



Washington County, Oregon

**WOOD STOVE
EXCHANGE**

Let's clear the air.

Year Four Report

July 1, 2019 – June 30, 2020



View East into Washington County



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Introduction

In 2016, Washington County Department of Health and Human Services and the Office of Community Development partnered to develop the Washington County Wood Stove Exchange program (WSE) to provide grants (full cost) and rebates (\$1,500–\$3,500) to households that change to a cleaner heating source.

An Oregon DEQ survey of the Portland metro area determined that a major source of particulate matter (PM_{2.5} and PM₁₀) pollution in Washington County is older and uncertified wood stoves. Older wood stoves produce an excessive amount of residential wood smoke, which negatively affects air quality, the local environment and residents' health. Wood stove change-out programs have proven to be an effective approach to reducing particulate matter pollution, especially in winter months.

The Wood Stove Exchange program is designed to:

- Reduce particulate matter pollution, resulting in better air quality and a healthier community.
- Potentially improve indoor air quality in homes with older wood stoves, reducing the symptoms of asthma and other respiratory conditions.
- Avoid public health and economic consequences of violating the federal Clean Air Act (i.e., nonattainment designation in Washington County).

The program's goals are to serve up to 700 households, reduce wintertime occurrences of exceeding the national particulate matter standard, and reduce the annual average particulate matter concentrations.

These long-term outcomes require monitoring of particulates and pollutants over time to assess the effectiveness of the Wood Stove Exchange program.

In year four, the program reached 500 completed exchanges.

In 2019, the program saw an early ramp up of installs in the fall and into winter with some applicants from spring of 2019 taking action on exchanging their old devices. The program was on track to exchange 140-150 devices until the COVID-19 crisis arose. The resulting state of emergency and restrictions prompted a suspension of the program in late March. Home visits for initial assessments, contractor estimates and installs were halted, resulting in an overall reduction in completed projects this year. In year four, WSE received 149 applications, performed 95 initial assessments, and completed 107 exchanges.

Of those 107 completed exchanges, 65 were grants and 42 rebates.

Replacement options mix

Overall – 57 Pellet/Gas/Electric devices, 50 Wood stoves/inserts

Grant – 33 Pellet/Gas/Electric, 32 Wood stoves/insert

Rebate – 24 Pellet/Gas/Electric, 18 Wood stoves/inserts

Of the 500 completed exchanges, more than half of the participants continue to install new devices that use electric, gas or pellets (a lumber by-product). By offering electric, gas or pellet options, the program provides a greater reduction in wood smoke emissions than other wood stove change-out programs.

Installed new heat type	Completed	%
Pellet, Gas, Or Electric devices	270	54.0%
Wood stove or insert	230	46.0%

The average payout per completed project in the fourth year was \$3,724.

Leveraged incentives and contractor and manufacturer discounts for the first four years totals \$94,523

- Average leveraged dollars per replacement in year four = \$189 per project
- Current utility partners include the Energy Trust, NW Natural Gas, PGE, and Forest Grove Light & Power

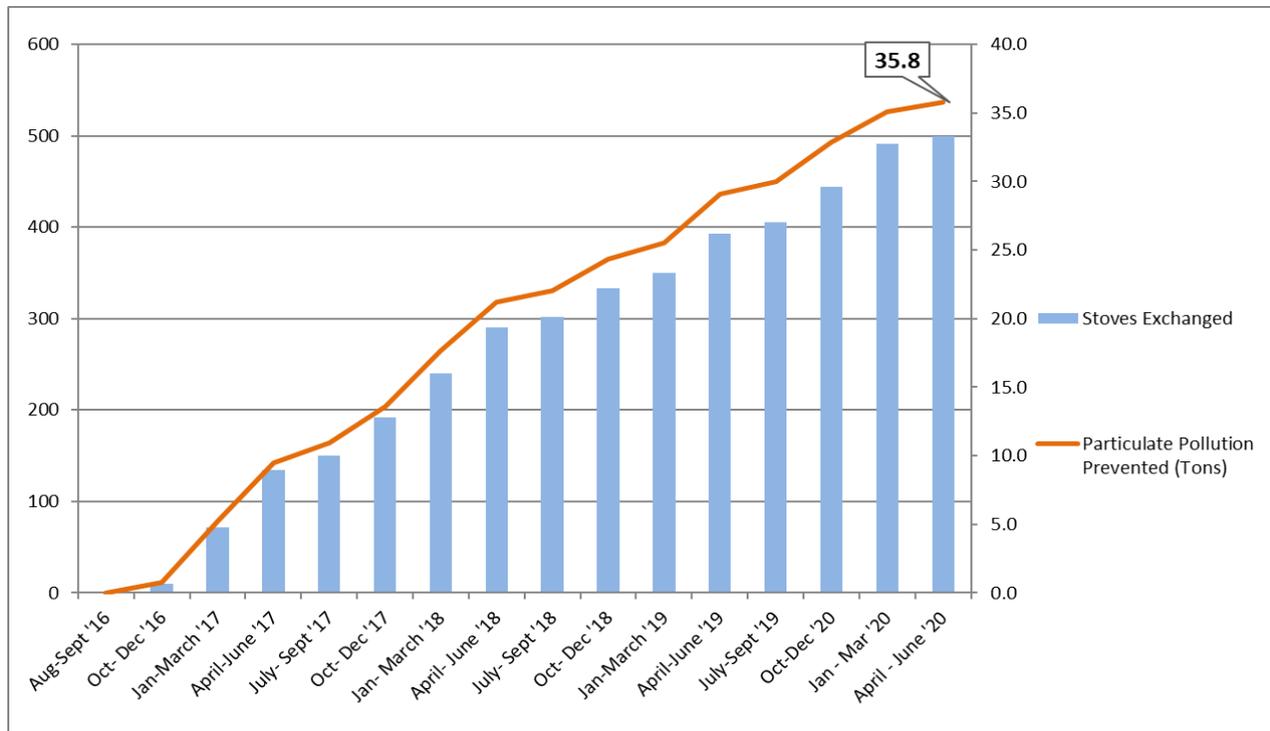
Reducing Emissions

After four full years, the prevented emissions of particulate matter, pollutants and gases from 500 replacements amount to over 240 tons. Using the EPA emissions calculator, the specifics are:

- 35.80 tons of PM_{2.5} and PM₁₀ emissions prevented
- Over 204 tons of other pollutants prevented
 - 130.9 tons of carbon monoxide
 - 36.6 tons of methane
 - 32.4 tons of volatile organic compounds
 - 4.6 tons of hazardous air pollutants

NOTE: See Appendix A for EPA emissions calculator chart in detail.

This chart demonstrates the correlation between stoves exchanged and particulate prevented.



Community Outreach Efforts

Outreach efforts began in July with presentations to partner organizations and a table at the county fair. These efforts brought an increase in the usual fall applications.

Outreach efforts from the program included a direct mail and a Facebook ad in October, and presentations to the Oregon Real Estate Inspector Association (OREIA), County CPO's, Orenco Elementary School, 350.org, and real estate offices. Other tabled events included National Night Out in August and QUAKE UP! In September.

The direct mail post card was sent to 20,000 homes built before 1992. Wood stoves manufactured before 1993 emit more than 10 times more particulate, gases, and pollutants than newer stoves, and thus houses built earlier than 1992 are more likely to use older stoves.

Word of mouth also continues to drive applications. Most survey responders say they get their information from friends, family and neighbors. The rack cards are an integral part of this portion of intake as three to five cards are given to each participant at the completion of their project. Postcards and newsletters still prove very effective, as do program contractors, the program website, and Facebook.

Facebook posts and ads continue to work well. Each year, the program includes a participant's stove and pet in one of the ads and this year was Pepper the pig. The "Likes" and "Shares" from these posts and ads expand the reach of program promotions.

Multiple cities provided funding, materials, and announcements through their networks and local media. Hillsboro included a scrolling PSA on the electronic boards in the Civic Center outdoor space and in their elevators. Banks, Gaston, Hillsboro, North Plains, and Tigard all provided information on their websites, newsletters, utility bills, offered program presentations, and displayed rack cards in multiple locations.

- Facebook posts and ads reached an estimated 60,080 community members
- The Wood Stove Exchange website at WoodStoveExchange.com had 4,074 page views

Staff continues to monitor the methods of outreach and identify the most impactful and cost-effective elements of the outreach strategy and make enhancements to the strategy when necessary.

Do you use an old (made in 1992 or earlier) wood stove for heat?
You may be able to get a new heating device (including gas, pellet, wood or electric) for reduced cost or even free!

This is an excellent program! I exchanged a wood stove for a gas stove and absolutely love it. Washington County and the contractor coordinated beautifully and their communication with me was spot on. Easiest installation I've ever experienced!

¡Este es un excelente programa! Cambié una estufa de leña por una estufa de gas y me encanto. El Condado de Washington y el contratista se coordinaron perfectamente y su comunicación conmigo fue perfecto. La instalación más fácil que he ¡experimentado!

Fueron increíbles y se aseguraron de que obtuviera toda la ayuda posible. Y no podría haber pedido una mejor compañía de instalación. Ellos fueron rápidos, minuciosos y muy amigables. Muchas gracias por ayudarnos con la nueva bomba de calor sin ductos, nos encanta.

They were awesome and made sure I got all the help I could. And I couldn't have asked for a better install company. They were fast, thorough and very friendly. Thank you so much for helping with the new ductless heat pump, we love it.

¿Utiliza una chimenea como calefacción (que sea hecha antes de 1992 o anterior)?
¿Usted pudiera obtener un nuevo dispositivo de calefacción (incluido de gas, granulado, madera o eléctrico) a un costo reducido o incluso gratis!

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WOOD STOVE EXCHANGE
Let's clean the air.



Washington County Health and Human Services
Government Organization [Learn More](#)

Washington County Health and Human Services
October 2, 2019 · 🌐

You'll want to hog the heat like Pepper when you trade in your old wood stove for a new one or a different heating device. A new wood stove uses less wood, provides great heat, and is safer for your health and the air. Other options include furnaces, heat pumps, and gas or pellet stoves. Rebates and full-cost replacements available to qualifying households. Visit www.WoodStoveExchange.com or call 503-846-4425.

Community Education Efforts

Outreach efforts always include education on the effects of air quality on health, clean burning methods, program options, and safety. Our program partners provide additional promotion of the program to residents, as well as inform the public about best practices for clean and dry wood burning, cleaner heating device options, and health and safety related to the program.

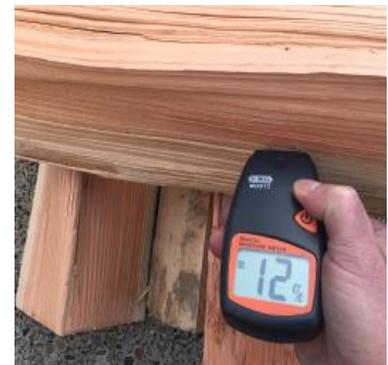
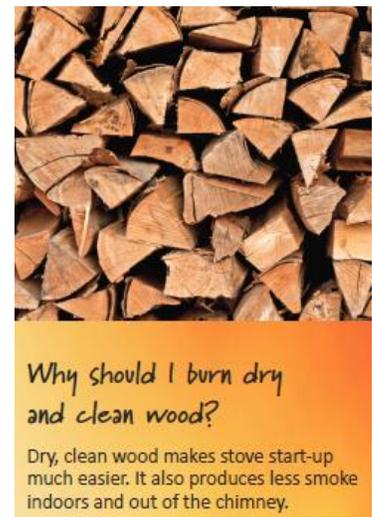
The program brochure developed last year, reaches more people with education on improving air quality and associated health benefits, encourages the use of clean wood burning practices, offers safety tips, and encourages participation in the Wood Stove Exchange.

The brochure goes into detail about overall air quality issues this program is working to address, and why wood stove owners should use only dry wood and not use starter material from garbage, chemically treated paper, mail including plastic, or color-printed items.

The brochure describes the benefits of using moisture meters, provided by the program to participants, to ensure dry wood is used to burn most efficiently and to produce less smoke.

It includes safety tips on maintaining a wood stove and keeping the chimney clear and safe every heating season.

Additionally, the brochure lists helpful resources such as Oregon Heat Smart, the OregonAir app, EPA Burnwise, and how to access air quality alerts at www.publicalerts.org.



Program Enhancement for Household Safety

The program continues to emphasize air quality and safety in the home. Over 40% of the homes assessed in the program do not have carbon monoxide (CO) monitors in the home. All Oregon contractors are required to install CO monitors, if not already present in the home, during any remodeling or repair of a home. In the course of the Wood Stove Exchange program process and dependent upon the participant's motivation for the exchange, timelines from the initial assessment by program staff to the installation of a new device, and a CO monitor if necessary, is regularly 2 to 6 months. If a CO monitor is not present in the home at the time of the initial assessment, the new process includes program staff installing a CO monitor at the initial assessment, rather than that household go without a CO monitor during that time.

Partnerships Make a Difference

This year the Wood Stove Exchange partnered with the Washington County Housing Rehabilitation program and Community Action of Washington County to make a significant difference for a Wood Stove Exchange program participant. This participant was unable to afford the bulk purchase of propane for the furnace and was relying on the old wood stove on the first floor to heat a 2-story home. This homeowner also had a physical difficulty exacerbated by going up and down the stairs many times during the day to load the stove. These three organizations and multiple contractors worked together to upgrade the electric system, weatherize the home, and install a new electric heat pump, for a total cost to the homeowner of only \$400.

Energy Trust Program Partner

The Energy Trust has requested to partner with the Wood Stove Exchange program and Housing Rehabilitation in their new Community Partner Funding program. This program offers increased incentives for customers of PGE and NW Natural Gas, in partnership with programs such as the WSE and Housing Rehabilitation. This program also offers Energy Saver Kits and LED light bulbs for eligible households in the program. The additional incentive dollars will likely allow the Housing Rehab program to include more repair and rehab elements to each project. Also, the additional incentive dollars used for each eligible project will extend the funding of the WSE and Housing Rehabilitation programs, possibly providing for more projects to be completed each year.

Reduced Emissions from New Wood Stoves

As of May 15, 2020, retailers (contractors) must sell and install new wood stoves that meet the EPA New Source Performance Standards (NSPS) for New Residential Wood Heaters (more stringent Step 2 emission standards). These new standards reduce the allowed tested emissions from 3.5 grams of particulate per hour (g/hr) to 2.5 g/hr. According to the main industry group, the Hearth, Patio & Barbeque Association (HPBA), EPA enforcement of wood heaters appeared to be somewhat low-priority for many years, long before the COVID-19 pandemic. The EPA is not expected to engage retailers who continue selling higher emissions Step 1 appliances. In addition, the HPBA has been reminding both manufacturers and retailers that even though the EPA may not employ at higher level enforcement, state and local authorities can still be active.

To ensure the Washington County Wood Stove Exchange program contractors install new wood stoves that meet the new Step 2 NSPS emissions levels, the contracts for 2020-2021 specifically state this requirement, and staff will enforce the installation of these new devices.

The new Step 2 devices will reduce the amount of pollutants emitted by new stoves even further. From each of the 50-60 new wood stoves installed within the program in subsequent years, the emissions will be reduced by 28%.

Annual Survey

Each year, program staff conduct a survey after the heating season to obtain post-change-out data. Due to the lower number of installs after January 2020, participants will not have significant time to evaluate the usage and effectiveness of their new device. This year the survey will be delayed until later in the year or combined with those surveyed next spring.

Year Four Report Summary

Awareness of the program remains strong. New materials were incorporated into the program, and additional efforts made to increase program participation proved effective. These types of efforts will be replicated and enhanced for the upcoming fall and winter promotions.

The educational brochure is now providing clean burning tips to many households, including those that use newer stoves, likely reducing emissions from those devices as well.

The 30 suspended projects and current waitlist of 60 applicants bodes well for a significant start to year five (when the program is approved to resume).

The major successes of the Wood Stove Exchange program in the fourth year include:

- 107 completed exchanges increased the total exchanges to date to 500
- Prevented emissions of over 240 tons of particulate matter, pollutants, and gases to date
- The new educational brochure on more efficient, less polluting burning methods, using dry wood, and safety tips, informs more wood burners with certified stoves how to reduce emissions even further
- Growing word-of-mouth about the program informs residents on cleaner burning methods and devices, and raises awareness of air quality issues
- Further expansion of partnerships continues to provide additional support and increase awareness of the program
- Enhanced, and new, targeted outreach efforts reached over 84,000 residents

The commitment of community organizations, business, industry, utilities, and funders continues to be vital to the success in implementing the program.

A growing, diverse mix of supporters and partners is essential to raising awareness and educating the public. Partners that have been instrumental in the program's progress include City of Hillsboro (project funder), Intel (project funder), the cities of Banks, Cornelius, Forest Grove, Gaston, North Plains, and Tigard, Washington County Community Action, and Oregon DEQ. Newer partners include Oregon Real Estate Inspectors Association (ORIEA), 350.org, and Remax.

NOTE: A comprehensive partner list is included in the Appendix of this report.

Appendix A

EPA Emissions Calculator Chart

Pollutant Emissions Prevented (tons)	TONS
PM2.5 + PM 10	35.80
Carbon Monoxide (CO)	130.93
Methane	36.62
Volatile Organic Compounds (VOCs)	32.44
Total HAPS (Hazardous Air Pollutants)	3.04
Sulfur Dioxide (SO2)	0.17
Nitrogen Oxides (NOX)	1.41
Total emissions prevented	240.42

from U.S. EPA Emissions Calculator

Partnering Organizations

- Alliance for Green Heat
- American Lung Association
- Boy Scouts of America
- breatheOregon
- Centro Cultural
- City of Beaverton
- City of Cornelius
- City of Forest Grove
- City of Gaston
- City of Hillsboro
- City of North Plains
- City of Tigard
- Community Action of Washington County
- Energy Trust of Oregon
- Environmental Protection Agency
- Habitat for Humanity
- Hillsboro Fire & Police Department
- Intel
- National Hearth, Patio and Barbecue Association
- NW Natural
- Neighbors for Clean Air
- Oregon Department of Energy
- Oregon Department of Environmental Quality
- Oregon Department of Forestry
- Oregon Health Authority
- Oregon Hearth, Patio and Barbecue Association
- Oregon Real Estate Inspectors Association
- Portland General Electric
- Remax
- 350.org
- Washington County Community Participation
- Washington County Solid Waste & Recycling
- WCCCA 911
- Westside Economic Alliance



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