.

Weatherization programs address an array of measures on a residence, including mechanical, electric, and health and safety measures. Source: US Department of Energy.<sup>1</sup>

## Funding for WAP

WAP is funded through federal, state and utility sources. In [FY 2021](#), the most recent year for which all sources of funds were available, \$378 million was provided as a direct federal appropriation for WAP. In addition, \$521 million was provided as a transfer from LIHEAP,

which allows states to set aside up to 25% of their regular appropriation for WAP and \$370 million from utility and state sources. These funds were used to weatherize 64,024 housing units across the United States, or about 1.6% of eligible homes.

Recent actions by Congress to address infrastructure and climate needs, such as the IRA and IIJA, provide significant new sources of funding that could set the stage for increased investment in weatherizing low-income housing in the years ahead.

### **Supporting Access to Cooling by Combining Federal, State and Utility Funds**

States combine federal, state and utility funds, through a [leveraging process](#) known as braiding, to expand allowable weatherization measures and related home repairs. By fund braiding, WAP agencies can conduct more extensive energy retrofits and home repairs. For example, in Virginia and Illinois utility funds are leveraged to include additional efficiency improvements that are not covered by weatherization. Allowing agencies options to increase the energy efficiency for low-income families and install high efficiency heating and cooling systems.

In [Illinois, weatherization program](#)<sup>1</sup> manager Mick Prince said braiding state, WAP, and utility funding on the same energy efficiency upgrades reduces the measure's cost to each funding source, thereby increasing the agency's flexibility in what it can install. "We have a relatively unique approach where the weatherization agencies can basically cut the cost of a measure in half. The state grant pays for half of a measure, and the utility will pick up the other half of those costs. That can have a very positive impact. It doubles our savings-to-investment ratio when there is utility participation," he said.

In Virginia, Mark Jackson of Community Housing Partners ([CHP](#)) stated that CHP collaborates closely with utility companies and advises them on low-income energy efficiency program design for maximum compatibility with the state WAP. CHP has found this working relationship to be highly successful and the group stated that fund braiding is common in Virginia.<sup>2</sup> Additionally, CHP often uses utility funds to install efficient heat pumps, which increase the cooling capacity of homes.

California has found that the state- and utility-funded energy conservation programs benefit from working in tandem on weatherization projects. The state has created a specific Farmworker Housing Component ([FHC](#))<sup>3</sup> to reduce the energy burden for the state's more than 400,000 farmworkers. For Maroma Energy Services, a local California agency that administers FHC programs in addition to weatherization, additional state funds have been crucial in supporting energy efficiency improvements beyond those that could be covered by WAP.

In an interview, Maroma CEO Mauricio Blanco shared an example: If Maroma was planning to replace a gas furnace with a heat pump under its weatherization program, but

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<sup>1</sup> <https://dceo.illinois.gov/communityservices/homeweatherization.html>

<sup>2</sup> <https://www.communityhousingpartners.org/>

<sup>3</sup> <https://www.csd.ca.gov/Pages/Assistance-FarmworkerAssistance.aspx>



the heat pump required the home's electric panel to be upgraded to a 200-amp panel, funds from TECH Clean (state supplemental program) would cover that upgrade, which otherwise would have prevented the customer from receiving the heat pump. "Normally, we walk away from those jobs because they're outside of the scope of the program. But these new funds allow us to make all those necessary home repairs, so then we can complete the installation [of a service]," he said.

Blanco who also administers California's farmworker program, said the best situation for his farmworker program participants is if they live in a region that is serviced by public utilities for both gas and electric. In those situations, his agency can combine those utility funds with FHC program funds and perform in-depth weatherization work on a client's home, including installing cooling systems.

## Best Practices for Weatherization

### Prioritizing Efficiency Measures

An alternative method to the traditional energy audit is to administer weatherization work based on priority lists. These are core lists of energy efficiency and home upgrade measures that are repeatedly called for in energy auditing software. Many states across the country have found that their weatherization programs can reach more customers when they work from priority lists and forego lengthy and time-consuming energy audits.

The following are examples of how Texas, Colorado, Illinois and California prioritize weatherization services:

The [Texas Department of Housing and Community Affairs](https://www.tdhca.state.tx.us/)<sup>4</sup> (TDHCA) has found its priority list to be effective and efficient, allowing state weatherization teams to reach many more households and increase TDHCA's impact than if the department was conducting more time-consuming audits.

*I ran 69,000 audits, and the same 12 things come up on every home, such as the need to insulate basements, attics, and walls. Let's stop trying to find the 13th and the 14th thing that might save three bucks. Let's get to weatherizing homes faster. The Texas priority list paved the way for DOE to adopt the use of priority lists nationwide, said Michael DeYoung, Division Director, TDHCA*

Community Housing Partners, which is Virginia's largest state weatherization agency, noted major improvements when its program began using DOE's priority list.

*"What weatherization does has been proven time after time. There are some really basic things that we do that will always save energy, like insulation and baseload measures," said Meghan McMillen, director of CHP's Weatherization Programs and Services. Audits are useful for collecting information and tailoring the work to a specific house, but that audits don't always reflect the dynamic construction material and labor price environment, according to McMillen. She said that with inflation and price increases, some*

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<sup>4</sup> <https://www.tdhca.state.tx.us/>

*weatherization measures – such as air sealing the basement, walls, and ceiling – should go forward on a house regardless of what the cost-benefit analysis software shows.*

Colorado Energy Office, which administers the state weatherization agency, noted that typically, under WAP rules, each new measure, or each specific upgrade, such as the insulation of walls, needs to pass a cost-benefit analysis, known as a savings-to-investment ratio (SIR).

*The cost-benefit analysis software typically would need to indicate that a new furnace installation, for example, would save a customer more money over a period of time than it would cost to install a furnace. However, because the state braids funds, if a new furnace costs \$5,000, for instance, the administering agency could charge half that cost to WAP and the other half to utility ratepayer funds, making it much more likely that the new furnace would pass the software’s cost-benefit requirement,* explained Stephanie Insinna-Sahondo, Colorado’s Weatherization Manager.

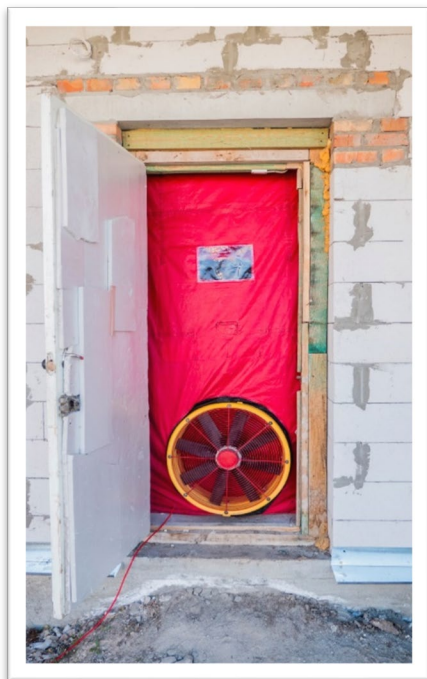
The state of Illinois applies a “whole-package” approach whereby instead of each measure or upgrade needing to individually pass a cost-benefit analysis, the state’s rules only require that a house as a whole package passes a cost-benefit analysis, allowing agencies to install highly effective, cost-saving measure such as new furnaces or air conditioning.

*We didn’t often get favorable SIRs specifically on furnaces, and we didn’t want to leave [furnaces] off the table to participate in the priority list., Removing that requirement has enabled us to serve our clients much more comprehensively,* said Mike Prince, Illinois Weatherization Program Manager. Prince said that in addition to furnaces, another major improvement, especially in the face of rising temperatures, has been that additional funding has given the state the ability to install air conditioning units.

<b>Simplified DOE-Sponsored Priority List for Single Family Site-Built Homes, in Climate Region 3 (Cold Climate)</b>	
1	<b>Install:</b> All applicable health and safety measures.
2	<b>Replace:</b> All non-LED light bulbs with LEDS.
3	<b>Air Sealing:</b> Seal the exterior pressure boundary surfaces at all the following locations: attic top-plates; ceiling, wall, and floor bypasses, penetrations, and holes; sill box to floor intersection if on unconditioned crawlspace or basement, or entire sill box area if conditioned foundation.
4	<b>Duct Sealing:</b> Seal all accessible ducts located outside the thermal boundary.
5	<b>Duct Insulation:</b> Insulate all accessible uninsulated ducts located outside the thermal boundary to R-8 or R12 if exposed to the exterior.

6	<b>Ceiling Insulation:</b> In unconditioned attic: insulate all accessible attics to R-60 or to capacity. Finished attic / knee-wall attic / bonus room: Insulate all attic flats (collar beam and outer ceiling joists) to R-60 or to capacity if less.
7	<b>Wall Insulation:</b> Mandatory: Insulate any exterior wall cavity with no existing insulation to full dense-packed capacity. Optional: Insulate any partially insulated exterior wall cavities using dense-pack insulation.
8	<b>Foundation Insulation:</b> Mandatory: Insulate accessible rim/band joist.
9	<b>Optional:</b> Faucet aerators; low-flow showerhead; domestic water heater (DWH) with tank insulation; and pipe insulation.
10	<b>Optional:</b> Replace up to one refrigerator per home, with a label rating of less than 400kWh/yr and maximum installed cost of \$850 per unit when the existing refrigerator was manufactured before 2001.
11	<b>Optional:</b> Primary heating and air-conditioning system replacements.

This is a condensed version, edited for this issue brief, of DOE’s 2022 priority list for single family homes in climate region 3 – cold climates. Source: U.S. Department of Energy.<sup>5</sup>



A blower door test is commonly used during the initial inspection of a home to determine the presence of air leaks.

### Maximizing Cooling Equipment Options: State and Local Observations

The best appliances for residential cooling are energy-efficient air conditioning units that are properly sized for the space. A unit that is too large for its space will cool too rapidly while not adequately removing humidity, and a unit too small for its space will not provide adequate cooling. Further, the unit must be placed in a central location and the home should be insulated for maximum air conditioning efficiency.<sup>6</sup>

Some weatherization programs repair existing central air conditioning units or install central air conditioning if a home already has central heating. However, many programs only install window units. For instance, the [New York State Energy Research and Development Authority](https://www.nyserda.org/) (NYSERDA) keeps customers cool by installing one window unit per household in homes that previously lacked cooling appliances. This relatively simple cooling intervention of keeping one room in the home safe enough – i.e., cool enough – during heat waves allows the program to have a wide reach by

spreading out available funding.

<sup>5</sup> [https://www.energy.gov/sites/default/files/2022-06/wpn-22-8\\_attachment-priority-list-single-family.pdf](https://www.energy.gov/sites/default/files/2022-06/wpn-22-8_attachment-priority-list-single-family.pdf)

<sup>6</sup> <https://www.energy.gov/energysaver/central-air-conditioning>

While air conditioning is the most effective way of cooling a home, not all air conditioners are made equal. Air conditioning technology has improved enormously over the past decades. According to an article by DOE about cooling technologies,<sup>7</sup> a household could save 20-40 percent of its cooling costs by upgrading a central air conditioning unit that is at least 10 years old to a new model.

Mick Prince, manager of the Illinois weatherization program, told us that he has seen 30 to 50 percent bill reductions as a result of weatherization work and equipment upgrades explaining that if an air conditioning unit is over 10 years old, “in that time period, there have been significant increases in efficiency.”

In Virginia, CHP saves money on equipment – and increases the amount of new equipment low-income customers could receive – by purchasing equipment such as heat pumps, in bulk.

### **Best Practices: Using WAP to Reduce Dependence on Fossil Fuels**

[Beneficial electrification](#) is an umbrella term referring to the replacement of fossil fuel use with affordable electricity that is renewably generated, such as by solar, wind, or water. The goal of beneficial electrification is to reduce emissions and energy costs, support a robust and sustainable electric grid, and bolster local renewable energy sources.

A concern many state weatherization offices have mentioned is that although electrifying all appliances in a household can reduce greenhouse gas emissions, this electrifying of all appliances can at the same time increase utility bills for customers. Most weatherization offices we spoke with view their dual mission as reducing customers’ energy bills and maintaining a family’s health and safety, all while at the same time aiming to reduce customers’ energy use. In states with extreme heat events, a focus on health and safety can include installing cooling appliances where there were none previously.

Some weatherization programs, such as those in California and Colorado, are exploring offsetting increased costs from cooling installation by enrolling their customers in solar energy programs. Stephanie Insinna-Sahondo, for example, told us that Colorado has a *pretty robust rooftop solar program in Colorado through weatherization.*” She said the state has three projects in the works to move households from natural gas solar-power.

Some states are taking steps towards electrification for low-income households by either fully electrifying houses during the weatherization process or, as in the case of New York, by preparing houses to be ‘electrification-ready’ in the future, by upgrading electric panels, wiring, and appliances. Scott Oliver, NYSERDA’s Program Manager for Equity and Affordability and Building Decarbonization, underscored the importance of electrifying low-income homes to keep up with moderate- and upper-income home electrification. Oliver explained that as electrification increases nationwide, non-electric households will be left to share the energy cost of increasingly expensive natural gas and fuels.

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<sup>7</sup> <https://www.energy.gov/energysaver/central-air-conditioning>

The Massachusetts 2050 Decarbonization Roadmap, enacted in December 2022, aims to reduce greenhouse gas emissions by 85% by the year 2050.<sup>8</sup> The Massachusetts roadmap includes a section on electrification, and it focuses on the potential for the use of heat pumps to reduce greenhouse gas emissions. The roadmap states that, “across a wide range of potential futures, electrification of end uses, particularly space heating through the use of electric heat pumps, was found to be the most economically advantageous and cost-effective decarbonization strategy.” The roadmap notes that electrification and the installation of heat pumps should be combined with well-insulated, or weatherized, buildings for maximum energy savings.

### **Best Practices: Deferrals and Deferral Remediation**

Many low-income families cannot afford basic repairs and maintenance on their homes because their incomes have not kept up with rising inflation in basic household goods including food and energy. In some cases, weatherization work will be delayed if a house needs roof repair or replacement, repairs to the foundation, and mold or lead remediation. To address this concern, weatherization programs will work with housing agencies that have resources to repair structural issues that are beyond the scope of the weatherization. The [Consolidated Appropriations Act of 2022](#) provided \$15 million to state WAP offices for pre-weatherization services, the first time such funding has been provided at the federal level. Prior to this funding, states had to use state, utility, or LIHEAP funds for pre-weatherization measures.

The Maine State Housing Authority (MSHA), which also administers WAP, has set aside state funds to address home repair needs prior to installing weatherization measures. Amanda Roy, the state weatherization manager, told us that when it comes to low-income home repair, MSHA spends its WAP funds first and then applies its own resources to spend on deferral remediation.

Roy told us that Maine has “really old housing stock in our state, so deferrals are sadly a very prevalent thing that we deal with. The old knob-and-tube wiring is a significant cause of deferrals. And two other [causes] would be structural and roofs.”

Mauricio Blanco said health and safety retrofits are also vital in California. Blanco said that “allowing access to health and safety-related retrofits in a home is probably the most important part you can bring with weatherization services, followed, of course, by the energy savings. He added that “the most effective way to address significant health and safety expenses, and deal with deferral repairs, is to braid funds by leveraging state, utility, or LIHEAP funds, or by collaborating with other home repair programs to cover the cost of some of the work needed for the home to be weatherized.”

An example of braiding funds to address health and safety issues is the [Massachusetts weatherization program](#)<sup>9</sup> which partners with the [Zonolite Attic Insulation Trust](#) to offset most of the cost of the remediation of asbestos-containing materials such as vermiculite.

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<sup>8</sup> <https://www.mass.gov/info-details/ma-decarbonization-roadmap>

<sup>9</sup> <https://www.mass.gov/info-details/weatherization-assistance-program-wap>



Another example is the New Jersey weatherization program, which partners with other states programs to provide lead abatement and radon mitigation services.<sup>10</sup>

The repair of health and safety issues— problems such as structural issues, dilapidated roofs, or mold, which normally would lead to deferrals – has the dual benefit of enabling homes to be weatherized and supporting low-income families in safely maintaining their homes. New York’s Oliver told us that this vital support can lead to increased generational wealth transfer, by decreasing the chances that a house falls into disrepair and becomes unaffordable or dangerous for its owners to maintain. Oliver added that engaging and empowering low-income people to participate in their own adaption to climate change is a key ingredient in the successful transition to hotter global temperatures. He told us that providing families “the ability to make their own decisions on how they want to improve their homes is important.”

### **Issues: Workforce Development**

Every weatherization manager interviewed for this issue brief mentioned workforce issues as a key concern, including the lack of contractors, auditors, and field inspectors to do weatherization work. Mick Prince, the Illinois program manager, noted that the insufficient weatherization workforce is among the biggest obstacles to expanding state programs and helping more clients. “We don’t have enough contractors and we don’t have enough energy auditors and final inspectors,” he said.

Officials with the New Jersey DCA program spoke about the challenges of finding trained contractors to do weatherization work. DCA Program Development Specialist Luis Alicea mentioned the lack of training and non-competitive pay for contractors as being major obstacles to expanding the DCA workforce. Alicea said that “a lot of regular home contractors who just do basic [services] have no experience with weatherization. “They don’t know what weatherization is. So, an agency can’t just hire contractors who know nothing about air sealing,” he said as an example.

A focus on training new workers could help increase the country’s weatherization workforce. Some state weatherization offices are tackling the workforce problem head-on by hiring workforce development professionals, building new training centers, and ramping up training and apprenticeship programs in the hope of bulking up the workforce.

[Colorado’s Weatherization Assistance Program](#) has hired an engagement manager and a workforce development manager to tackle workforce initiatives. Colorado agencies train their workers at the [Energy Smart Academy](#) at Santa Fe Community College in New Mexico.

Stephanie Insinna-Sahondo, Colorado’s program director, said, “The goal is to build relationships with tech schools, high schools, get folks interested, even community colleges, go and do presentations, sustainability classes, environmental classes, and really help connect people to the mission of weatherization and start creating this pipeline into the workforce.”

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<sup>10</sup> <https://www.nj.gov/dca/>

Some states are looking at vocational programs and apprenticeship programs to build up the weatherization workforce. In Maine, the [Building Performance Association](#) has a grant that sponsors weatherization apprentices and can supplement apprenticeship wages, which can crucially help bridge the pay gap for new contractors who otherwise would enter the private construction market.

The workforce issue regarding weatherization is multifaceted. Community agencies and nonprofits struggle to keep their hourly rates competitive with the private construction market. Further, even with inflation and supply chain issues, and with the cost of materials higher than usual, agencies have to keep within an aggregated dollar maximum for each house they work on. This hampers a local agencies ability to raise the wages for weatherization workers. One weatherization office we spoke with suggested increasing contractors' pay at weatherization agencies to keep the work financially attractive.

Some weatherization offices have suggested that contractors are hesitant to become involved with federal- and state-funded work because contractors perceive that there is too much red tape, and because payment often comes as a reimbursement and can arrive slowly. Officials in New Jersey noted that only two contracting companies in their state get most of the state's weatherization jobs.

There is a wide variation in training capacities in different states. Virginia offers more than a dozen weatherization training courses, and weatherization contractors from surrounding states train their workers in Virginia. Massachusetts hosts New England's only training center, the [Green Jobs Academy](#). Increasing weatherization training could also create jobs and contribute to the green economy by improving country-wide energy savings. As an example of the job-creation potential of weatherization work, the federal WAP program alone creates [8,500 jobs](#) per year.<sup>11</sup>

### **Best Practices: Weatherization Outreach Services**

Typical outreach methods used by weatherization and LIHEAP agencies to identify eligible households include social media, utility bill inserts, and radio and newspaper advertisements. Yet, many potentially eligible households still are unaware of the existence of these weatherization programs. To go beyond these typical outreach methods, agencies in Virginia and California described the types of targeted efforts to reach communities that are disproportionately affected by extreme temperatures:

Megan MacMillen, CHP weatherization manager, told us that CHP uses multiple tools to reach families during the summer cooling season. *There has been some compelling research about historically redlined communities having less green space, higher summer temperatures, and the heat island effect affecting those buildings, so [there is] increased heat stress in those communities.*

[Maroma Energy Services](#) has identified a growing need for summer cooling that is needed to keep people safe and comfortable during extreme heat events. Mauricio Blanco said

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<sup>11</sup> <https://www.energy.gov/eere/articles/creating-jobs-home-efficiency>

he is seeing increasing numbers of people purchase their first air conditioning unit because the temperatures are reaching levels that are intolerable inside the home. Blanco said many of these households, particularly those with senior citizens, face a difficult decision of running air conditioning to create safe indoor air temperatures at the risk of incurring the financial strain of unaffordable electricity bills.

### **Recommendations for Additional Resources**

Weatherization managers spoke of the need for additional funding, specifically to reduce the backlog of deferrals so all eligible homes could be weatherized – regardless of a house’s condition – including repairing major roof damage, replacing faulty or old electrical wiring, and upgrading electrical panels. The following are some other specific improvements program managers said they would allocate additional funding for:

- Duane Graves, with the California Community Services and Development Agency, would purchase battery backup systems for rooftop solar to provide additional resiliency in the event of blackouts and wildfire power outages.
- Mick Prince, with Illinois’ weatherization program, would use additional funds to increase the participation of contractors in the weatherization program. This could be supported by more resources to help local agencies recruit quality energy auditors and inspectors.
- Stephanie Insinna-Sahondo, with Colorado’s Weatherization Assistance Program, would *replace every furnace with an air source heat pump. I would put at least a seven-kilowatt rooftop solar system on every low-income home that I could. And if there wasn’t a good candidate for rooftop, I would connect them immediately to community solar.*
- Luis Alicea, with New Jersey’s DCA, would add solar to move families off fossil fuels and reduce their energy bills.
- Eric Beaton, with the Weatherization Program Manager for Massachusetts, would add funds to decrease deferrals and pay for large repairs such as electric wiring upgrades.

**Conclusion and Recommendations:** Through adequate funding, collaborative partnerships, and program flexibility, weatherization programs can provide the multiple benefits of saving energy, improving indoor air quality, creating work opportunities, and helping vulnerable people maintain and stay in their homes, all while cutting greenhouse gas emissions.

The following recommendations are designed to strengthen the role of weatherization in delivering access to affordable and energy efficient cooling to low-income families and are based on interviews with weatherization officials representing the states of California, Colorado, Illinois, Maine, Massachusetts, New Jersey, New York, Texas, and Virginia regarding their program operations, approach to household cooling needs, and perspective on the strategies for ramping up existing efforts to retrofit the nation’s low-

income housing stock to address rising temperatures and need for efficient cooling as well as heating systems.

- **Develop Strategies to Integrate WAP with Funds Provided by IRA and IIJA.** The funds provided by the IRA and IIJA Acts combined with regular WAP funding provide resources that can serve as a base for retrofitting the nation's low-income housing stock. Federal and state governments should use these funds as an opportunity to integrate federal resources with state and utility funds.
- **Increase Maximum Benefits to Include More Measures:** Congress should allow DOE to raise the maximum average weatherization cost allowed per unit of housing to increase the number of energy efficiency measures installed in each project to allow for increased investment in high efficiency heating and cooling systems including heat pumps.
- **Reduce Deferrals Due to Poor Housing Stock:** The backlog of houses that have been deferred from weatherization needs to be significantly decreased through increased funding for pre-weatherization activities.
- **Improving Coordination Between Housing, Energy and Utility Programs:** There are multiple programs that are designed to strengthen low-income housing but often they work in separate silos and never reach their full potential to help low-income families. Working together, these programs could provide comprehensive weatherization while addressing other housing needs including indoor air quality, addressing safety hazards, roof repair and replacement, and structural repairs.
- **Creating Measurable Results:** Federal and state governments should work together to develop a metric to measure the effectiveness of weatherization work. The metric should take into account energy savings as well as tangible health benefits derived from weatherization services, including indoor air quality and structural integrity of the home, in addition to measuring energy and cost savings.
- **Developing the Weatherization Workforce:** The availability of weatherization workers – trained contractors, energy auditors, and inspectors – needs to grow to meet increasing demand driven by the increase in federal funding. Federal and state governments could do this by establishing apprenticeships, hiring workforce development professionals, and increasing agencies' training capacities.