

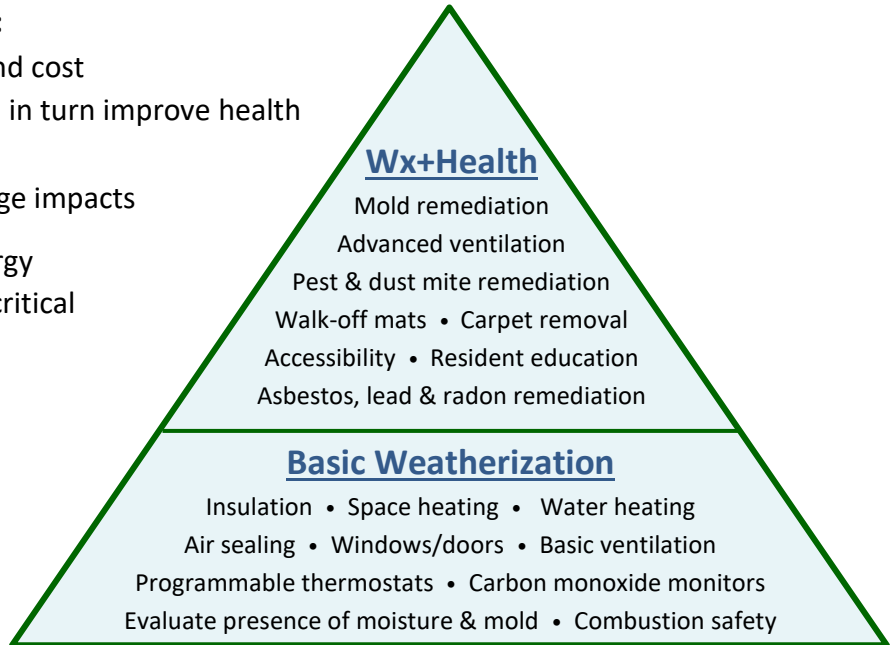
Home weatherization addresses energy, health and environmental problems

Benefits of home weatherization include:

- Reduced household energy usage and cost
- Improved housing conditions, which in turn improve health
- Reduced greenhouse gas emissions
- Increased resilience to climate change impacts

Basic weatherization (Wx) prioritizes energy efficiency improvements but can include critical health and safety improvements.








Weatherization + Health (Wx+Health) prioritizes delivery of health benefits by including specific health and safety improvements in addition to basic Wx strategies, which may be especially helpful for those with chronic health conditions or accessibility challenges.



Wx+Health builds on basic weatherization strategies













Weatherization improves home conditions that affect health

Wx improves the home

-  Reduced energy bills
-  Improved temperature control
-  Improved indoor air quality
-  Enhanced safety
-  Reduced humidity
-  Reduced mold
-  Reduced pest intrusion

**Published evidence about the indoor environmental quality and health impacts of Wx was reviewed to identify the expected effects. The strength of evidence for each finding was based on the quality and amount of evidence available.*

Wx benefits health in many ways

| Health benefits... | ...are associated with these improvements to home conditions. | Strength of evidence* |
|---------------------------------|---|-----------------------|
| General Health |  | High |
| Productivity |  | High |
| Social Health |  | High |
| Upper Respiratory |  | High |
| Asthma |  | Medium |
| Cardiovascular |  | Medium |
| Financial Stress |  | Medium |
| Mental Health |  | Medium |
| Health Care Utilization & Costs |  | Medium |
| Accidental Injury |  | Low |
| Infectious Disease |  | Low |
| Neurological |  | Low |

Weatherization in action: Vermont case studies

Referrals to Health Services

The Vermont Weatherization Assistance Program (VT WAP) provides free Wx services to income-qualifying households across Vermont. About 20 percent of its funding is used to address critical health and safety issues like electrical or combustion hazards.

VT WAP also uses One Touch, an electronic referral system that connects clients to health, housing and energy programs. The One Touch questionnaire, used during the energy audit, automatically refers clients to local partners for help with asthma management, accessibility needs, and other health-related issues.

Partnering with Hospitals

NeighborWorks of Western Vermont runs a HEAT Squad program that provides low-to-moderate income residents with low-cost energy audits and assistance in identifying, contracting, and financing Wx improvements.

The HEAT Squad began partnering with Rutland Regional Medical Center (RRMC) in 2016 to provide Wx+Health services to RRMC patients with respiratory issues and mobility limitations. Through this partnership, the HEAT Squad and RRMC deliver services that help keep residents healthy and out of the hospital.

Evaluating Health Impacts

Efficiency Vermont (EV) is a public energy efficiency utility that provides energy efficiency services and financial incentives to market-rate clients across Vermont.

EV launched a *Healthy Homes* pilot study in 2018 in partnership with Northeastern Vermont Regional Hospital (NVRH). EV and NVRH will deliver Wx+Health services to 10 low-income households with at least one person managing a chronic respiratory condition. Data will be collected from each home to evaluate the health benefits of Wx+Health services.

What weatherization can do for Vermonters' health: costs and benefits

Low Costs but Limited Funding

The current weatherization rate of 900 low-income homes each year is far below what is needed to meet the state's statutory goal of weatherizing 80,000 homes by 2020, including 20,000 low-income homes. The average cost of a VT WAP project is \$8,500, and funding is one barrier to doing more.

This is a missed opportunity for low-income Vermonters, who spend more of their income on energy and whose health is more likely to be affected by asthma, cold and heat.

Substantial Benefits for Household and Public Health

Weatherizing 2,000 low-income homes in Vermont would help prevent an estimated 223 emergency department visits, 13 hospitalizations, and 0.5 deaths over a 10-year period, associated with reduced health impacts caused by asthma, cold and heat.*

Wx also benefits public health by reducing fine particulate emissions from heating systems. The estimated 10-year value of energy and health benefits is at least \$24,757 per household, or about three times the initial cost. Larger benefits are expected if Wx+Health services are offered to people with existing chronic health conditions.

The estimated 10-year economic benefit per household is nearly three times greater than the initial expense.

| Benefit category | Primary beneficiary | First-year benefit | 10-year benefit |
|--|---------------------------|--------------------|-----------------|
| Thermal and electric energy cost savings | Household | \$1,174 | \$11,740 |
| Reduced impacts of asthma, cold, and heat* | Household | \$276 | \$2,762 |
| Reduced fine particulate emissions | Public | \$1,026 | \$10,255 |
| Total | Household + public | \$2,476 | \$24,757 |

*More benefits are expected but could not be quantified, such as better mental and social health, fewer accidental injuries, and increased productivity.

Visit healthvermont.gov/climate to learn more about these findings and estimated impacts.