



Wood Smoke in Oregon

Key Information

- Oregon communities have a long history of experiencing poor air quality because of particulate matter from wood burning.
- High levels of particulate matter can lead to violations of federal air quality standards, impacting the health and economic vitality of communities.
- The legislature has supported local-efforts to reduce wood smoke through education & outreach, public advisory systems and wood stove change out programs.

Oregon’s history of wood smoke and air quality

Oregon has a long history of addressing areas that have violated federal health standards due to wood smoke. The US Environmental Protection Agency designates areas that don’t meet the federal standards as “nonattainment.” Being designated as nonattainment is serious. The designation means that the air is unhealthy; triggers legal requirements to reduce pollution and meet standards; results in stricter requirements imposed on new and potentially existing industry; and can be a deterrent to attracting new business. Currently, Klamath Falls and Oakridge are designated as nonattainment for violating the federal daily fine particulate (PM_{2.5}) standard. Lakeview, Prineville, Medford, Eugene, Hillsboro, La Grande and Burns are at risk of exceeding federal fine particulate standards. Smoke from residential wood burning is almost always a key driver of high particulate matter. Situations can be made worse by topographical and meteorological conditions that lead to long periods of stagnant air.

Communities most impacted by wood smoke

Four communities in Oregon are currently under PM_{2.5} nonattainment plans or PM advance (preventative) plans. All four of those areas have median incomes significantly lower than the statewide median income (See Table 1). This pattern holds for the 11 communities in Oregon working to reduce wood smoke and/or PM emissions: all except one have median household incomes that are significantly lower than the statewide median income. A limited income constrains the ability for households to explore lower emitting home-heating options such as natural gas.

In addition to lower incomes, the same communities also experience health impacts associated with exposure to fine particulate matter at rates higher than the statewide average (See Table 1).



Data also show that within the Portland-metro area, some communities are impacted more than others. The Portland Air Toxics Assessment found that Hispanics/Latinos and Asian communities are disproportionately impacted by residential wood combustion¹.

Table 1. Income and Health Characteristics in areas under nonattainment of advance plans for PM2.5

County	Community/ies	Median* Household Income	Asthma (%)*		Chronic** Respiratory Disease (per 100,000)
			Unadjusted	Age-Adjusted	Age-adjusted
State of Oregon		\$53,270	10.7	10.9	41.5
Klamath	Klamath Falls	\$36,394	10.5	10.5	64.8
Lake	Lakeview	\$38,953	18.3	17.4	75.3
Lane	Oakridge; Eugene/Springfield	\$32,394	12.2	12.7	43.0
Crook	Prineville	\$31,669	12.0	12.5	51.7

*Median Household Income (2016)²

**Asthma (2012-2015)³

***Chronic Lower Respiratory Disease (2012-2016)⁴

Health impacts of particulate matter from residential wood combustion

Woodsmoke contains both fine particulate and toxic air pollutants that can pose health risks in communities all across Oregon. Health impacts associated with high levels of PM_{2.5} are documented through thousands of studies in the published literature. They include impaired lung development in children with lifelong, permanent impacts, and impaired cardiovascular and lung function in adults and seniors. These impacts are associated with high incidences of asthma, heart disease, high blood pressure, nervous system effect, cancer, and premature death. Recent studies are finding associations of ambient air pollution and PM air pollution with adverse birth outcomes such as stillbirths⁵ and low birth weights,⁶ diabetes, and neurodevelopment and cognitive function.⁷

¹ <https://www.oregon.gov/deq/air-toxics/Pages/PATS.aspx>

² https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml (Accessed 12/4/2018)

³ https://www.oregon.gov/oha/PH/DISEASES/CONDITIONS/CHRONICDISEASE/DATAREPORTS/Documents/datatable_s/ORCountyBRFSS_diseases.pdf (Accessed 12/3/2018)

⁴ <https://www.oregon.gov/OHA/PH/ABOUT/Documents/indicators/leadingcausesofdeath-county.pdf> (Accessed 12/3/2018)

⁵ E.g, Green, R. et al. 2015. "Association of stillbirth with ambient air pollution in a California cohort study." *Am. J. Epidemiology* 181 (11): 874-882.

⁶ E.g. Basu et al. 2004. "Comparing exposure metrics in the relationship between PM_{2.5} and birth weight in California." *J Exposure Anal and Env Epidemiology* 14, 391-396.

⁷ Kelly, F. J. and J. C. Fussell. 2015. "Air pollution and public health: emerging hazards and improved understanding of risk." *Environ Geochem Health* 37: 631-649.

Legislative Task Force on Wood Smoke Reduction

As directed by HB 3068 (2015), DEQ formed a diverse 22-member work group to study wood smoke in Oregon and develop recommendations for reducing emissions. The work group included both rural and urban community leaders and local government officials from areas where attainment of national air quality standards is a concern as well as representatives from industry, the conservation community, health organizations, local governments, pellet fuel interests, and other state agencies. A full list of workgroup members and recommendations can be found in the 2016 report, *Wood smoke in Oregon: House Bill 3068 – 2015 Final Report to Legislature*.⁸

The workgroup developed three priority recommendations for the legislature:

- 1) ***Funding for local communities to implement wood smoke reduction programs:*** Locally-run wood smoke reduction programs are critical to maintaining or achieving clean air. At a minimum, part-time programs are required for some former nonattainment communities under their federally approved clean air plans. Current state funding of approximately \$170,000 per biennium only covers part of the cost to implement minimal wood smoke reduction programs in seven communities. By increasing state funding for local wood smoke reduction by a range of \$550,000 - \$700,000 per biennium, each community could employ a full-time or part-time dedicated staff person to implement woodstove curtailment programs, expand education and outreach efforts, and administer woodstove change out programs.
- 2) ***Sustained funding for woodstove change out programs with special consideration given to serious nonattainment areas or those at risk of being declared serious nonattainment:*** There are approximately 150,000 uncertified stoves in the state. Oregon has a long, successful history of replacing woodstoves in certain communities, but money is sporadic and limited. Sustained funding is the only way to ensure communities have a consistent, reliable source of funding. An allocation in the range of \$3-\$5 million per biennium could target high risk communities and would support a meaningful level of effort to replace old, dirty woodstoves.
- 3) ***Increase education and outreach across the state on the health effects of excessive wood smoke:*** Increasing awareness of the wood smoke problem is an essential component to implementing effective reduction programs. If residents do not understand why reducing wood smoke is important, then needed or existing locally-based reduction programs could fail or be severely hindered. To date, limited state and local resources have resulted in limited outreach.

⁸ <https://www.oregon.gov/deq/FilterDocs/WoodsmokeOR.pdf>

Investments made in 2017 support local communities across Oregon

The Legislature and Oregon DEQ have long recognized that local communities understand the challenges of their area, and are best situated to craft effective wood smoke reduction programs specifically tailored for their residents. To that end, the legislature authorized \$250,000 in one-time funds to Oregon DEQ to support local-level wood smoke reduction demonstration projects. Oregon DEQ passed-through 100% of the funds to the following communities:

City of Oakridge	\$75,000
Implement resource development and program development activities identified in an Oregon Solutions wood smoke mitigation plan. This includes woodstove replacement, education and outreach, implementing a community firewood program, and recruitment of funding to continue on work identified in the mitigation plan.	
Washington County	\$75,000
Conduct an indoor and outdoor air quality monitoring campaign in households that are participating in the woodstove exchange program. Data generated from the study will help quantify the indoor air pollution exposure implications of woodstove exchange programs not only in Washington County but also for other programs in Oregon.	
City of Pendleton	\$31,960
Perform education and outreach in the community, focusing on opportunities in the schools, as well as to the larger community as a whole through the purchase of an electronic signboard to provide all types of air quality information in a proactive educational way.	
Harney County (Cities of Burns and Hines)	\$18,000
Develop a woodstove change out program, including public education and outreach and other activities.	
Klamath Falls Public Health Department	\$15,000
Support an existing wood smoke reduction program, including a mandatory residential wood heating and open burning curtailment program, a public education program, and other activities.	
City of La Grande	\$15,000
Perform education and outreach in the community, including school programs, woodstove curtailment programs, and a Christmas tree recycling program.	
Lane Regional Air Protection Agency	\$15,000
Expand the personal air monitoring network in Lane County and directly involve interested schools to host these small monitors. The expansion of the PurpleAir Lane County program and implementation of the Clean Air Kids project will increase awareness of wood smoke dangers and reduce wood burning in Lane County.	
City of Prineville	\$5,040
Provide a free yard debris day at two different locations in the City of Prineville.	

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