



Issue Brief

Wood Stove Changeouts and LIHEAP

Cheaper, Healthier Alternatives for Wood-Heat Clients

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In areas with plentiful wood supplies, heating with wood is generally a cheaper alternative to other heating sources, such as natural gas, electricity, or oil.

Thanks to programs that provide cleaner-burning and more efficient wood stoves, wood heat has become even cheaper, as well as cleaner, safer, and more energy efficient than it was. The programs, known as wood stove changeouts, replace or retrofit older, inefficient wood stoves and fireplaces with new units (e.g., gas, wood pellet and EPA-certified wood stoves) that are more energy efficient and burn cleaner. These newer stoves improve ambient and indoor air quality. The new units also reduce creosote and the risk of chimney fire, and they cut fuel costs by as much as a third for participating low-income families.

Dozens of public-private partnerships across the country have provided free or low-cost certified energy-efficient wood stoves to thousands of families during the past decade. Participating states and tribes have partnered with LIHEAP and weatherization programs, the Environmental Protection Agency (EPA), the American Lung Association, state and local health departments, air quality management districts, wood stove dealers, and the national organization representing dealers. In several states, LIHEAP weatherization or Department of Energy Weatherization Assistance Program funds have helped subsidize purchase and installation of the stoves. In other cases, the LIHEAP program verified participants' income eligibility to participate in the changeout program.

This issue brief will summarize several changeout partnerships and provide links to program reports and resources available for developing and funding projects.

Wood Stoves and Health

The EPA estimates that residential wood burning emits 390,000 tons of fine particle (PM_{2.5}) pollution each year. The smoke emitted from wood stoves contains a mixture of gases and fine particles that can cause burning eyes and runny noses. Fine particle pollution can also aggravate existing medical conditions, such as coronary artery disease, heart failure, asthma, chronic bronchitis, and emphysema. Wood smoke is also known to emit harmful pollutants such as polycyclic aromatic hydrocarbons, benzene, and dioxin.

Wood-Stove Changeout Resources

- EPA ["Burn Wise" website](#)
 - Contact: EPA Residential Wood Smoke Reduction Initiative
 - Team Leader: Larry Brockman
 - Phone: (919) 541-5398
 - E-mail: brockman.larry@epa.gov
- EPA [guidance on SEP funding](#) for changeouts
- National Tribal Air Association: [Changeout Information](#)
- Hearth, Patio, and Barbecue Association: [Consumer Information on wood burning](#), including home heating cost calculator
- Hearth, Patio, and Barbecue Association: [How to Start a Community Wood Stove Changeout](#)
- Montana [Wood Stove Changeout Proposal](#) (2007)
- [Libby, Montana, Changeout Project](#) (EPA-funded)
- [Woodstove Changeout on the Nez Perce Reservation](#)
- [Makah Clean Air/Health Home Wood Stove Changeout Project](#)
- [Passamaquoddy Wood Stove Changeout](#)

According to the EPA, replacing inefficient wood stoves with cleaner burning products:

- reduces fine particles and toxic air pollution by 90 percent;
- reduces indoor PM_{2.5} emissions by 55 percent, or more if gas is installed;
- improves energy efficiency by 50 percent with new models using one-third less wood; and
- helps mitigate the effects of climate change by reducing methane, black carbon, and carbon dioxide through improved combustion efficiency and reduced fuel use.

EPA Initiatives

From 2005 through 2008, the EPA funded several wood stove changeout demonstration grant projects throughout the country and led a major program called the “Great American Wood Stove Changeout.” The Changeout Program’s goal was to evaluate the effectiveness of reducing PM_{2.5} and air toxins pollution by replacing/retrofitting older, inefficient wood-burning stoves or fireplaces with cleaner burning gas, pellet, or EPA-certified wood stoves. EPA partnered with the Hearth, Patio and Barbecue Association, the American Lung Association, Department of Energy, state and local health departments, and other agencies.

As of 2008, the EPA could no longer provide funding for changeout programs. However, the agency is continuing to encourage wood stove changeouts and has been sharing the lessons learned and promoting the various benefits (health, safety, and energy efficiency) that can be realized. One key lesson learned from the demonstration projects is to ensure stove owners get the benefits of upgrading to a cleaner-burning wood stove by educating them on the importance of burning dry, seasoned wood and operating their wood stoves correctly.

Wood-Heat Statistics

- **2.1% of US Households (2.5 million) use wood or pellets as their primary heating fuel**
- **7.7% use wood as their secondary source**
- **Wood and pellet heating has grown by 34% since 2000, faster than any other fuel type**

With that in mind, the EPA kicked off a new education and outreach program called “Burn Wise” in 2009 that stresses the importance of burning wood properly and using certified stoves correctly. (See www.epa.gov/burnwise for more information.) The website has information that can help state and local agencies plan and implement changeout programs and provides case studies from entities that have obtained other sources of funding for changeouts.

One current source is Supplemental Environmental Projects (SEP) funds in areas where a violator of an environmental law has agreed through a settlement to improve the environmental health of a community (or communities) that have been put at risk. Several state, tribal, and local governments have effectively implemented changeout programs through SEPs. For example, utilities, through negotiated settlements, funded projects in Ohio, Massachusetts, and Washington.

As of 2013, the EPA, state, local, and tribal governments have replaced or retrofitted over 30,000 wood stoves and fireplaces in more than 50 communities. The EPA estimates, that through the collective efforts of the various partners to changeout/retrofit these appliances, more than 3,700 tons of fine particle emissions have been reduced each year, resulting in an estimated \$135 million to \$329 million per year of health benefits (e.g., reduced asthma attacks, hospital visits, etc.). The EPA estimates that about nine million older wood stoves remain operational nationwide.

Projects Involving LIHEAP

The Montana Department of Public Health and Human Services (DPHHS), which administers LIHEAP, participated in a wood stove changeout pilot study in FY 2007. DPHHS received an EPA grant of \$100,000 to replace at least 74 wood stoves and leveraged the EPA funds with \$95,133 in LIHEAP weatherization funds.

Montana targeted three counties that were in areas prime for wood smoke pollution – mountain valleys experiencing significant air inversions that trapped the wood smoke pollutants and resulted in poor air quality on many winter days. Two of the counties had been cited for non-attainment of EPA PM_{2.5} standards.

Initially, eligibility was limited to LIHEAP households heating primarily with wood, and then expanded to allow wood as a secondary heat source. Participants also had to agree to allow their old wood stove to be removed and recycled. All wood stove replacements were installed by certified installers.

Eligible households received up to \$2,570 (\$1,365 of EPA funding and \$1,205 of LIHEAP funding) toward replacement of non-compliant wood stoves with EPA-approved appliances. The project replaced 88 wood stoves, installing 85 certified EPA-compliant wood stoves and three natural gas appliances. Local agencies provided client education covering health hazards associated with breathing wood smoke, the benefits of using EPA-certified stoves, and proper wood-burning practices.

Following the pilot, wood stove changeouts were integrated into the standard LIHEAP services provided by DPHHS statewide. The state's LIHEAP administrative rules were revised, allowing agencies to use LIHEAP funds to replace non-compliant wood stoves in homes heated primarily with wood with EPA-approved heating devices.

During FY 2011 through 2013, the project replaced 86 wood stoves at a cost of \$236,260, averaging \$2,774 per household. Changeouts continue in

all areas of the state, but the supply of eligible households is dwindling, according to Kane Quenemoen, Montana LIHEAP Director. In Montana, it's getting harder to find LIHEAP-eligible households that use wood as their primary source of heat rather than as a back-up to another heating source. (See [Montana's EPA proposal](#) for more information.)

Among participating tribes, the Makah Tribe of Neah Bay, Washington, received a \$100,000 EPA grant in 2007. Prior to that, the LIHEAP office had done 10 changeouts with LIHEAP and HUD funds. Thus, no additional LIHEAP funding was used in the EPA project. However, the LIHEAP office provided assistance with research, outreach, and client verification. The project replaced 45 older units and also retrofitted 10 older stoves, bringing into them compliance. (See the [Makah report](#) for additional details.)

An EPA-funded project of Idaho's Nez Perce Tribe sampled indoor air quality in the homes of 16 tribal members and supplied each home with an EPA-certified stove. Follow-up studies showed that the changeouts improved indoor air quality with a 52 percent reduction of PM_{2.5} and reduced particulates in the outdoor air. (See the [Nez Perce report](#) for more information.)

The Passamaquoddy Tribe of Maine replaced 21 wood stoves during FY 2011, using EPA and tribal funds. The tribe's LIHEAP office provided technical assistance and client eligibility verification for the effort. (See the [Passamaquoddy report](#) for more details.)

For information on more communities that have participated, see the EPA's case studies [here](#).

This is the first of six Issue Briefs that the LIHEAP Clearinghouse will prepare under its contract with the U.S. Department of Health and Human Services, Division of Energy Assistance. The content of this publication does not necessarily reflect the views or policies of the Department of Health and Human Services, nor does mention of trade names, commercial products, organizations or program activities imply endorsement by the U.S. Government or compliance with HHS regulations.