

# Facilitating Equitable Resilience Through the Weatherization Assistance Program

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## The Weatherization Assistance Program (WAP)

WAP is a U.S. Department of Energy (DOE) program that **reduces energy costs for low-income households** by increasing the efficiency of their homes and their energy-consuming systems.

**Income-qualification of weatherization clients** facilitates energy equity by reducing homes' energy consumption and energy costs, improving health and safety, and increasing passive resilience of buildings in which low-income residents live.

- WAP clients must be at or below 200% of the poverty level or 60% of the state median income.
- WAP Grantees also give priority to the elderly, families with one or more members with a disability, families with children, high-energy users, and households with a high energy burden.

**WAP measures must meet cost-effectiveness testing** with all future savings, discounted to present value, exceeding the upfront cost of materials and installation.

WAP also funds WAP Innovation grants such as the Enhancement & Innovation (E&I), Sustainable Energy Resources for Consumers (SERC), and Community Scale Pilot Program (CSPP) grants that demonstrate innovative technologies and allow for projects that go beyond formula WAP by offering greater flexibility.

### Typical Measures:



#### Mechanical

- HVAC Systems Repair & Replacement
- Duct Insulation
- Hot Water Systems
- Thermostats



#### Building Shell

- Install Insulation
- Perform Air Sealing
- Window and Door Repair and Replacement



#### Electric and Water

- Install Efficient Lighting
- Install Water-Saving Fixtures
- Replace Inefficient Refrigerators



#### Health and Safety

- Heating System Safety Testing
- Combustion Appliance Testing
- Repair / Replace Combustion Vent Systems
- Install Mechanical Ventilation
- Evaluate Environmental Hazards (mold, moisture, etc.)
- Incidental Safety Repairs As Needed



#### Client Education

- Inform Client of Household Hazards (mold, moisture, lead, radon, etc.)
- Demonstrate New Equipment Usage
- Discuss Benefits of Efficient Products



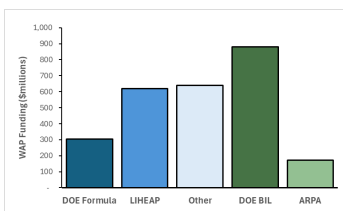
Illustrations from DOE

### Funding

- In Program Year 2022, for every \$1.00 of DOE formula WAP funding, \$4.10 of funding was supplied by sources such as the Low Income Home Energy Assistance Program (LIHEAP), utilities, and states.
- Funding from non-formula sources helps facilitate improved equity by allowing for efficiency measures, equipment installations, and additional home improvements that are not cost-effective or allowable per WAP regulations.

### Program Outcomes:

- Approximately 35,000 homes weatherized annually.
- Supports 8,500 jobs nationwide.
- Typical households' energy bills decrease by \$372 (2022 dollars) per year on average.
- Weatherization measures improve passive resilience.
- About \$4,695 (2020 dollars) average spend per unit for weatherization measures.
- For every \$1.00 invested in weatherization:
  - \$1.72 generated in energy benefits
  - \$2.78 in non-energy benefits.



2022 WAP Funding Sources

Source: National Association for State Community Services Programs

## Workforce Credentials, Standards, and Resources

NREL collaborates with subject matter experts from across the WAP and home performance industry to support DOE in maintaining and develop high-quality, nationally-recognized credentials and resources.

### Workforce Credentials:

- A credentialed workforce is in high demand.
- The Energy Auditor and Quality Control Inspector certifications require experienced home energy professionals to demonstrate comprehensive knowledge, practical skills, and technical proficiency to earn the certification. NREL facilitates the development, maintenance, and validation of the certification schemes for use by certifying organizations compliant with the ISO/IEC 17024 standard.

- Getting started can be an intimidating and daunting task with a range of certifications.

- Prerequisites, written/field exams, travel, etc.

- Welcome to a more flexible option: the Installer Badges Toolkit!

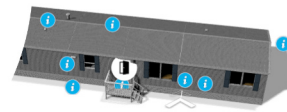
- The Toolkit for home retrofits consists of 25 Badges, each representing different energy efficiency tasks that an installer could perform on a home.

### Visualization Resources:

- The job aids are step-by-step visual guides that align with each of the Badges and assist home energy professionals with effective, durable, and safe energy efficiency upgrades.
- The 3D houses can be used as a self-guided learning tool by anyone interested in learning more about retrofit strategies of common weatherization measures.

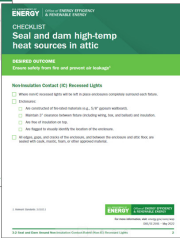
### Standards:

- The Standard Work Specifications (SWS) are a free online tool and industry guide that define the minimum acceptable outcomes for home energy upgrades installed on single-family, multifamily, and manufactured housing.
- These specifications provide objective-based outcomes for energy efficiency measures installed by the home performance industry.
- The SWS address a complete set of energy efficiency measures that comprise a whole-house energy upgrade.
- The SWS provide WAP with a consistent definition of work quality by increasing the standardization of installation and technical monitoring outcomes across the industry.



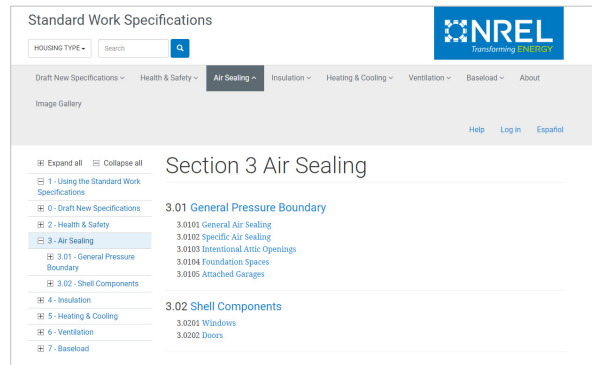
Single-Family and Manufactured 3D Houses

Images from DOE



Images from DOE

Job Aids



SWS Tool

Screenshot from NREL

## Decarbonization and Electrification

### Solar in WAP

- Currently, eight states or Grantees have solar photovoltaics (PV) approved as a WAP measure or are installing solar as part of a SERC award. Further, six states or Grantees have solar PV approved as a measure within LIHEAP.

### NREL supported DOE in the development of three resources to help facilitate solar installations within WAP:

- Solar Savings to Investment (SIR) Calculator:** This calculator allows WAP Grantees to assess the cost-effectiveness of solar installation using PV Watts<sup>®</sup> model outputs and solar characteristics such as installed cost, local utility rates, and net metering.
- Solar Energy Burden Calculator:** This tool allows WAP partners to quickly assess the impact that a solar PV project will have on a client's energy burden, which is the percentage of their income spent on energy costs.
- Solar PV and hot water SWS:** NREL has helped draft SWS for solar PV installations which define the minimum outcomes to ensure high work quality for home installations. NREL has also helped develop the SWS for solar water heater installations (7.0302.6) which helps ensure resilient hot water supply in appropriate regions.

### Innovation Grants

- A number of projects have been funded by WAP Innovation grants that go beyond the formula WAP program. Some of the recently awarded projects are completing resilience projects involving solar PV installations, solar water heating, and electrification measures such as heat pump retrofits, heat pump water heater installation, and appliance electrification.

### WAP Cold Climate Air-Source Heat Pump (ccASHP) Toolkit

- This web-based toolkit is being finalized and will provide information and resources regarding ccASHP technology for consumers, WAP program implementers, contractors, and HVAC professionals. This tool will help facilitate electrification within WAP, and decarbonization in certain Grantee territories based on regional grid emissions.