

## Vermont Outdoor Wood Boiler Change-out Program

**Description:** This project used vouchers to replace uncertified outdoor wood boilers (OWB, a.k.a. hydronic heaters) with cleaner, EPA-certified units. OWBs targeted for replacement by VT DEC included units associated with complaints from residents, those with high emission rates, and those located within 200 feet of a residence, school, or health-care facility. The change-out program began in 2011 before VT passed legislation in 2012 requiring uncertified OWBs to be retired by the end of 2012.

Title	Vermont Outdoor Wood Boiler Change-out Program
Location (City, Counties, Region)	Vermont, state-wide
Population/Number of homes covered by project	<ul style="list-style-type: none"> <li>Population: 623,989 (2019)</li> <li>Housing Units: 339,439 (2019)</li> </ul>
Objectives (NAAQS attainment/maintenance, indoor air, visibility, air toxics, public education)	<ul style="list-style-type: none"> <li>Reduce fine particles (PM<sub>2.5</sub>) from wintertime woodsmoke.</li> <li>Remain in attainment with PM<sub>2.5</sub> air-quality standards.</li> <li>Prioritize replacement of hydronic heaters (aka OWBs) that have been the subject of complaints regarding smoke emissions, have the highest emission rates, or are within 200 feet of a residence, school, or health care facility.</li> </ul>
Milestones (Project time frame, number of changeouts, air quality goals, number of low-income homes targeted if applicable)	<ul style="list-style-type: none"> <li>Replaced 85 uncertified OWBs from 2011 to 2015.</li> <li>Majority of OWBs replaced with certified cordwood OWBs. Four replaced with certified pellet OWBs and two with gas units.</li> <li>Change-out Program ended in September 2015 due to halt in funding.</li> <li>See PM Advance: <a href="https://www.epa.gov/sites/default/files/2018-06/documents/path_forward.0418.pdf">https://www.epa.gov/sites/default/files/2018-06/documents/path_forward.0418.pdf</a></li> </ul>
Budget (projected/actual cost)	<ul style="list-style-type: none"> <li>\$500,000 from settlement of <i>US v. American Electric Power Service Corp.</i> (Civil Action No. C2-99-1250).</li> <li>Additional funds via VT legislature.</li> </ul>
Funding Sources (Government funds, grants, Supplemental Environmental Project, fees, etc.)	<ul style="list-style-type: none"> <li>American Electric Power Service Corp.</li> <li>Vermont legislature (Act 94, effective May 7, 2010, and codified at 10 V.S.A. § 584): Vermont Air Quality and Climate Division was given \$500,000 through the Legislature to implement the OWB Change Out Program.</li> </ul>
Partners (Government/private organizations involved)	<ul style="list-style-type: none"> <li>EPA Region 1</li> <li>Vermont Legislature</li> <li>Vermont Department of Environmental Conservation (DEC): <a href="https://dec.vermont.gov/">https://dec.vermont.gov/</a></li> <li>Vermont Air Quality and Climate Division (AQCD)</li> <li>17 participating OWB dealers</li> <li>American Lung Association: <a href="https://www.lung.org/">https://www.lung.org/</a></li> </ul>
Incentives Offered (rebates, discounts, vouchers, incentives for low-income homes, etc.)	<ul style="list-style-type: none"> <li>Up to \$6,000 voucher to replace uncertified OWBs with cleaner, more efficient units.</li> <li>\$1,000 voucher for owners of uncertified OWBs owners to change to more efficient units, but whose operation of current boiler did not result in a complaint.</li> </ul>
Ordinances/Regulations (mandates for cleaner-burning hearth devices)	<ul style="list-style-type: none"> <li>Uncertified OWBs were required to be retired by December 31, 2012. See 10 V.S.A. section 584(g): <a href="https://law.justia.com/codes/vermont/2012/title10/chapter23/section584">https://law.justia.com/codes/vermont/2012/title10/chapter23/section584</a></li> </ul>

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	<ul style="list-style-type: none"> <li>Any EPA certified wood-fired central heater, woodstove or wood-pellet stove can be sold in Vermont.</li> </ul> <p>Set-back and stack-height regulations apply to hydronic heaters including a 100-foot setback requirement from the nearest residence, school or health care facility not served by the hydronic heater. See: <a href="https://dec.vermont.gov/air-quality/compliance/owb/vt-certified-outdoor-wood-boilers">https://dec.vermont.gov/air-quality/compliance/owb/vt-certified-outdoor-wood-boilers</a></p>
Project Yardstick (Number of woodsheds constructed, number of stoves replaced with new stoves or other technology, etc.)	<ul style="list-style-type: none"> <li>Removed 85 uncertified OWBs from service.</li> <li>Majority of OWBs replaced with certified cordwood OWBs. Four were replaced with certified pellet OWBs and two with gas units.</li> </ul>
Outreach/Marketing (Radio/TV public service announcements, workshops, woodstoves expo, flyers, mailouts, social media)	<ul style="list-style-type: none"> <li>Announced on local TV, newspaper, and online news. See: <a href="https://www.benningtonbanner.com/local-news/uncertified-outdoor-wood-boilers-must-be-retired/article_356f0fd0-05aa-5073-979d-42bf355514b8.html">https://www.benningtonbanner.com/local-news/uncertified-outdoor-wood-boilers-must-be-retired/article_356f0fd0-05aa-5073-979d-42bf355514b8.html</a></li> <li>Provided information for distribution at woodstove retailers.</li> <li>See: <a href="https://www.vtwoodsmoke.org/">https://www.vtwoodsmoke.org/</a>; <a href="https://www.vtwoodsmoke.org/wp-content/uploads/2021/05/OWB-VTFactSheet.pdf">https://www.vtwoodsmoke.org/wp-content/uploads/2021/05/OWB-VTFactSheet.pdf</a></li> </ul>
Air Quality Data/Other Results (Air-quality status of project area. Is improving indoor air quality part of project?)	<ul style="list-style-type: none"> <li>PM<sub>2.5</sub> was the major contributor to air pollution on moderate AQI days in Vermont for 2016-2019.</li> <li>Average annual number of “good” AQI days has continued to increase.</li> <li>Difficult to quantify improvement in air quality due to changeouts; however, on average certified OWBs emit 70-90% less PM<sub>2.5</sub> than older units.</li> </ul>
Lessons Learned (What worked? What didn't? Tips? How can project be improved?)	<ul style="list-style-type: none"> <li>Partnerships between local government and private sector are key.</li> <li>Important to maintain partnerships and contracts with specific dealers in response to public requests.</li> <li>Necessary to retain participating dealers in various areas of Vermont to prevent geographic locations of the dealer from becoming a hindrance for people interested in the program.</li> <li>Educational outreach on proper wood-burning practices is essential.</li> <li>Consider seeking other funding opportunities in order to extend and expand program.</li> </ul>
Project Contact (Name, organization, phone number, email address, web link to project)	<ul style="list-style-type: none"> <li>John Wakefield, Vermont Department of Environmental Conservation (<a href="mailto:john.wakefield@vermont.gov">john.wakefield@vermont.gov</a>)</li> <li><a href="https://dec.vermont.gov/tags/outdoor-wood-fired-boilers">https://dec.vermont.gov/tags/outdoor-wood-fired-boilers</a></li> </ul>