



Woodsmoke Air Pollution

Toxic chemicals in woodsmoke and their effects on neighborhoods

Portland has the second highest concentration of woodsmoke air pollution of any US city, according to the US Environmental Protection Agency (EPA). The EPA National Air Toxics Assessment 2011, released on December 2015, found that only Seattle had a worse urban woodsmoke problem. However, due to Portland's additional airborne industrial solvents, EPA found Portland ranked as the worst American city for respiratory distress. The only counties in the US that ranked worse than Portland for respiratory distress are two rural California counties with frequent exposure to forest fires.

Woodsmoke in the air is dangerous. The particulate matter contained in woodsmoke was named "carcinogenic to humans" by the World Health Organization in October 2014 based on 113 independent studies.

Health consequences from exposure to woodsmoke include:

- asthma
- cardiovascular disease
- chronic obstructive pulmonary disease
- premature death

Air pollution is expensive. Future generations have increased healthcare costs when an aging population has more lung ailments.

"There is no low threshold level to the health effects (including mortality) of small air pollution particles ... short-term exposure has been linked to increases in hospitalizations, emergency room visits and mortality."

— Mark Z. Jacobson, Director, Atmosphere and Energy Program, Stanford University

Portland's woodsmoke problem is due to inadequate government regulation. This isn't changing much - the Department of Environmental Quality's (DEQ) initial recommendations call for burning bio-bricks, made from compressed

sawdust, and a firewood exchange project which exchanges newly cut, wet wood for dried firewood. Although dried firewood offers far more heat for dramatically less pollution, this is not a solution.



These "Burn Wise" programs reduce air pollution but burning wood-based products continue to pollute the air. Offering tarps to cover homeowner wood piles and moisture meters to determine optimum dry firewood, as frequently suggested during the DEQ Woodsmoke Workgroup Roadshow, are unlikely to yield sufficient results. The best policy is cleaner burning alternatives, like natural gas, propane and electricity.

Wood stove replacement programs, such as those offered in Washington County, often offer cash incentives or rebates, like interest-free loans, to swap an old, inefficient wood-burning device for a new EPA certified stove, preferably natural gas. Pendleton, Oregon's Wood Stove Replacement Program leverages interest-free loans to residents seeking a cleaner home environment. Critical to



Pendleton's success has been the efforts of a dedicated Middle School teacher who has educated the community over the past 15 years on the hazards of residential wood burning.

Commercial restaurants are another source of woodsmoke. In April 2016, Applebee's restaurants decided to convert all 2,000 properties to wood-burning kitchens. Over the past few months, the company's franchisees have removed the traditional gas grills that have become an industry standard and replaced them with wood-fired grills burning seven days a week.

Portland currently has 59 restaurants burning wood or charcoal. Portland has more food carts per capita than any city in the world. Most food cart pods also have at least one food cart burning wood or charcoal. Portland has 30 food cart pods.

According to Multnomah Building Department, 385 restaurants in Portland have a Type I hood. A Type I hood is required by the County Building Department when a restaurant is likely to cause significant airborne oil particulate or smoke when cooking.

Solutions for Restaurant Woodsmoke

Restaurant smoke and oil particulate can be addressed using an electrostatic precipitator. These devices, mounted on a roof or in the exhaust hood, use an ionizer to give a positive charge to particulate. These particles are then collected on electrically charged aluminum plates. Restaurants such as Applebee's, Pizza Hut, P.F. Chang's,

Kentucky Fried Chicken, and McDonald's have installed such devices at some locations, presumably where they are required by local regulation. Another option to reduce smoke is a catalytic oxidizer, which is an emissions control device that burns or oxidizes smoke and gases from the cooking process into carbon dioxide and water. Catalytic oxidizers are similar to catalytic

converters, the air pollution prevention devices required in cars. Using natural gas instead of wood or charcoal is a far more cost-effective option.

New York City Department of Environmental Protection proposed a city-wide rule on May 18th, 2016 requiring an electrostatic precipitator or catalytic oxidizer in restaurants. The rule will affect char-broilers that cook more than 875 pounds of meat per week. The New York City Department of Health and Mental Hygiene found that throughout the five boroughs of New York, 1,400 tons of airborne particulate are emitted annually from commercial char-broilers. The agency found that if these commercial char-broilers had pollution control devices installed, 350 deaths of nearby residents would be prevented annually.

A roof-mounted Smog-Hog® electrostatic precipitator large enough for a McDonalds restaurant costs about \$37,000. Installation costs \$6-7,000 if ducts, hot water lines, and electrical line are already installed. These are sold in Oregon through Air Right Products and Services LLC.

Solutions for Residential Woodsmoke

Beginning November 2016, Bay Area Air Quality Management District (BAAQMD), banned wood-burning devices from being installed in new home in the Bay Area, most remodels are included in this restriction. The City of Berkeley banned wood-burning devices in new construction back in 2008. South Coast Air Quality Management District also banned wood-burning devices in new houses and remodels in 2008 for all or Orange County, urban Los Angeles, Riverside, and San Bernardino counties. Portland, Oregon, which has a worse woodsmoke problem than the Bay Area or Los Angeles, according to the most recent EPA National Air Toxics Assessment, should do the same immediately.



Oregon should customize and adopt California's Model Wood Smoke Ordinance, which includes several options for reducing localized woodsmoke. These include adding new Residential Fireplace Disclosures to Real Estate and Rental Agreements. BAAQMD's Rule 445, effective November 2016, requires anyone, selling, renting, or leasing a property in the Bay Area to disclose the potential health impacts from air pollution caused by burning wood.

Replicate Oregon's Best Practices

Recognizing the success of Pendleton's Wood Stove Replacement Program, allocate multi-year funds for interest-free loans and grants to incentivize

homeowners to swap old wood stoves for new, clean fuel alternatives. This fall Washington County begins a comprehensive wood stove mitigation project.

Pendleton has been leveraging an effective educational program for 15 years and is seeing good results accordingly. One advantage of committing to an educational component as part of the total solution is that we can apply the educational materials statewide even if budgets for stove removal only target parts of the state. Modern media can be distributed widely for relatively low cost and a statewide campaign would ease the introduction of more widely-focused wood stove replacement efforts.

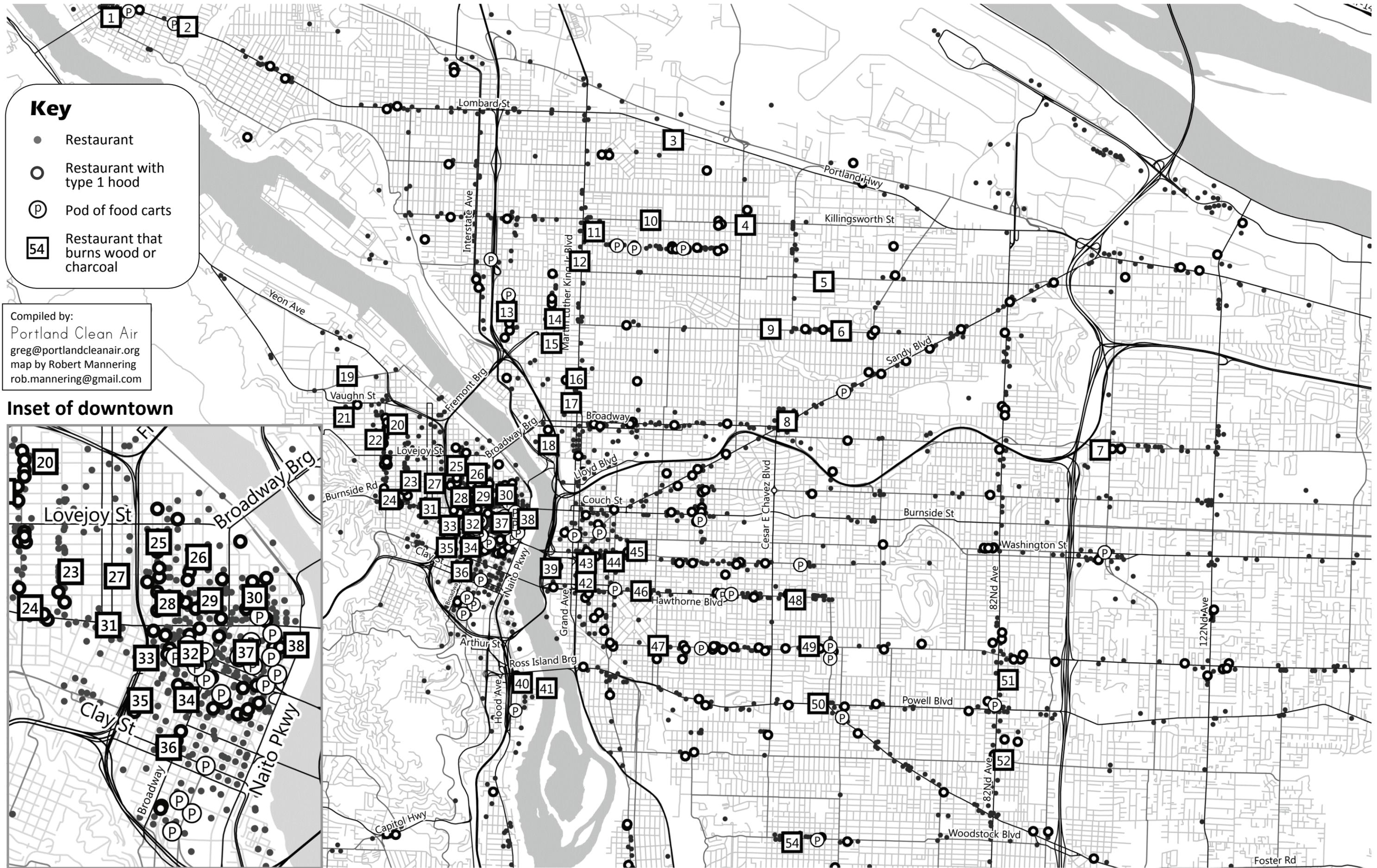
Be A Good Neighbor

At the state level, we need to provide protections from wood-burning neighbors. Today anyone can burn with no regard for the impact on their neighbors. This must be changed so that backyard fire pits, beach bonfires, smokers, and recreational burning are mitigated. Washington State protects an individual's rights: "It is always illegal to smoke out your neighbor. Everyone has a right to breathe clean air. If smoke from your fire is affecting your neighbors, it is considered a nuisance and subject to enforcement action."

Oregon has no such nuisance action.

No Short Term Cures

There will be costs as Oregonians convert to healthier, cleaner fuels to heat their homes. Making a science- and health-based plan must include education, woodstove replacement, no burn days, and restaurant rooftop filters to bring Portland in line with other US cities. The Multnomah Board of County Commissioners oversees the Multnomah County Health Department. The Commissioners can direct the Health Department to create air quality ordinances to protect us from cancer-causing emissions in our neighborhoods.

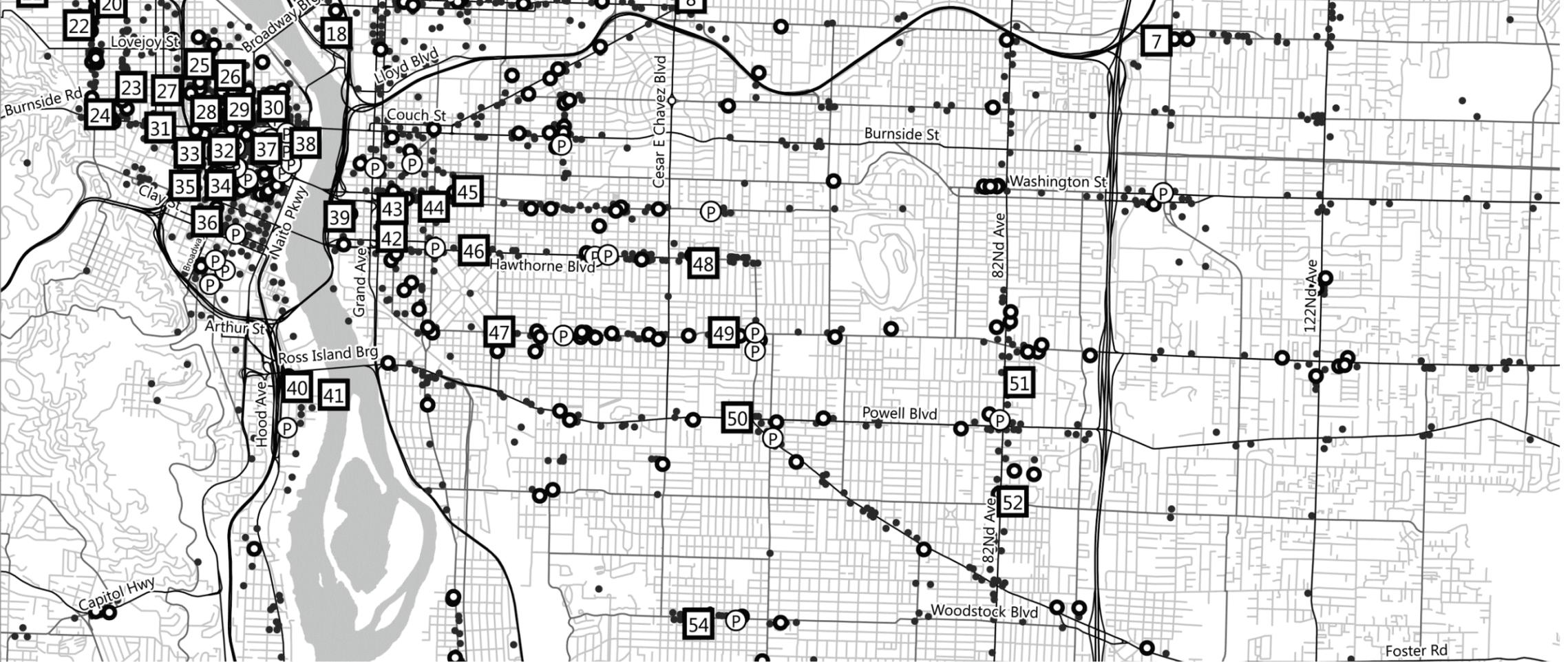
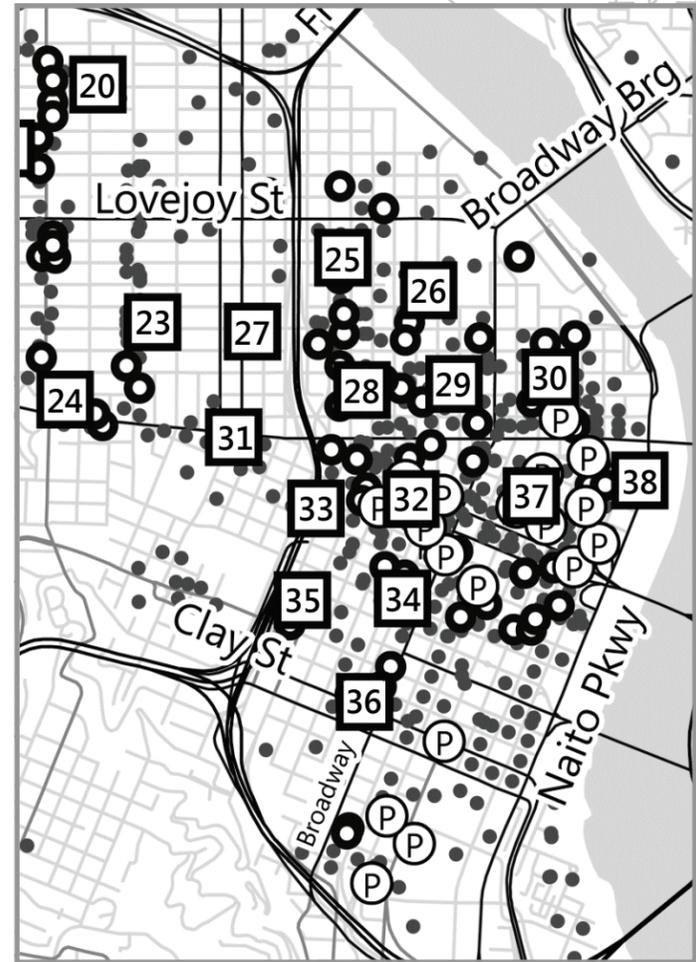


Key

- Restaurant
- Restaurant with type 1 hood
- Ⓟ Pod of food carts
- 54 Restaurant that burns wood or charcoal

Compiled by:
 Portland Clean Air
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 map by Robert Mannering
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Inset of downtown



Map Key from preceding page

1	Girasole Restaurant & bar	8438 N Lombard St
2	Big Kahuna's	7123 N Lombard St
3	My Brothers Famous Bar B Q	2104 NE Morgan St
4	Cannon's Rib Express	5410 NE 33rd Ave
5	A Little Bit of Smoke	4434 NE 47th Ave
6	Bottles	5015 NE Fremont St
7	Applebees	10004 NE Halsey St
8	Reo's Ribs	4211 NE Sandy Blvd
9	Fire and Stone Restaurant	3707 NE Fremont St
10	Podnah's Pit Barbecue	1625 NE Killingsworth St
11	Old Town Brewing	5201 NE MLK Jr Blvd
12	Matt's BBQ	4709 NE MLK Jr Blvd
13	Verde Cocina	3746 N Mississippi Ave
14	Life Of Pie	3632 N Williams Ave
15	The People's Pig	3217 N Williams Ave
16	Russell Street Bat-B-Que	325 NE Russell St
17	Ox	2225 NE MLK Jr Blvd
18	Pines 300 Levy Bar	1 N Center Court St
19	Meriwether's Restaurant	2601 NW Vaughn St
20	Southland Whiskey Kitchen	1422 NW 23rd Ave
21	Slabtown Ribs & BBQ	2606 NW Vaughn St
22	Siri Indian Cuisine	1323 NW 23rd Ave
23	Smokehouse 21	413 NW 21st Ave
24	Elephants Delicatessen	115 NW 22nd Ave
25	Oba	555 NW 12th Ave
26	Zaatar	1037 NW Flanders St
27	Oven and Shaker	1134 NW Everett St
28	Piattino	1140 NW Everett St
29	Dechutes Brewery	210 NW 11th Ave
30	Taqueria Los Gorditos	922 NW Davis St
31	McMenamins Ringlers Pub	1332 W Burnside St
32	Zeus Café	303 SW 12th Ave
33	Multnomah Whiskey Library	1124 SW Alder St
34	India House	1038 SW Morrison St
35	East India Co Grill & Bar	821 SW 11th Ave
36	Raven and Rose	1331 SW Broadway
37	Imperial	410 SW Broadway
38	Shalom Y'All	126 SW 2nd Ave
39	Clark Lewis Restaurant	1001 SE Water Ave
40	The Hot Box BBQ	3121 SW Moody Ave
41	Ash Woodfired Pizza	3121 SW Moody Ave
42	Renata	626 SE Main St
43	Afuri	923 SE 7th Ave
44	Nostrana	1401 SE Morrison St
45	Smokehouse Tavern	1401 SE Morrison St
46	Devils Dill Sandwiches	1711 SE Hawthorne Blvd
47	Garden Bar	2045 SE Division St
48	Ranger Station	4260 SE Hawthorne Blvd
49	Woodsmen Tavern	4537 SE Division St
50	Thai BBQ	4811 SE Powell Blvd
51	So Kong Dong Tofu & BBQ	2850 SE 82nd Ave
52	L&L	4328 SE 82nd Ave
53	Da Fat Boyz BBQ	8145 SE 82nd Ave
54	Double Mountain Taproom	4336 SE Woodstock

Portland Clean Air obtained a list of every restaurant in Multnomah County from the County Health Department. Next we made an information request to the County Building Department for a list of every restaurant with a Type 1 hood. Type 1 hoods are required for a restaurant to burn wood or charcoal indoors. Then we called 385 restaurants with type 1 hoods and asked if they burn wood or charcoal. Some restaurants also burn wood or charcoal outside of their restaurant. To find these we searched Google for "wood," "BBQ," or "ribs." Finally we walked the city and looked for woodsmoke, talked to area restaurants in person, and looked at menus.

Food Pods generally have one or more BBQ or wood-fired pizza food carts that burn wood or charcoal. We considered calling all 800 food carts to ask but on a test run we found half of the food carts did not answer their phones. We visited a number of food cart pods and observed it is usually one wood or charcoal burner per pod.

New York City is about to require restaurants that cook 875 pounds of meat per meat to install a stack filter, either a electrostatic precipitator or catalytic oxidizer. Such devices remove 99.9% of oil particulate as well as smoke. Portland should do the same.

The map on the preceding page shows that wood and charcoal burning restaurants are concentrated in the downtown area as well as inner SE and NE Portland. Population density, which is progressive by preventing sprawl, requires adaptation. Pollution control devices, like noise ordinances, and parking restrictions are required in a dense urban area.

What You Can Do

Communicate with your County Commissioner, and the County Chair

- ➔ Put a reminder in your calendar: once a month, write a letter or email, or make a phone call.
- Tell the Commissioners that having air quality ordinances on woodsmoke is important to you.
- Repeated communication keeps the issue alive, and begins to establish a relationship.

How will that help?

- We are lucky in Multnomah – our Board of County Commissioners wants to know what our priorities are!
- Making this issue a priority for our Commissioners is an achievable goal.
- This issue fits within our county Mission Statement like fingers fit in a glove.

How this fits within Multnomah county's values

Excerpts from Multnomah County Mission, Vision, Values, June 2, 2011:

- Social Justice – Promote equity in the community, include people who have not been included in the past, help those who need help.
- Health – Support a healthy community from birth through adulthood.
- Stewardship – Demonstrate tangible, cost effective results from our work; decisions are clear, evidence-based, and fair.
- Creativity and Innovation – Think in new ways, value new opinions and recognize ingenuity and resourcefulness.
- Sustainability- Focus on the long-term environmental and economic well being of the community.

You may ask – who is my County Commissioner?

There are 5 Commissioners – one for each of 4 Districts, and a County Chair. To determine which District you live in:

- Your county district is printed on your voter registration card after CO. COMM.
- You can find your residence on this map:<https://multco.us/ds3/district-map>
- When new Commissioners are sworn in in January 2017, check for their names here: <https://multco.us/board>

Deborah Kafoury Chair,
503-988-3308 mult.chair@multco.us.
Term ends: December 2018

Jules Bailey
District 1, 503-988-5220
district1@multco.us.
Term ends: December 2016

Loretta Smith
District 2, 503-988-5219
district2@multco.us.
Term ends: December 2018

Judy Shiprack
District 3, 503-988-5217
district2@multco.us,
Term ends: December 2016

Diane McKeel
District 4, 503-988-5213
district4@multco.us,
Term ends: December 2016

Mailing address:
501 SE Hawthorne Blvd, Suite 600,
Portland, OR 97214

Tips for communicating:

1. State your name, address and phone number.
2. State your connection to the issue – for example, “I live one mile from Columbia Blvd's industrial strip.”
3. Firmly, but politely, state your concerns for yourself, your loved ones, and your neighborhood.
4. If it feels like a good fit, reference one or more of the county's values, from the County Mission Statement.
5. Make a clear request, for example, “The Board of County Commissioners should direct the Health Department to create air quality ordinances that limit cancer causing emissions near residential neighborhoods.”
6. Stay up on the news about Portland's toxic air issues.

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