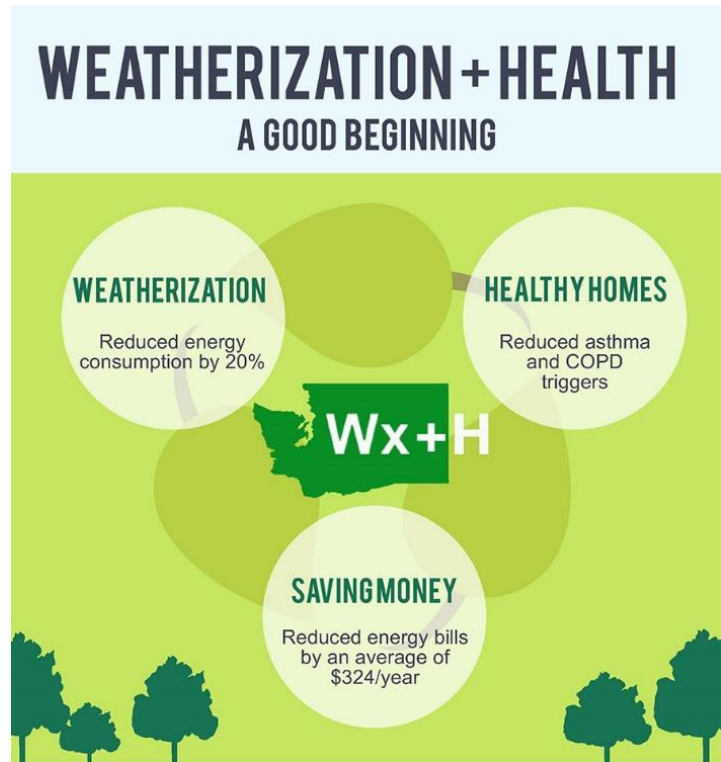


One of the many benefits of making energy efficiency improvements to a low-income home is improved household health and safety. Energy efficiency professionals can identify and eliminate health and safety issues in the home, such as carbon monoxide leaks, and install measures such as air sealing, insulation, and heating and cooling equipment, which simultaneously reduce energy costs and may also help to reduce asthma triggers in homes. While federal energy programs are able to address some health and safety issues related to energy measures, federal and utility funds are often limited and unable to adequately address the larger scope of health and safety repairs often needed in low-income homes. For example, when there are homes that may need a roof replacement versus a roof repair, the costs exceed the available funding. In these instances, practitioners seek to leverage funding from other sources. This issue brief provides state and local agencies with key considerations and examples from partners in the Clean Energy for Low Income Communities Accelerator (CELICA), including the States of Washington and Connecticut, which are leveraging additional state and utility funding for improvements to the health and safety of low-income homes.



Source: State of Washington Department of Commerce, 2019

Key Health and Safety Considerations

Integrated Energy Efficiency and Health Program Interventions

A holistic assessment of home health and safety issues in concert with energy audits can be used to simultaneously address multiple issues prior to installing energy efficiency measures in low-income homes. In the US Department of Energy's Weatherization Assistance Program (WAP), it is a requirement to assess not only a home's energy efficiency, but also the home's health and safety characteristics as well. State and local agencies featured in this issue brief report that assessing multiple issues helps them provide more comprehensive healthy homes interventions to participating low-income households. This is especially pertinent when working with energy efficiency programs, which may have utility restrictions and federal requirements that limit the scope and level of spending on health and safety issues. State and local agencies can also develop partnerships with public health, medical clinics, and other community organizations to identify priority households with the greatest potential for energy and health benefits. The [resources section](#) at the end of this document contains several examples of assessments that can be utilized to assess health and safety concerns and identify needed improvements. The profiles of Washington and Connecticut provide examples of how states are integrating energy efficiency and healthy homes services beyond the scope of what utility and federal funding typically allows to decrease energy cost and improve the health of low-income families.

Leveraging Health and Safety Funding

Sometimes there are more substantial costs beyond what federal programs like the U.S. Department of Energy (DOE) Weatherization Assistance Program (WAP), the U.S. Department of Health and Human Services (HHS) Low Income Home Energy Assistance Program (LIHEAP), and U.S. Department of Housing and Urban Development (HUD) Community Development Block Grants (CDBG) can cover. An emerging area of focus for some states is to build partnerships to leverage additional funding at the state level (e.g., around use of Medicaid funding) and local level (e.g., with hospitals) for comprehensive home health and safety interventions linked with energy efficiency (i.e., integrated energy efficiency and healthy homes programs). Profiles in the following section illustrate these emerging approaches, including:

- State of Connecticut's use of a Medicaid waiver and memorandum of understanding between state agencies, and
- State of Washington's use of state funding to demonstrate healthcare cost savings from comprehensive energy efficiency and health program interventions.

A key focus to these approaches is showing the direct cost savings from reduced need for medical treatment after mitigating health and safety issues commonly found in low-income housing.

CELICA Partner Profile: Washington's Weatherization Plus Health Initiative

The State of Washington Department of Commerce, which hosts the state's weatherization office, launched the Weatherization Plus Health (Wx+H) Initiative with the goal of integrating weatherization, health, and social services in one pilot program so that low-income housing received energy efficiency and health and safety services under one coordinated effort. The state's local weatherization agency partners deliver the Weatherization Plus Health program using a variety of funding sources including WAP, LIHEAP, CDBG, state energy and home repair funds from other sources, as well as private donations. The program relies on community support and coordinates outreach activities and referrals with Head Start, energy assistance, county health departments, and local asthma clinics. The pilot tested whether the state's local partners could deliver full weatherization and healthy homes interventions to clients as well as develop partnerships with public health departments, medical clinics, and other community organizations to implement healthy homes measures. In the first year, the state's pilot partners delivered services to over 250 households. Between 20 and 40% of the grantees' existing clients that received services had either asthma, chronic pulmonary disease, or other respiratory conditions. The state expanded the Wx+H 2015 pilot and dedicated a substantial funding stream to eight different pilots in 2016 to 2017.

Starting in 2018, the State of Washington initiated a plan focused on installing physical Wx+H measures in the homes of medically vulnerable occupants and investment in community health worker home visit services for medical screening and follow-ups by local agency staff or community partners. The state encourages local agencies receiving Wx+H funds to develop and strengthen community partnerships and find alternative funding sources to be able to provide these services to these households. Based on the pilot program, the State of Washington and its evaluator, the Washington State University Energy Extension Program, found sufficient evidence to suggest that many existing low-income weatherization households have medically vulnerable occupants. Most significantly, they determined that providing Wx+H measures resulted in significant energy savings, positive health outcomes, and other non-energy benefits that are likely to meet or exceed measured costs (Schueler, 2018).

One Local Network Partner's Experience: Opportunity Council, a DOE WAP Subgrantee of the State of Washington, also participated in DOE's CELICA. As part of their participation in the state's Wx+H program, Opportunity Council provided comprehensive weatherization and/or healthy homes services to 36 households and an additional 16 households received lower-cost measures (they were lower cost because they were not whole house retrofits). In addition to the energy measures, Opportunity Council visits provided families that have asthmatic children with environmentally friendly cleaning kits, walk-off mats, and dust mite covers. Improvements to the indoor environment focused on benefits for asthmatic residents, including enhanced ventilation, high-efficiency particulate air vacuums, and other services that dealt with dust, pests, environmental tobacco smoke, pet dander, chemicals, moisture, and mold.

The State of Washington's WAP annual plan, as approved by DOE, includes an allowance for Subgrantees like Opportunity Council to spend up to 25% of its WAP annual funds on health and safety. According to Opportunity Council, this equates to approximately \$1,625 per home assisted. Opportunity Council estimates the average investment to reduce asthma triggers costs an additional \$1,800 per home in a typical weatherization. This is beyond the level of health and safety expenditures that can be performed using WAP funding alone in the State of Washington (Wilson & Tohn, 2011). As a result, as noted above, community action agencies delivering Wx+H in the state of Washington, like Opportunity Council have often sought additional funding to complete projects of this nature. The program mainly relies on community support and coordinates outreach activities as well as referrals with the Northwest Clean Air Agency, Head Start, LIHEAP, county health department, and local asthma clinics (Bonlender, 2016). Out of the 36 homes they served in the Wx+H pilot, 90% received green cleaning kits, 84% received walk-off mats, 80% received new bedding for dust mite control, and 77% received air sealing (an energy efficiency measure that is also part of mold prevention efforts). Through the partnership with WAP, LIHEAP, and HUD, the State of Washington demonstrated that established local weatherization agencies may serve as hubs for delivering expanded healthy home measures in coordination with traditional weatherization services. Some important outcomes of the Wx+H program reported by their pilot project partners were the initial cultivation and strengthening of new referral relationships, a continued focus on strengthening these relationships, and a greater recognition of value from considering medical vulnerability when prioritizing recipients of weatherization services. U.S. DOE's WAP statute recognizes the connection between health and safety and certain at risk categories of low-income households, prioritizing elderly, persons with disabilities, families with children, high residential energy users, and households with high energy burden."

Lessons Learned: Running a Wx+H program raised the general awareness and visibility of the connection between substandard housing and occupant health among community partners and grantee agencies. The following key lessons were also captured by the state.

Healthy home interventions may reduce medical costs. A sub-analysis performed as part of the Oak Ridge National Laboratory's (ORNL) National Evaluation of WAP investigated the asthma-related health impacts of weatherization and healthy home interventions using data from participating households in the State of Washington between 2006 and 2013. Results indicated that medically-insured households that received either weatherization, healthy home, or weatherization plus healthy home renovations significantly decreased their healthcare utilization post intervention. Together the participants' average yearly asthma-related Medicaid cost decreased by \$421 (Rose, 2015).

Adding to the technical capabilities of local agencies is essential to implementation of healthy home interventions. Another outcome of the Wx+H work was the strengthening of the ability of weatherization staff to address the occupants' health, not just the building systems in which they live.

According to the state and its partners, stable, multiyear funding is likely what will allow weatherization agencies to develop the understanding and expertise needed to offer the full Wx+H integrated service model.

CELICA Partner Profile: Connecticut Green & Healthy Homes Project

The Connecticut Green & Healthy Homes Project is a multiagency initiative designed to advance comprehensive, evidence-based energy and healthy home interventions in an effort to promote energy savings and improve health outcomes for low-income households. The project is a partnership between the Connecticut Green Bank and the Connecticut Department of Public Health, which are coordinating with other state agencies and outside organizations, including the Connecticut Department of Energy and Environmental Protection, the Department of Children and Families, the Department of Housing, the Department of Social Services, the Office of the Chief State's Attorney, the Office of Early Childhood, the Unit on Aging, and the Green & Healthy Homes Initiative (consultant), Energize CT, Eversource, and the United Illuminating Company. The project seeks to generate substantial energy and medical cost savings through reductions in energy consumption and health outcomes related to alleviating asthma, lead poisoning, and household injury in low-income housing. Through this work, the State of Connecticut and its partners have found that unhealthy and unsafe home conditions are a significant barrier to the implementation of energy efficiency and renewable energy (e.g., rooftop solar PV) improvements in low-income housing. They also found that unhealthy and unsafe conditions in low-income housing are a significant medical cost for the state.

The [Connecticut Green & Healthy Homes June 2018 Pre-Feasibility Analysis Report](#) examined the extent to which, with sustainable funding such as Medicaid, comprehensive housing interventions could be taken to a statewide scale. A memorandum of understanding exists between the Connecticut Green Bank, the Connecticut Department of Public Health (the lead agency), and the Connecticut Department of Social Services, articulating how the collaborative project will operate. Funding is provided by the state Medicaid office to explore and evaluate the health benefits and potential healthcare cost savings associated with combining energy and housing improvements; examining options for implementing a statewide energy, health, and housing intervention strategy; and identifying innovative funding mechanisms that could support an integrated model. The initial development of the Connecticut Green & Healthy Homes Project lays the groundwork for a coordinated state energy and preventative health care model that can potentially improve health outcomes and significantly lower energy costs. According to the 2017 [Connecticut Green & Healthy Homes Needs Justification Statement](#), the state and its partners believe the pilot phase of this project could demonstrate a national model and enable partners in Connecticut to build the business case for other sustainable funding streams for this work.

Lessons Learned: While the State of Connecticut has considerable focus on improving the housing conditions that impact health and energy, some critical gaps exist in the service network that the state and its partners believe can be effectively addressed through a new statewide model, as noted below.

Sustainable funding is key. Through research and conversations with the Connecticut Centers for Medicare and Medicaid Services, the state and its partners see the possibility for Medicaid to be a source of sustainable support for services that address the underlying housing conditions related to health problems and reduce healthcare utilization and costs over time.

Outcomes-oriented healthcare initiatives are an opportunity for energy efficiency and healthy homes partnership pilots. Connecticut moved to a largely fee-for-service payment mechanism for

Medicaid claims in 2010. However, some recent initiatives, including the Intensive Care Management, Patient-Centered Medical Home, and Patient-Centered Medical Home Plus, utilize patient-centered, value-based,ⁱ or shared savings approaches to payment for services.

In the case of Patient-Centered Medical Home Plus, providers meet healthcare quality improvement standards and engage in strategies to reduce the costs of unnecessary physician or nurse healthcare services provided to patients. This makes the providers eligible to receive some of the generated savings. Additional research is needed to fully examine the opportunity for Medicaid's support of the Connecticut Green & Healthy Homes Project model.

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ⁱ Medicaid value-based purchasing is defined as “any activity that a state Medicaid program undertakes to hold a provider or contracted managed care organization accountable for the costs and quality of the care they provide or pay for.” Frequently, this refers to state Medicaid activities to implement alternative payment models. Alternative payment models change the way Medicaid programs pay providers and can be implemented in all types of Medicaid delivery systems, including fee-for-service Medicaid programs and in Medicaid managed care.” —January, 2017, National Association of Medical Directors.