LRAPA
Lane Regional Air Protection Agency

Lane Regional Air Protection Agency

2010 Annual Report

Table of Contents

Letter from the Director

As predicted in last year's Lane Regional Air Protection Agency's (LRAPA) annual report, 2010 was a great year for air quality! Let me begin with the 2010 air quality results.

Air quality in 2010 throughout the Lane County network was the best recorded since air monitoring for the various air pollutants was first initiated in the 1970s and 1980s. The Particulate Matter (PM_{10} and $PM_{2.5}$), Ozone and Carbon Monoxide levels measured in Eugene, Springfield, Cottage Grove and Oakridge were all at record low levels.

For example, using 1985-1987 as a baseline, the air pollution levels in Eugene-Springfield during 2008-2010 were:

- 65% lower PM_{10} on worst winter days and 60% lower PM_{10} as an annual average;
- 25% lower Ozone on hot summer afternoons; and
- 80% lower Carbon Monoxide in the area of highest traffic congestion.

Progress continued in Oakridge to meet the more protective $PM_{2.5}$ standard adopted by the U.S. Environmental Protection Agency in 2006. Compared to the initial Oakridge baseline of 1989-1991, the measured Oakridge $PM_{2.5}$ levels in 2008-2010 were:

- 79% lower on worst winter days, well below the pre-2006 standard, but still about 10-15% above the new, more protective 24-hour health standard;
- Well below the annual-average $PM_{2.5}$ standard.

The air toxics of most concern continued to improve. Benzene and formaldehyde concentrations decreased by 50% between 2002 and 2008, and the improvement trends continued in 2010.

In April 2010, a second air toxics monitoring site was added at the Petersen Park in west Eugene. This will allow for at least a 12-month air toxics comparison between the Amazon Park site in south Eugene and the Petersen Park site.

What is happening to ensure that these air quality improvements continue?

The HeatSmart program, passed by the Oregon Legislature in 2009, took effect in August 2010. HeatSmart contains several key elements that will be implemented statewide to reduce emissions from residential wood heating devices and improve winter time air quality. The program requires the removal of uncertified woodstoves when selling a home, allows the state to set emission standards for new stoves, and prohibits the burning of garbage and illegal materials inside homes. Oregon is the first state in the country to require the removal of uncertified stoves upon sale of a home.

The summer of 2010 was the first to benefit from the Legislature's 2009 ban on field burning. LRAPA received hundreds of complaints in recent years (as many as 576 in the summer of 2006) prior to the ban. LRAPA received only 24 field burning complaints in 2009 as the acreage burned was sharply reduced, and none in 2010 after the ban was fully implemented.

In 2009, the LRAPA Board adopted new rules to reduce air toxics emissions from gasoline stations and other area sources of Hazardous Air Pollutants. LRAPA staff issued industrial permits with these new requirements during 2010, and full compliance is required by no later than January 10, 2011.

LRAPA was successful in obtaining $420,000 in funding during 2010 to continue the Warm Homes project in Oakridge/Westfir. The funding replaces old, uncertified wood stoves with clean, energy efficient heating systems for residents. The program is also providing a healthy boost to the local economy as heating system dealers in Eugene and Springfield are doing the work and seeing an increase in sales.

What else is happening in recent months to improve air quality in Lane County?

LRAPA expanded public outreach in 2010 through air quality forums and informational meetings. LRAPA also participated in the City of Eugene's Climate Action Plan meetings, contributed to the Eugene Health Impact Assessment, and continued its many other programs to reduce air pollution from businesses, residences and vehicles.

What new developments do we expect to see during 2011?

The U.S. Environmental Protection Agency continues its reconsideration of the ozone and several other ambient air quality health standards in consultation with the Clean Air Scientific Advisory Committee, a non-EPA group of scientific and medical professionals appointed by the U.S. Congress to review ongoing health studies and advise EPA on such matters. EPA is expected to take action to tighten the ozone standard by July 29, 2011. EPA is also expected to adopt new air toxics rules for boilers and incinerators in 2011 that will affect many facilities in Lane County over the next three years.

During 2011, new air toxics rules will take effect for auto body shops and some other area sources of Hazardous Air Pollutants. LRAPA will also be considering New Source Review rules for greenhouse gases and $PM_{2.5}$. LRAPA will be working with Oakridge during 2011-2012 to finalize the $PM_{2.5}$ strategy outlining how the community will continue to reduce $PM_{2.5}$ levels to meet the new, more protective health standards by 2014.

Yes, 2010 was a great year and a very busy year for air quality. I look forward to an even better year in 2011!

Merlyn Hough

Vision

Community partners working together to ensure clean air for everyone

Mission

To protect public health, quality of life and the environment as a leader and advocate for the continuous improvement of air quality in Lane County

Goals

Air Quality

Our goal is to ensure healthful air quality for all Lane County citizens.

Involvement

Our goal is to inform and involve citizens and businesses in improving air quality.

Service

Our goal is to serve citizens and other stakeholders fairly, courteously, and in a timely manner.

Partnerships

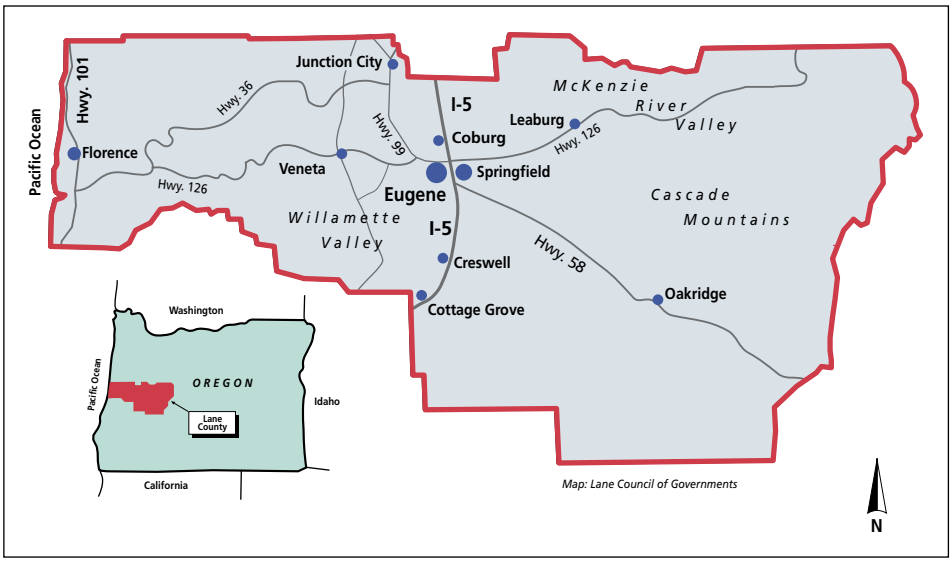
Our goal is to work with our partners to leverage resources to make a difference in local air quality.

LRAPA
Lane Regional Air Protection Agency

Lane County, Oregon The Setting, Topography and Meteorology

The Setting: The Willamette Valley

Lane County is located at the southern end of the Willamette Valley and stretches from the Cascade Mountains to the Pacific Ocean. The county is approximately the same size as the state of Connecticut. The county's population is around 351,000 or just over 10 percent of the state's total population. The incorporated cities of Eugene and Springfield comprise the second largest urban area in Oregon with an estimated 199,990 residents. (U.S. Census)



Topography and Meteorology

Lane County has many distinct geographic features and multiple airsheds. The Willamette Valley is framed to the west by the Coast Range mountains and the east by the Cascade mountains. There are distinct climate differences between the Willamette Valley, coastal areas, and the Cascades. The temperate coastal climate is contrasted by the snowy Cascades. The Willamette Valley experiences cool, wet winters and hot, dry summers.

Air quality in most of Lane County is very good, with Eugene/Springfield averaging 323 days a year in the "green" category of the air quality index. However, some of the inland areas and mountain valleys experience periods of air stagnation. When this happens during winter months, cold air often becomes trapped near the valley floor with slightly warmer air aloft, creating temperature inversion conditions. The combination of cold, stagnant air and restricted ventilation causes air pollutants to become trapped near the ground. Wintertime temperature inversions contribute to high particulate levels. Stagnant periods in the summertime contribute to increases in ozone levels, causing the local air quality to deteriorate.

Periodic episodes of stagnant air cause pollution to build up in the Willamette Valley. This photo, taken in mid-winter, shows a poor air quality day with a heavy brown haze over Eugene and Springfield. Smoke from home wood heating is the major contributor to poor air quality during the colder months.

LRAPA Organization

2010 LRAPA Board of Directors*

The LRAPA Board of Directors is a nine-member board that meets monthly to establish policy and adopt agency regulations. Board members are appointed by their respective city councils and the Lane County Board of Commissioners. Membership includes four representatives from the City of Eugene, one each from Lane County and the City of Springfield, one from either the City of Cottage Grove or City of Oakridge, and two at-large representatives appointed by the board. Cities with more than one member may appoint the second or third member from the public within their jurisdictions.

** This report reflects the 2010 Board members. Changes in memberships have occurred since January 2011.*

Glenn Fortune, Chair
6 yrs. service
Oakridge City Council
(Oakridge/CottageGrove)

David Monk, Vice Chair
6 yrs. service
Eugene City Council
Appointment

Bill Brommelsiek
1 yr. service
At-Large Appointment

Brian Forge
2 yrs. service
At-large General Lane County

Drew Johnson
6 yrs. service
Eugene City Council
Appointment

Scott Lucas
1 yr. service
Eugene City Council
Appointment

Andrea Ortiz
3 yrs. service
Eugene City Council

Dave Ralston
10 yrs. service
Springfield City Council

Faye Stewart
6 yrs. service
Lane County Board of
Commissioners

LRAPA Organization

2010 LRAPA Citizens Advisory Committee*

The LRAPA Citizens Advisory Committee is comprised of local citizens representing specific areas of interest, including agriculture, community planning, fire suppression, industry, public health, and the general public. The committee is called upon to advise the board and staff on a variety of air quality issues, rules, and policies.

Russ Ayers - 11 yrs. service
Representing General Public
Diana Bollenbaugh - 2 yrs. service
Representing Industry
Maurie Denner - 6 yrs. service
Representing General Public
Larry Dunlap - 12 yrs. service
Representing Public Health
Paul Engelking - 13 yrs. service
Representing General Public
Chuck Gottfried - 2 yrs. service
Representing Agriculture
Don Holkestad -2 yrs. service
Representing General Public
Earl Koenig - 3 yrs. service — Chair
Representing General Public
Hugh Larkin II - 4 yrs. service
Representing General Public
Amy Peccia - 4 yrs. service — Vice-Chair
Representing Industry
Link Smith - 2 yrs. service
Representing Fire Suppression
John Tamulonis - 13 yrs. service
Representing Planning
Gary Vander Meer - 8 yrs. service
Representing General Public

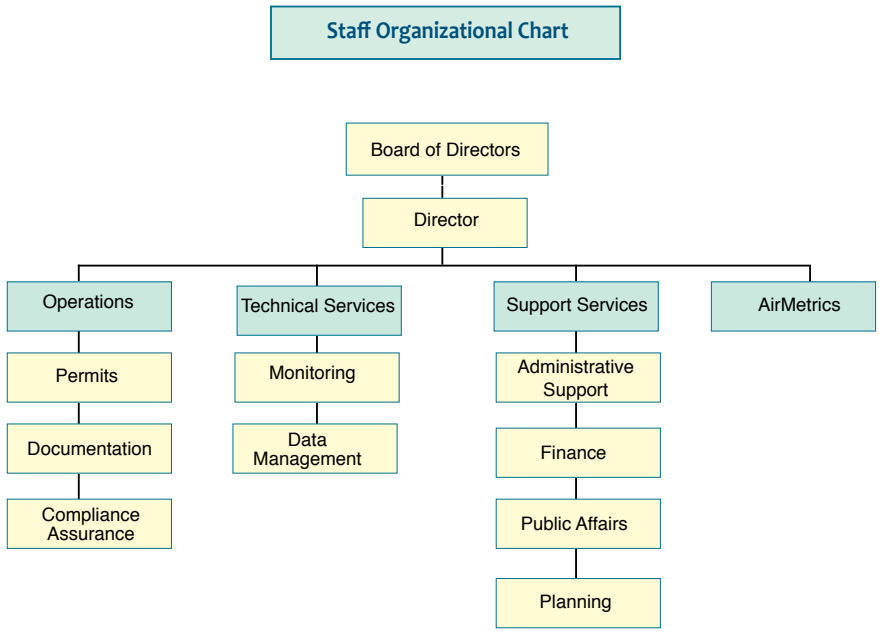
2010 LRAPA Budget Committee*

The LRAPA Budget Committee consists of the LRAPA Board of Directors plus nine board-appointed citizens. The committee meets yearly to review and approve LRAPA's budget request. The nine board-appointed citizens include:

Don Hampton, Chair (Oakridge/ Cottage Grove)
John Ahlen (Eugene)
Dick Beers (Eugene)
Bob Brew (Springfield)
Landa Gillette (at-large)
Robert Houston (at-large)
Earl Koenig (Eugene)
Juan Carlos Valle (Eugene)
Gary Williams (Lane County)

** This report reflects the 2010 Board and committee members. Changes in memberships have occurred since January 2011.*

The board of directors appoints the director of the agency, who has overall authority to appoint and direct the LRAPA staff. The director makes policy recommendations to the board and is responsible for implementing board decisions.



LRAPA Organization

The LRAPA staff consists of 19 professional and technical employees who perform permitting, enforcement, planning, clerical, financial, enterprise, and public information and outreach programs.

Operations: Permitting, Compliance and Enforcement

Permitting - establishes conditions under which regulated industrial sources may operate.

Compliance/Enforcement - assures permitted sources comply with permitting requirements; enforces all agency rules and regulations through education and enforcement actions.

Technical Services: Monitoring and Data Management

Monitoring- collects ambient air quality data and provides quality assurance.

Data Management - determines whether ambient air quality standards are being met, and provides technical assistance for program priorities and planning.

Administration and Planning: Planning, Finance and Human Resources

Air Quality Planning - identifies present and potential future air quality problems and develops appropriate control strategies.

Finance - provides the agency with full financial management services.

Human Resources - manages agency personnel matters.

Public Information: Public Affairs Program

Public Information/Education - works with all sections of the agency to promote public understanding, education and awareness of the agency and local air quality issues.

Airmetrics

Manufactures and markets portable air-sampling devices and services.

LRAPA Phone Numbers

Business Office.....541-736-1056

Home Wood Heating Advisory Line.....541-746-HEAT

Backyard Burning Advisory Line.....541-726-3976

Florence Backyard Burning Advisory Line.....541-997-1757

24-Hour Complaint Line.....541-726-1930

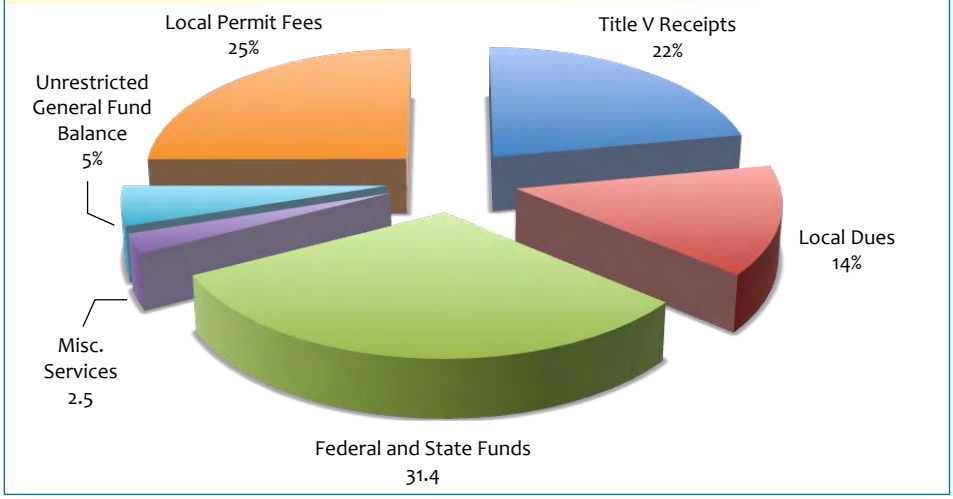
Toll-Free Line.....1-877-285-7272

Website ..... www.lrapa.org

E-mail ..... lrapa@lrapa.org

Funding/Budget

Funding Resources FY 2010 — $2,401,370



LRAPA's funding sources include: local contributions (Lane County and the cities of Eugene, Springfield, Oakridge, and Cottage Grove); state and federal grants; industrial and open burning permit fees; asbestos demolition/renovation fees; Airmetrics sales and services; and miscellaneous contracts.

Program Summaries

Operations

Permitting

LRAPA-issued operating permits are required for a number of industries and businesses in Lane County. Of the 273 permitted sources in Lane County, 254 have basic Air Contaminant Discharge Permits (ACDP), and 19 hold Title V Federal Operating Permits. Permits for gasoline dispensing facilities were issued to 96 businesses.

ACDPs are issued to all industries required by LRAPA rules to obtain permits, except those "major" sources subject to federal operating permit requirements. Industrial sources are classified as "major" sources if they have the potential to emit more than 100 tons of any criteria pollutant (see pg. 19), or 10 tons or more of any single hazardous air pollutant (HAP) or 25 tons or more of any combination of HAPs on an annual basis.

Industrial source categories in Lane County which require operating permits include: food and agriculture, wood products manufacturing, chemical products manufacturing, mineral products manufacturing, metal products manufacturing; waste treatment, fuel burning, fuel transfer operations, coating operations, sources of toxic air pollutants, and any source emitting more than 10 tons per year of any combination of criteria pollutants.

2010 Permitting Summary –

Permits issued or renewed.....135
Permits modified 29
Industries inspected.....61

Note: Some industries have multiple inspections in a year.

Enforcement

LRAPA initiates enforcement actions in instances of excessive industrial air pollution, illegal open burning activities, improper handling or transport of asbestos-containing materials, and failure to obtain necessary air pollution permits prior to construction or operation.

Typically, the dollar amount of penalties collected annually does not strictly reflect the penalties assessed or settled during the year, due to pending cases and collections received on previous years' penalties.

LRAPA collected $27,941 in penalties during 2010. All penalties collected are forwarded to the Lane County general fund; however, attorney fees associated with contested cases are deducted first. In 2010, LRAPA issued 57 administrative warnings/notices on non-compliance and 39 notices of violations with civil penalties.

Asbestos Abatement

Remodeling and renovation projects in Lane County that include asbestos abatement must register with LRAPA. In 2010, LRAPA documented 370 notifications of asbestos abatement projects. LRAPA inspected 107, or 29 percent, of all projects. Eight violations were found. By category, the total number of abatement projects included:

Residential.....212
Schools.....70
Business/Industry 69
Other 19

Permitting and compliance staff work closely together to ensure industrial sources are aware of current requirements and rule changes.

Enforcement Actions 2000 - 2010

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Administrative warnings and Notices of non-compliance	118	102	129	103	52	55	51	48	57	37	57
Notices of violation with civil penalty	80	64	72	67	31	39	33	47	36	28	39

Total civil penalties collected $	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	18,070	49,437	97,584	49,590	31,097	14,700	16,404	46,050	46, 526	53,786	27,941

Program Summaries

Complaint Response

It is LRAPA's policy to investigate in a timely manner every complaint called into the agency. Staff investigated approximately 734 formal complaints in 2010. LRAPA also receives hundreds of phone inquiries that do not result in formal complaints being filed. Responsibility for LRAPA's comprehensive complaint response program is shared by staff in the operations and administrative divisions.

Overall, complaints decreased in 2010 due to the changes in the Department of Agriculture's field burning program. Summer time field burning is now limited to the far northern areas of Linn County and parts of Marion County.

Only nine field burning complaints were received in 2010 and they were forwarded to the Oregon Department of Agriculture.

The number of complaints, and percent changes from the previous year are as follows by category:

- Dust ..... +39%
- General air quality ..... -91%
- Home wood-heating ..... -48%
- Field Burning ..... -73
- Industry ..... -2%
- Miscellaneous ..... +21%
- Open burning ..... -3%
- Slash burning ..... +40%
- Unknown ..... -52%
- **Total complaints ..... -10%**

Over the last three years, LRAPA has received 838 formal complaints regarding backyard burning. Burning illegal materials is a violation of LRAPA's rules and subject to fines.

LRAPA Complaints 2000 - 2010

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Dust	17	27	25	15	17	35	33	6	21	21	34
Field burning	198	199	294	96	103	330	576	341	101	24	9
General Air Quality	4	4	4	6	2	8	7	63	14	21	2
Home Wood Heating	37	58	73	71	82	80	89	82	130	113	62
Industry	492	689	168	530	880	768	465	327	231	270	265
Miscellaneous	46	44	34	32	66	75	95	109	137	61	77
Open Burning	91	103	142	90	163	179	169	390	293	277	268
Slash Burning	35	18	23	9	8	31	41	33	25	3	5
Unknown	49	61	65	103	110	97	105	124	59	25	12
Total	**1060**	**1301**	**950**	**1056**	**1525**	**1719**	**1643**	**1496**	**1011**	**815**	**734**

Dust from late summer agricultural operations contributes to poor air quality and obscures views.

LRAPA enforcement staff investigate complaints about emissions from industrial operations.

Program Summaries

Technical Services

Monitoring and Data Management

LRAPA's monitoring network consists of 45 sets of monitoring equipment at 9 sites in Lane County including Eugene, Springfield, Saginaw, Cottage Grove, and Oakridge. LRAPA's network samples for particulate matter, ozone, carbon monoxide, and hazardous air pollutants. Approximately 339,480 hours of pollutant-related and meteorological data were collected last year.

In April 2010, a second air toxics monitor was sited in Petersen Park. The site at Petersen Park in west Eugene was chosen so the agency could characterize air toxics of concern in an area with a good mix of mobile and industrial sources. Monitoring results will complement historical data from the site in Amazon Park.

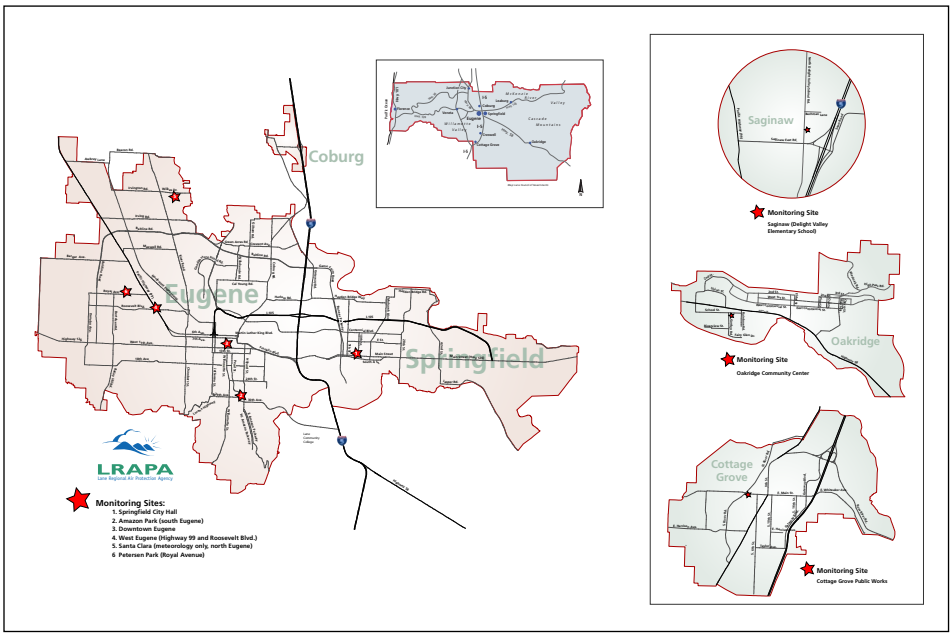
With the exception of air toxics, the agency's in-house laboratory analyzes samples collected from the monitoring network, and staff regularly calibrates all network equipment.

Airmetrics

Airmetrics is an LRAPA enterprise that manufactures an inexpensive, portable, battery-operated air sampler patented as the MiniVol. Building on the success of the MiniVol, Airmetrics replaced the original sampler with the next generation MiniVol TAS (Tactical Air Sampler) to better meet the needs of the market. The sampler has been adapted to sample gaseous pollutants, such as carbon monoxide and nitrogen oxides, as well as particulates (PM_{10} and $PM_{2.5}$).

The MiniVol and related products are sold worldwide with over 50 percent of annual sales being international. Sales for the '09-'10 fiscal year totaled $849,292 with a net fund transfer to the general operation of the agency of $25,599. Revenues generated by the enterprise are allocated to defray capital costs.

A media event celebrated the installation of a second air toxics monitor at Petersen Park.



LRAPA's comprehensive monitoring network measures pollutants and gathers meteorological data at multiple sites throughout Lane County.

Filters used to sample particulate matter are weighed at LRAPA's in-house laboratory.

Program Summaries

Public Affairs: Education, Outreach, and Partnerships

LRAPA understands that public education is an integral part of any program if lasting behavioral changes to reduce air pollution are to occur.

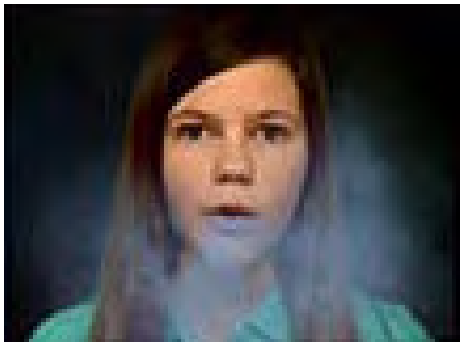
The scope of work performed by public affairs staff includes, but is not limited to: media relations; producing written materials; targeted anti-pollution campaigns; school outreach; participation in community events, projects and committees; special project development and implementation; interagency partnerships (such as Warm Homes); website design and management; print and electronic design; and complaint response. Staff also attend public hearings, City Council and County Commissioner meetings, and state, regional, and national air quality conferences.

Oakridge sixth grade students participate in the outdoor school program.

2010 Education Projects:

- Classroom presentation program:
  - ✔ Oakridge elementary school Air Quality Index (AQI) flag project
  - ✔ Oakridge outdoor school program
  - ✔ Sky Camp: Twin Oaks Elementary
  - ✔ Oasis senior education class
- Warm Homes/Clean Air Oakridge wood stove change-out project
- Partnership in EWEB ductless heat pump program
- Home wood heating season advisory program television ad
- New homeowners monthly mailing on home wood heating/remodeling
- Eco-biz program for auto repair shops
- Lane County Home and Garden Show
- Earth Day celebration
- Regional open burning TV/radio/ newspaper ad campaign
- Asbestos Outreach (weekly direct mailings, presentations to groups)
- No-idle school campaign
- HeatSmart presentations for real estate agents in Lane County
- Presentations to Kiwanis clubs and Chamber of Commerce groups
- Air and Waste Management technical session on biomass energy
- Participation in City of Eugene Climate Action Plan and Health Impact Assessment

Targeted public education campaigns remind residents about the connection between air pollution, public health, and the environment.



Leveraging funds with other northwest air quality agencies is a cost-effective way for LRAPA to access high-quality media used to promote pollution prevention.

Program Summaries: Home Wood Heating Program

Eugene/ Springfield and Oakridge Home Wood Heating Programs

The Eugene/Springfield urban area and the City of Oakridge have home wood heating advisory programs to regulate burning during episodes of poor wintertime air quality. Wood stove and fireplace use contributes to high particulate levels during winter months. An emission inventory created for Eugene/Springfield in 2008 estimated residential wood combustion contributed 728.2 tons of particle pollution per year and 8.5 tons on the worst winter day.

LRAPA has administered successful home wood heating advisory programs in Eugene/Springfield and Oakridge. The cities of Eugene, Springfield, and Oakridge, and Lane County have ordinances or codes to address pollution from home wood heating. In the summer of 2010, Junction City updated their nuisance ordinance in response to wood smoke complaints. Eugene, Springfield and Oakridge have mandatory advisory programs, which run from November 1 through the end of February. Using a simple "green, yellow, red" advisory system, the daily advisories inform the public whether burning is allowed, cautioned against, or prohibited. The programs have been in place since the 1980's, when air quality in areas of Lane County exceeded federal standards.

Daily advisories are announced through newspapers, radio and television stations, and displayed on the LRAPA website, www.lrapa.org. Residents may also call a home wood heating hotline, 541-746-4328 (HEAT). While home wood heating is allowed on most days, the agency encourages residents to avoid burning to reduce the health impacts associated with the inhalation of wood smoke.

LRAPA also administers an outdoor burning advisory program. Daily advisories are issued for six areas in the county. Burning is banned in all areas from mid-June until the beginning of October because of potential wildfire danger.

LRAPA measures particulate matter at three locations in Eugene, one location in Springfield, and one each in Oakridge and Cottage Grove. Since 1987, monitoring data and weather forecasts have been used to determine daily advisories for home wood heating and open burning.

In Lane County, two areas - the Eugene/Springfield urban area and the City of Oakridge - have been designated "non-attainment" for PM_{10}. Eugene currently meets the standard and is in the process of regaining attainment status. In recent years, the focus has shifted to the health impacts from exposure to $PM_{2.5}$, also referred to as respirable or fine particulate matter.

In December 2006, the Environmental Protection Agency (EPA) formally adopted tighter standards for fine particulate to further protect public health. The 2006 standards tightened the 24-hour fine particulate standard from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$, and retained the current annual-average fine particulate standard at 15 $\mu g/m^3$. The Eugene/Springfield area meets the 24-hour and annual-average standards, however, an area containing Oakridge and Westfir was declared "non-attainment" for fine particulate and continues to exceed the 24-hour standard.

Using 1985-1987 as a baseline, the PM_{10} air pollution levels in Eugene-Springfield during 2008-2010 were 65% lower on worst winter days. In Oakridge, comparing the initial baseline of 1989-1991, the measured Oakridge $PM_{2.5}$ levels in 2008-2010 were 79% lower on worst winter days, well below the pre-2006 standard, but still about 10-15% above the new, more protective 24-hour health standard; and well below the annual-average $PM_{2.5}$ standard.

In 2010, LRAPA started work on an attainment plan that will propose strategies to further reduce emissions of fine particulate in Oakridge. LRAPA staff are conducting data analysis and compiling

A new television commercial, developed by LRAPA,and produced by a local company, focused on proper burning techniques when using home wood heating devices and included a reminder about following LRAPA's advisories.

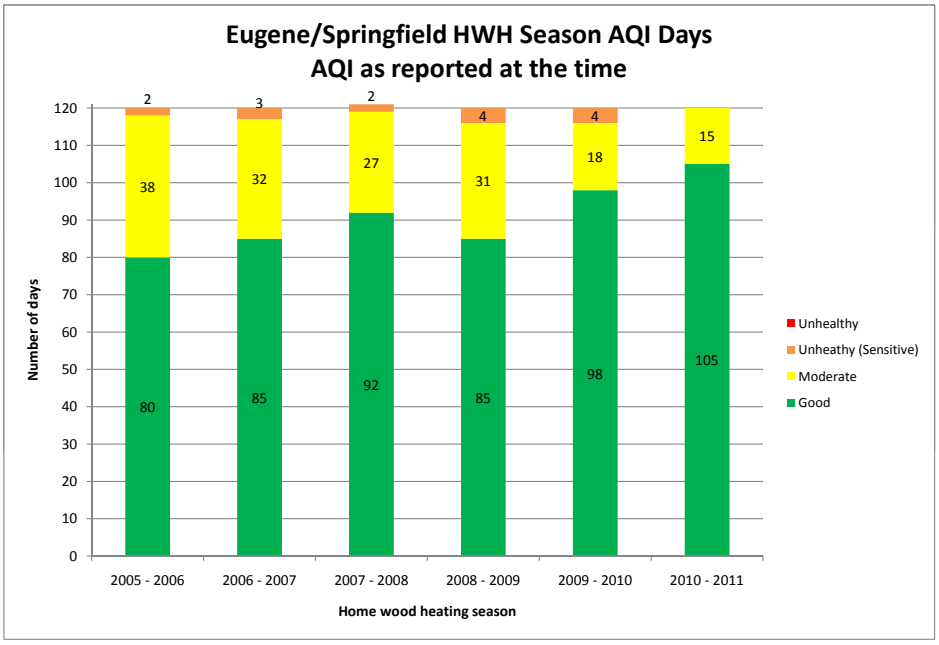
Program Summaries: Home Wood Heating Program

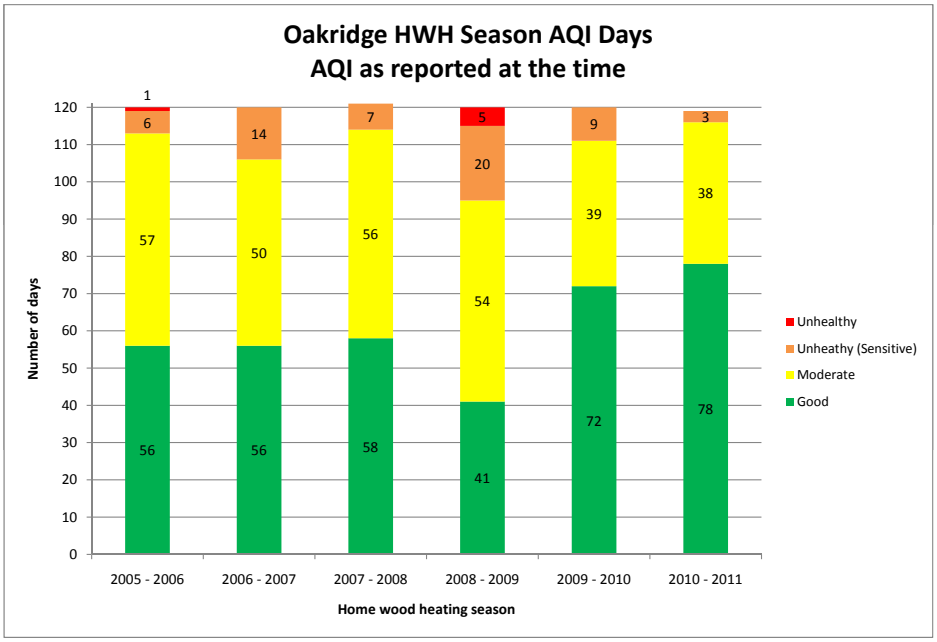
technical information that will be included in the plan. An Oakridge/Westfir advisory committee will begin meeting in the summer of 2011.

Public Education

Public education programs have raised awareness related to the health impacts of exposure to wood smoke. Television and radio commercials targeting home wood heating and outdoor burning have been used to reach a broad audience. Television commercials ran throughout the fall on all three major networks.

Removing or replacing old, polluting wood stoves has been a successful strategy for reducing wintertime particle pollution. Through the Warm Homes, Clean Air program, developed by LRAPA in partnership with other agencies, over $1 million in funding has been secured to replace old stoves and weatherize homes in Oakridge and Westfir. Work on the second phase of the program started in October 2010, using funds from a federal stimulus grant. Since the program started in 2006, over 120 stoves have been replaced and monitoring data from the Oakridge site has shown a steady decrease in particulate levels during the winter months.





The Air Quality Index charts for Eugene/Springfield and Oakridge from the last six winter heating seasons show a steady increase in the number of good air quality days. LRAPA's advisory programs, better standards for wood stove manufacturing, change-out programs and increased public awareness have all contributed to reduced emissions of wood smoke. The past two years have been the cleanest on record since LRAPA began monitoring air quality.

Home Wood Heating Advisories (November — February)

LRAPA uses the $PM_{2.5}$ standard when determining home wood heating advisories. Advisories are determined by comparing current pollution levels to current meteorological conditions and weather forecasts.

Green — Air quality is good at this time and unrestricted use of a wood heating device is allowed. Called when particle pollution levels are forecast to be less than 25 µg/m³ (micrograms per cubic meter) – the standard being 35 µg/m³.

Yellow — Air quality is deteriorating. Residents are asked to cut back on home wood-heating use. Called when particle pollution levels are forecast to be greater than or equal to 25 µg/m³, but less than 30 µg/m³.

Red I — Air quality is reaching an unhealthy stage. Visible smoke from a chimney will result in a violation unless the resident has an economic exemption. Burning is allowed if done without producing any visible smoke. Called when particle pollution levels are forecast to be greater than or equal to 30 µg/m³, but less than 35 µg/m³.

Red II — All burning must stop. Use of a pellet stove is allowed if no visible smoke is emitted into the air. Called when levels are forecast to be greater than or equal to 35 µg/m³.

In 2006, EPA tightened the standard for $PM_{2.5}$ resulting in more red and yellow advisories during subsequent years.

Oakridge HWH Advisories 2000 - 2010 Seasons

Season Year (Nov. - Feb.)	Yellow	Red
*2010-2011	34	0
*2009-2010	34	0
*2008-2009	29	10
*2007-2008	22	5
*2006-2007	28	0
*2005-2006	20	1
*2004-2005	37	0
*2003-2004	15	0
*2002-2003	29	0
*2001-2002	11	0
*2000-2001	35	2

Eugene/Springfield HWH Advisories 2000 - 2010 Seasons

Season Year (Nov. - Feb.)	Yellow	Red I	Red II
*2010-2011	4	0	0
*2009-2010	12	0	0
*2008-2009	10	0	0
*2007-2008	6	1	0
*2006-2007	7	0	0
*2005-2006	18	0	0
*2004-2005	6	0	0
*2003-2004	0	0	0
*2002-2003	4	0	0
*2001-2002	5	0	0
*2000-2001	6	0	0

**Based on $PM_{2.5}$ monitored levels*

Burn Smart to Keep Air Clean

Following the home wood heating advisories is the first step in keeping air clean during the cold, winter months. Here are other tips to burn clean and more efficiently:

- Burn only dry, seasoned wood. Allow the wood to dry a minimum of six months after splitting.
- Burn small hot fires and keep the dampers open to supply oxygen to the fire and encourage complete combustion of the wood.
- Never burn garbage! The toxins and fumes created by burning colored paper, treated wood, plastics and other garbage are extremely harmful to health.

Operating a wood stove or fireplace insert properly makes a huge difference in the amount of smoke emitted from the chimney. The photo on the left shows a chimney emitting smoke that is 10% in opacity, indicating clean burning practices. The photo on the right shows an example of poor burning practices and smoke emissions that are 100% opacity. By law, chimney emissions of 40% opacity or less are allowed.

Program Summaries: Special Projects

What are Special Projects?

Special Projects are programs conducted in addition to routine agency functions. These programs are mostly funded by competitive grants and have varying durations. LRAPA has developed and administered a number of special projects aimed at reducing air pollution in Lane County. Special projects may be conducted internally, or in support of planning or community development efforts by other local, state and federal agencies.

Auxiliary power units (APUs) are used to power heating and air conditioning in truck cabs, reducing idling time when trucks are parked overnight.

Retrofitting school buses to reduce diesel emissions ensures a healthier ride for kids and cleaner air around schools.

Everybody Wins, Phase I & II

The Everybody Wins program provides loans to long-haul truck drivers to install Auxiliary Power Units (APUs) to their rigs. APUs reduce main engine idling, which significantly reduces diesel emissions. In the face of today's challenging economy and high diesel fuel prices, the APUs are also a critical asset in keeping independent owner-operators financially solvent and able to work.

Through LRAPA, 350 APUs have been installed. The number of participating APU manufacturers and Oregon based installers has doubled since the beginning of Phase I. LRAPA has received $500,000 in additional funding from EPA to pay for the interest on Phase II loan proceeds that were secured from the Oregon Department of Energy and to conduct a two-year study to track the usage patterns of APUs that are part of the program. Lane Council of Governments (LCOG) concluded the APU usage study during June of 2009, and a copy of the report was forwarded to LRAPA and EPA to meet the requirements under the grant agreement with EPA.

The third phase, Business Energy Tax Credit (BETC) certificate, was finalized and the auditors filed the qualified program cost for the period from May 1, 2007 to December 31, 2009 on February 16, 2010**.** The tax credits are designed to defray the total cost of this multi-year program. *(In Progress)*

Clean School Bus USA

School districts in Lane County continue to utilize EPA grant funding for school bus engine retrofit and replacement. Recent health studies about exposure levels of diesel exhaust to in-cabin school bus children have also prompted an aggressive effort at the state level to retrofit all 1994 and newer buses with closed crankcase ventilation (CCV) systems. LRAPA will continue to coordinate with Lane County School Districts and DEQ in this campaign, which will retrofit 2,200 Oregon school buses with CCVs by 2013. *(On-going)*

The Northwest Regional Ethanol Distribution Network

The NW Regional Ethanol Distribution Network is a public-private partnership with a goal to establish a wholesale E85 rack in a centralized location and a minimum of fifteen retail distribution points in the Pacific Northwest along the I-5 corridor. The Pacific Northwest has the most limited retail access to E85 in the entire country. The Federal Department of Energy will release funding for this project on an as-needed basis to support the operation of the project. LRAPA was awarded $662,415 to provide grants to 15 stations and support a wholesale rack for E85. To-date, eight sub-grantees (stations) have qualified and received funding for $10,000 for each qualified project. This represents the largest effort, to-date, to make E85 available to the public in the Pacific Northwest. LRAPA will work cooperatively with Cascade Sierra Solutions work to complete the requirements of this program. *(In progress)*

Program Summaries: Special Projects

Warm Homes, Clean Air Project

Warm Homes was developed as a community solutions project to reduce emissions from wood stoves in Oakridge and Westfir. In 2010, LRAPA was awarded $420,000 in additional funding through the American Recovery and Reinvestment Act through the Oregon Department of Energy and Oregon Department of Environmental Quality. In fall 2010, work started on the second phase of the Warm Homes program. The goal is to replace 100 uncertified wood stoves with cleaner-burning heating devices. Staff conduct home visits, receive and approve/negotiate bids, conduct follow-up on all installations, and process paperwork for reimbursement. The program will be expanded in summer 2011 to include Eugene, Springfield, and Cottage Grove. All funding must be spent by November, 2011. *(In progress)*

No-idle signs placed at drop-off sites around schools remind parents to turn off their engines to reduce the emission of harmful vehicle exhaust and protect the health of young children.

School No-Idle Campaign

Funding was secured to purchase no-idle zone traffic signs for use at local schools. As of December 2010, over 60 no-idle signs were installed at Eugene, Springfield, Junction City, Cottage Grove, and other Lane County elementary and middle schools. In addition, over 4,500 flyers were sent home with students to remind parents of the importance of being idle-free. Signs are distributed by individual request. *(On-going)*

Oakridge School Flag Project

An air quality curriculum was developed for students at Oakridge Elementary School. The curriculum explains the health impacts of air pollution and how the air quality index is used to provide the public with simple information on local air quality. The curriculum includes learning activities and four color-coded air quality "flags" that are displayed by fifth grade students at the front entrance of the school to show air quality for that day. LRAPA staff gave a classroom presentation in October to support the curriculum. *(On-going)*

Clean Fuel for Bridges Project

LRAPA filed the final reports for this project on June 30, 2010 and this project is considered closed. The necessary close-out documentations was filed to justify the indirect cost of $700.00 for this project. The final FSR (Financial Status Report) was filed with the EPA. *(Completed)*

Replacing old, uncertified wood stoves with cleaner, more efficient heating systems reduces pollution and provides energy savings for home owners.

The Oakridge 5th grade air quality curriculum includes experiments that let students experience how exposure to air pollution can impact breathing.

National Ambient Air Quality Standards (NAAQS)

The Environmental Protection Agency (EPA) has established health-based National Ambient Air Quality Standards (NAAQS) for six air pollutants (criteria pollutants): particulate matter (PM_{10} and $PM_{2.5}$), ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and lead (Pb). Three of the six pollutants are monitored in Lane County: particulate matter, ozone and carbon monoxide.

Particulate Matter (PM) - Federal Standards

There are three particulate standards: one for particles 10 microns and smaller in size, and two for fine particles measuring no larger than 2.5 microns in size.

24-hour PM_{10} Standard — The standard is met when the second highest value at each monitoring site is less than or equal to 150 micrograms per cubic meter.

Annual $PM_{2.5}$ Standard — The standard is met when the three-year annual mean at each monitoring site is less than or equal to 15 micrograms per cubic meter.

24-hour $PM_{2.5}$ Standard — The standard is met when the three-year average of the 98th percentile value at each monitoring site is less than or equal to 35 micrograms per cubic meter.

Ozone - Federal Standard

On May 27, 2008, EPA revised the eight-hour standard for ozone. The ozone standard is attained when the consecutive three-year average of the annual fourth highest daily maximum eight-hour average concentration does not exceed 0.075 parts per million (ppm). The standard is being reviewed again, and EPA is proposing a tighter standard between 0.060 and 0.070 ppm. EPA plans to make a final decision by the end of July, 2011.

Carbon Monoxide - Federal Standard

There are two carbon monoxide standards, a one-hour and an eight-hour standard.

One-hour Standard — The standard is met when the maximum one-hour average concentration does not exceed 35 parts per million.

The Eight-hour Standard — The standard is met when the maximum eight-hour average concentration does not exceed nine parts per million.

NAAQ's and Local Air Quality: Lane County Attainment History

In Lane County, three criteria pollutants have historically been of concern: particulate matter, ozone, and carbon monoxide. The Eugene/Springfield area is monitored for all three pollutants, while the City of Oakridge is monitored for particulate matter only.

Particulate Matter (PM)

Particulate matter is measured at three locations in Eugene, one location in Springfield, and one each in Oakridge and Cottage Grove. In Lane County, two areas, the Eugene/Springfield urban area and the City of Oakridge, have been designated "non-attainment" for PM_{10}. Eugene currently meets the standard and is in the process of regaining attainment status. Oakridge was declared a non-attainment area for $PM_{2.5}$ in December, 2008.

Federal Ambient Air Quality Standards

Pollutant	Federal Standard	Monitoring Status in Lane County
Particulate ($PM_{2.5}$)		
24-hour standard	35 µg/m³	Required
Annual standard	15 µg/m³	Required
Particulate (PM_{10})		
24-hour standard	150 µg/m³	Required
Carbon Monoxide (CO)		
8-hour average	9 ppm	Required
1-hour average	35 ppm	Required
Ozone (O_3)		
8-hour average	0.075 ppm	Required
Sulfur Dioxide (SO_2)		
24-hour average	0.14 ppm	Not required
1-hour average	0.10 ppm	Not required
Nitrogen Dioxide (NO_2)		
Annual average	0.05 ppm	Not required
Lead (Pb)	1.5 µg/m³	Not required

µg/m³: micrograms per cubic meter
ppm: parts per million

The daily $PM_{2.5}$ standard is 35 micrograms per cubic meter (µg/m³) and the three-year annual mean standard is 15 µg/m³.

NAAQ's and Local Air Quality: Lane County Attainment History

- The Eugene/Springfield area was designated a "non-attainment" area on January 10, 1980, for exceeding the 24-hour secondary "total suspended particulate" (TSP) standard.
- The TSP standard was changed to the PM_{10} standard (particulate matter 10 microns in size or smaller) in 1987.
- The Eugene/Springfield area was redesignated a PM_{10} "non-attainment" area on August 7, 1987.

  — Last exceeded the standard in 1987.
- Oakridge was proposed a PM_{10} "non-attainment" area in September 1992, and designated on January 20, 1994.

  — Last exceeded the standard in 1993.
- On September 16, 1997, EPA established daily and annual $PM_{2.5}$ standards that were immediately challenged by industry.
- In March 1998, $PM_{2.5}$ monitoring began in Eugene/Springfield.
- In November 1998, $PM_{2.5}$ monitoring began in Oakridge.
- On February 27, 2000, the U.S. Supreme Court unanimously upheld the new standards.
- On December 17, 2006, EPA formally adopted new standards for $PM_{2.5}$. The 2006 standards tighten the 24-hour fine particle standard from 65 micrograms per cubic meter (µg/m3) to 35 µg/m3, and retain the current annual fine particle standard at 15 µg/m3. EPA also revoked the three year annual standard for PM_{10}, but retained the 24-hour standard of 150 µg/m3.

  — On October 8, 2009, the Environmental Protection Agency (EPA) issued final area non-attainment designations for the 24-hour national air quality standards for fine particulate matter ($PM_{2.5}$). An area containing Oakridge and Westfir was declared "non-attainment."

  — Oakridge last exceeded the standard in 2010.

  — Eugene/Springfield currently meet the $PM_{2.5}$ standards.

Ozone (O3)

Ozone is measured at one site in Eugene and one in Saginaw. Lane County is in attainment with the federal ozone standards.

- In 1970, EPA established a one-hour ozone standard.
- In May 1974, the Eugene/Springfield area began monitoring ozone and has continued to measure ozone, although the area has remained in attainment.
- In 1997, the standard was changed to an eight-hour standard, but this was challenged by industry.
- In 2000, the U.S. Supreme Court unanimously upheld the eight-hour standard.
- In 2007, the U.S. Environmental Protection Agency reviewed the primary and secondary eight-hour standards for ground level ozone. On May 27, 2008, EPA revised both the primary and secondary eight-hour standards for ozone. The ozone standard is attained when the consecutive three-year average of the annual fourth-highest daily maximum eight-hour average concentration does not exceed 0.075 parts per million.
- In 2010, EPA began another review of the primary and secondary eight-hour standards for ground-level ozone. A new standard is expected to be announced by July 31, 2011.

Carbon Monoxide (CO)

The Eugene/Springfield area was designated a "non-attainment" area for CO in the late 1970s, but was later redesignated an attainment area.

- In 1970, EPA established an eight-hour CO standard.
- In 1971, LRAPA began monitoring CO in downtown Eugene.
- On March 3, 1978, the Eugene/Springfield area was designated a "non-attainment" area for CO.

  — Last exceeded the standard in 1986.
- On February 4, 1994, the Eugene/Springfield area was redesignated an "attainment" area.

Criteria Pollutants

Pollutant	Description	Sources	Health Effects	Environmental Effects
Particulate Matter PM	PM_{10} — Respirable particles less than 10 microns in size $PM_{2.5}$ — Respirable particles less than 2.5 microns in size	Wood burning; industry; fugitive dust; construction activities; street sand application; combustion sources; transportation; open burning; NOx, SO_2, VOC gases	Aggravates ailments such as bronchitis and emphysema; especially bad for those with chronic heart and lung disease, as well as the very young and old, and pregnant women	Causes reduced visibility and haze
Carbon Monoxide CO	An odorless, colorless gas which is emitted primarily from any form of incomplete combustion	Gasoline and diesel-powered mobile sources, such as autos, trucks, buses and locomotives; wood burning; open burning; Industrial combustion sources	Deprives the body of oxygen by reducing the blood's capacity to carry it; harmful to unborn children; causes headaches, dizziness, nausea; high doses may cause death	(None)
Ozone O_3	A gas associated with smog; formed when nitrogen oxides (NOx) and volatile organic compounds (VOC) react with one another in the presence of sunlight and warm temperatures	VOCs and NOx from gasoline-powered mobile sources; industry; power plants; gasoline transfer and storage; paints and solvents; consumer products	Irritates eyes, nose, throat and respiratory system; especially bad for those with chronic heart and lung disease, as well as the very young and old, and pregnant women	Can cause damage to plants and trees; smog can cause reduced visibility; attacks rubber products
Nitrogen Dioxide NO_2	A gas produced as a by-product of high burning temperatures	Combustion processes — fossil fuel power, motor vehicles, industry; home heating; fertilizer manufacturing	Harmful to lungs, irritates bronchial and respiratory systems; increases adverse symptoms in asthmatic patients	Contributes to acid fog and rain, which can damage plant and aquatic life; can cause reduced visibility; precursor to smog
Sulfur Dioxide SO_2	A pungent, colorless gas, combines with water vapor to become sulfurous acid, which, when combined with oxygen, produces sulfuric acid, a very corrosive and irritating chemical	Fossil fuel power plants; nonferrous smelters; Kraft pulp production	Irritates respiratory system; Increases the risk of adverse symptoms in asthmatic patients	Contributes to acid fog and rain, which can damage plant and aquatic life; dissolves stone and corrodes iron and steel; can contribute to reduced visibility
Lead Pb	A widely used metal, which may accumulate in the body	Leaded gasoline; battery manufacturing; battery recycling; smelting; paint	Causes intestinal distress, anemia and damage to the central nervous system, kidneys and brain; children more adversely affected than adults	Harmful to wildlife

Air Quality Index

The United States Environmental Protection Agency (EPA) has developed the Air Quality Index (AQI) to provide the public with simple information about local air quality. Using data from local monitoring stations, the AQI provides a daily report about air quality and the possible health impacts on days with bad air quality.

Each AQI category is assigned a specific color and a brief explanation to make it easier for the public to understand quickly whether air pollution is reaching unhealthy levels in their community.

The LRAPA website, www.lrapa.org, displays the current AQI information for Eugene/Springfield and Oakridge on its home page. The AQI is updated on an hourly basis to provide current information to the public. More detailed technical information from all LRAPA monitoring sites can be accessed by clicking on the home page link to "real-time air quality data."

Good

Air quality is considered satisfactory and air pollution poses little or no risk.

Moderate

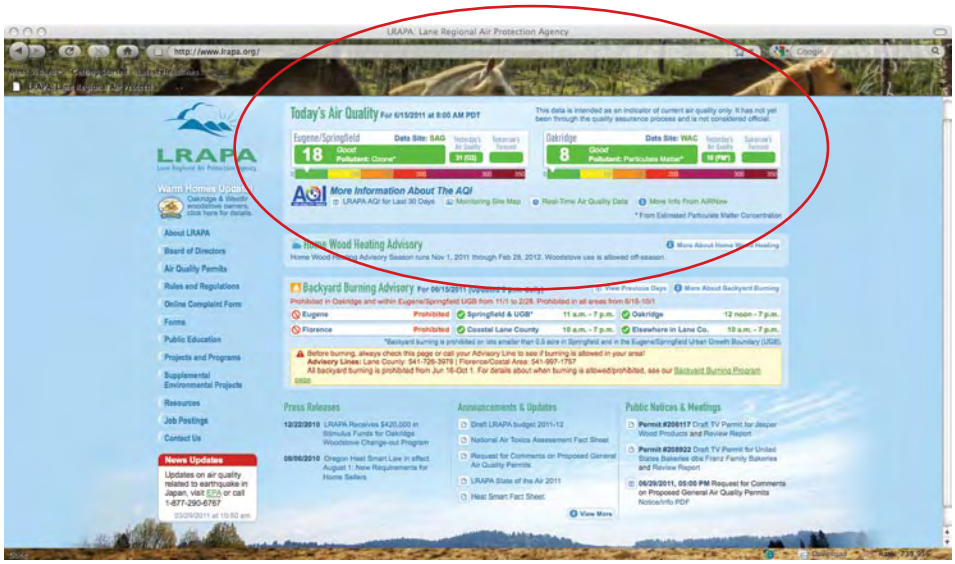
Air quality is acceptable, however, at these levels there may be a moderate health risk for a very small number of people.

Unhealthy for Sensitive Groups

Certain groups of people who are particularly sensitive to the harmful effects of certain pollutants are likely to be affected at this level.

Unhealthy

The general public may begin to experience adverse health effects. Members of sensitive groups may experience more serious health effects.



Air Quality Index Summary

Eugene/Springfield (number of days)

Year	Good	Moderate	Unhealthy (Sensitive)	Unhealthy
2010	347	18	0	0
2009	321	35	8	1
2008	325	40	1	0
2007	321	40	4	0
2006	339	25	1	0

Totals using CO, $PM_{2.5}$ and O_3 data.

Air Quality Index Summary

Oakridge (number of days)

Year	Good	Moderate	Unhealthy (Sensitive)	Unhealthy
2010	303	49	4	0
2009	282	59	20	4
2008	272	81	13	0
2007	295	60	10	0
2006	289	70	6	0

Totals using CO, $PM_{2.5}$ and O_3 data.

Air Toxics

What are air toxics?

Air toxics are generally defined as air pollutants known or suspected to cause serious health problems. These effects include cancer, birth defects, lung damage, and nerve damage. People can be exposed to toxics via contaminated air, water, food, and soil.

What resources help LRAPA characterize air toxics in Lane County?

LRAPA has monitored air toxics at Amazon Park since 2001. In 2010, LRAPA added a second air toxics monitoring site at Petersen Park in west Eugene. Monitoring results from the Amazon site are used to track air toxics concentrations and long-term trends. The second site at Petersen Park in west Eugene was chosen so the agency could characterize air toxics of concern in an area with a good mix of mobile and industrial sources. Monitoring results will complement historical data from the site in Amazon Park.

LRAPA also uses results from U.S. Environmental Protection Agency's (EPA) National-Scale Air Toxics Assessment (NATA), which reports EPA's estimates of nationwide health risks caused by air toxics. The latest assessment used National Emission Inventory data gathered during 2005 to calculate ambient concentrations, exposures, and risks related to air toxics. The modeled results from the 2005 NATA correlate very well with the actual concentrations of air toxics measured at Amazon Park during 2005.

NATA helps identify pollutants and source categories of greatest concern, and improve understanding of health risks posed by air toxics. The assessment is a useful tool to help agencies across the country develop more detailed information for air toxics reduction strategies. However, the information should not be used as the sole basis for developing risk reduction plans or regulations or as the sole basis to control specific sources or pollutants. More detailed information about NATA may be found at: www.epa.gov/ttn/atw/nata2005/index.html.

What air toxics are of most concern in Lane County?

Although LRAPA uses NATA as a tool to look at air toxics regionally, it is still useful in obtaining a snap-shot view of risk concentrations in Lane County. The data from the latest NATA study suggests several pollutants have concentrations that exceed health-based benchmarks established by EPA (one-in-a-million cancer risk threshold). Eight air toxics exceeded the one-in-a-million cancer risk threshold in Lane County:

Pollutant	Cancer risk per million
Formaldehyde	17.8
Benzene (Including benzene from gasoline)	7.8
Acetaldehyde	3.1
Carbon Tetrachloride	2.8
1,3-Butadiene	1.7
Naphthalene	1.2
PAHPOM	1.2
Perchlorethylene	1.0

The concentrations for most of the air toxics detected at the Amazon site have decreased since the first results were analyzed in 2002. For example, benzene concentrations have been reduced by 50% as a result of gasoline refined from oil with lower benzene content. However, although formaldehyde concentrations have gone down, there is a sharp increase in the risk from formaldehyde as the result of EPA using a higher toxicity or unit risk estimate (URE) for formaldehyde than was used in previous NATA studies.

Motor vehicle exhaust and refueling are major sources of air toxics in the metro area.

What are the sources of air toxics in Lane County?

Generally, the pollutants can be grouped by use in Lane County and can be attributed to everyday practices and processes commonplace to living in a metropolitan area.

Motor vehicles/Driving

As they are in most cities in the United States, vehicle exhaust (combustion of gasoline) and refueling are major sources of air toxics in Lane County. Diesel exhaust specifically has been identified as a significant source of air toxics. Acetaldehyde, formaldehyde, naphthalene, 1, 3-butadiene, and benzene are all by-products of fossil fuel combustion and associated with motor vehicle operation. Lane County residents can help reduce these toxics by driving less, not idling engines, keeping their vehicles tuned up, not

topping off gas tanks at the pump, and switching to more fuel-efficient vehicles.

Woodburning

Whether the result of home heating, backyard burning, or forest slash burning, wood burning emits toxic emissions into the air and is a large contributor to toxics in Lane County. Incomplete wood combustion is a major source of acetaldehyde and PAHPOM emissions in Lane County. Benzene and formaldehyde emissions are also significant. Residents can help reduce toxics by following the home wood heating advisories, reducing the amount of backyard burning they do, and practicing clean burning techniques when using a woodstove or fireplace. Burning cleanly not only reduces the amount of smoke emitted into the air, it also results in more complete combustion which emits fewer toxics into the air.

Industry

While industries in Lane County emit toxics into the air, many have taken steps to reduce emissions that contribute to the problem. Several ways they have accomplished this are: switching to cleaner burning fuels; changing to less toxic or toxin-free solvents, dry cleaning solutions, paints and finishes; and switching operational processes that emit fewer toxics.

Background levels of toxics

Toxics with very high atmospheric persistence (30 to 100 years or more) may remain in the environment for years after they have been used. Because of this, some chemicals used in the past, for example chemicals used for pesticides, industrial degreasing processes or for propelling aerosols, still remain in the air at measurable levels. As an example, NATA found 99% of carbon tetrachloride in Lane County is from background concentrations.

What is being done to reduce air toxics exposure in Lane County?

Lane Regional Air Protection Agency (LRAPA) has developed a number of programs to reduce air toxics. The Clean Lane Fuel program provided early implementation of reasonably priced Ultra Low Sulfur Diesel and biodiesel to local government and private fleets. LRAPA administers grants for local schools to replace old school buses and help them retrofit buses with new technology that reduces diesel emissions. LRAPA also sponsors a school no-idling campaign to reduce emissions from motor vehicles dropping off and picking up children at schools. The Everybody Wins Program was developed to reduce idling emissions from long-haul trucks.

LRAPA was a partner in an effort to bring about reductions in the benzene levels in gasoline sold in the Pacific Northwest. The successful effort during 2007 EPA deliberations resulted in a more protective standard and benzene levels in gasoline sold in the Pacific Northwest will be greatly reduced starting in 2012.

Paints and solvents used at home and in industry emit volatile organic compounds that contribute to the air toxics problem.

The Warm Homes/Clean Air project in the City of Oakridge and other energy-related programs have been developed to replace inefficient home heating systems with cleaner and more efficient units. Lower emissions, improved air quality, and reduced fuel use have resulted from the program.

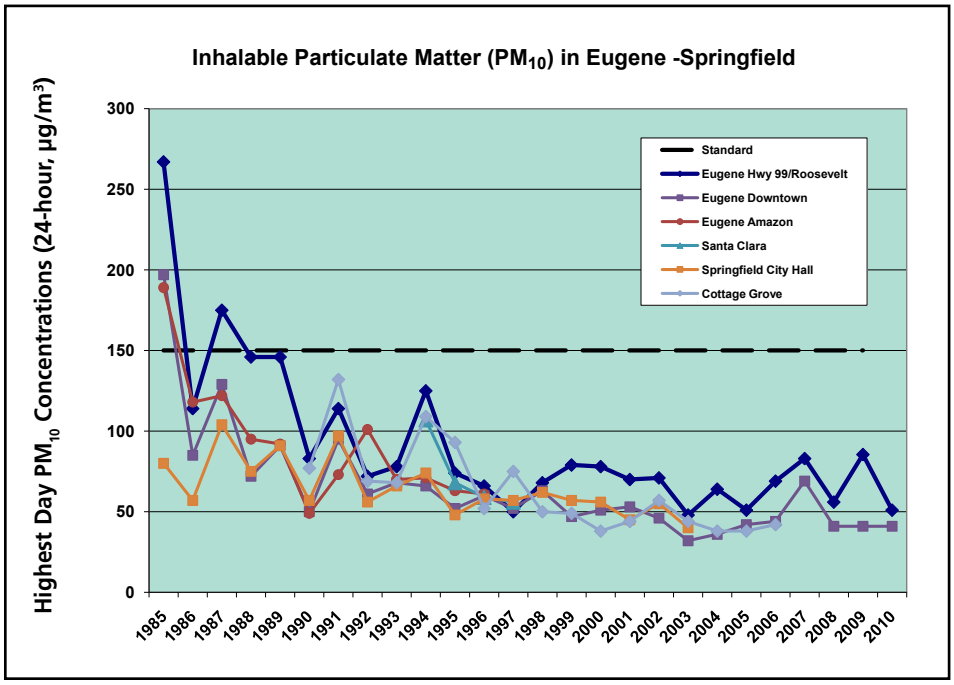
LRAPA's public education program recognizes the value of investing now to make long-term changes that result in cleaner air. The agency's outdoor school programs introduce students to the science of air pollution and help foster good habits that children carry into adulthood. LRAPA's comprehensive home wood heating and backyard burning advisory programs, along with wood stove change-outs, have helped reduce wood smoke emissions that impact air quality in areas of the county.

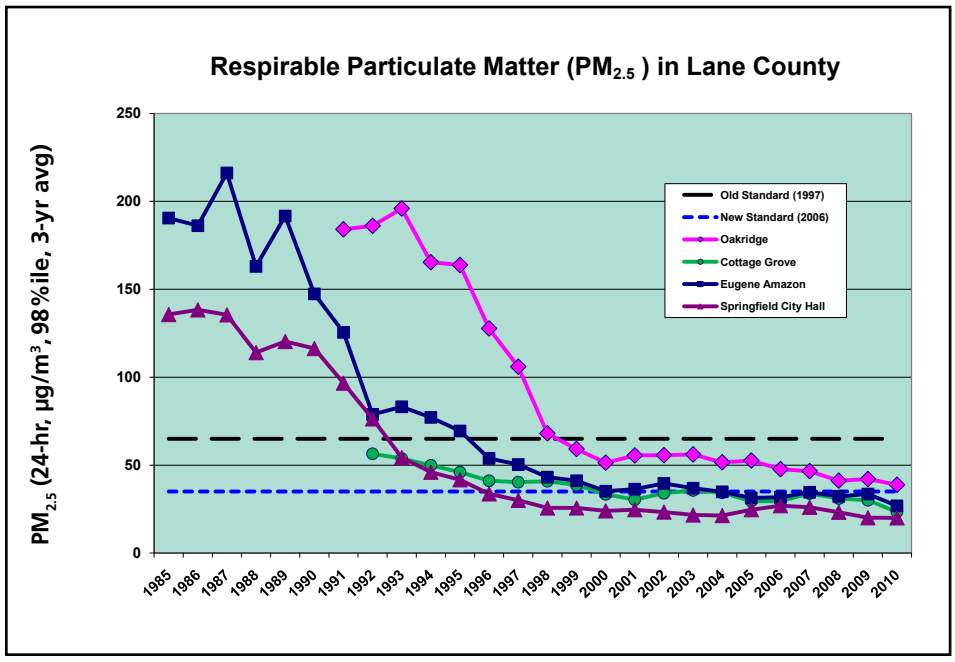
As new motor vehicles and fuels become progressively cleaner, and older vehicles are replaced by new cars and trucks with better pollution control equipment, additional reductions in air toxics will be realized. Newer gasoline and diesel fuels will also result in lower toxic emissions. Emissions from industry have also been reduced by implementing Maximum Attainable Control Technology Standards (MACT) on affected industrial facilities.

Lane County Trends

LRAPA's air quality monitoring network consists of 9 monitoring sites that measure a total of 45 parameters. The agency collected about 339,480 hours of pollutant-related data in 2010. At an estimated operational cost of $316,550 per year, LRAPA's network provides Lane County with comprehensive data on local air quality. Without the local program, the Lane County network could have as few as four sites, with a total of four to six sets of equipment, and a collection basis of fewer than 40,000 hours of pollutant-related data annually.

LRAPA's network includes five locations in Eugene, and one each in Springfield, Oakridge, Cottage Grove, and Saginaw.





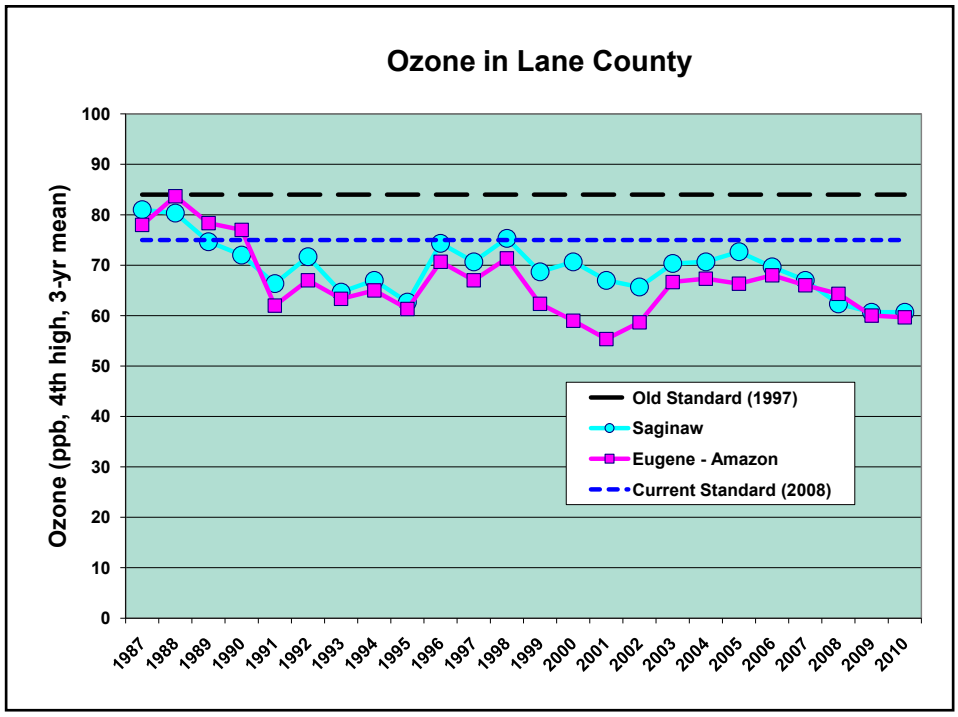
2010 Monitoring Sites:

- Amazon Park (South Eugene)
- Cottage Grove (City Shops)
- Downtown Eugene (11th /Willamette)
- Four Corners (Highway 99/Roosevelt),
- Oakridge Community Center (Oakridge)
- Saginaw (Delight Valley Elementary School)
- Santa Clara (meteorology only) (North Eugene)
- Springfield City Hall (Springfield)
- Petersen Park (Eugene)

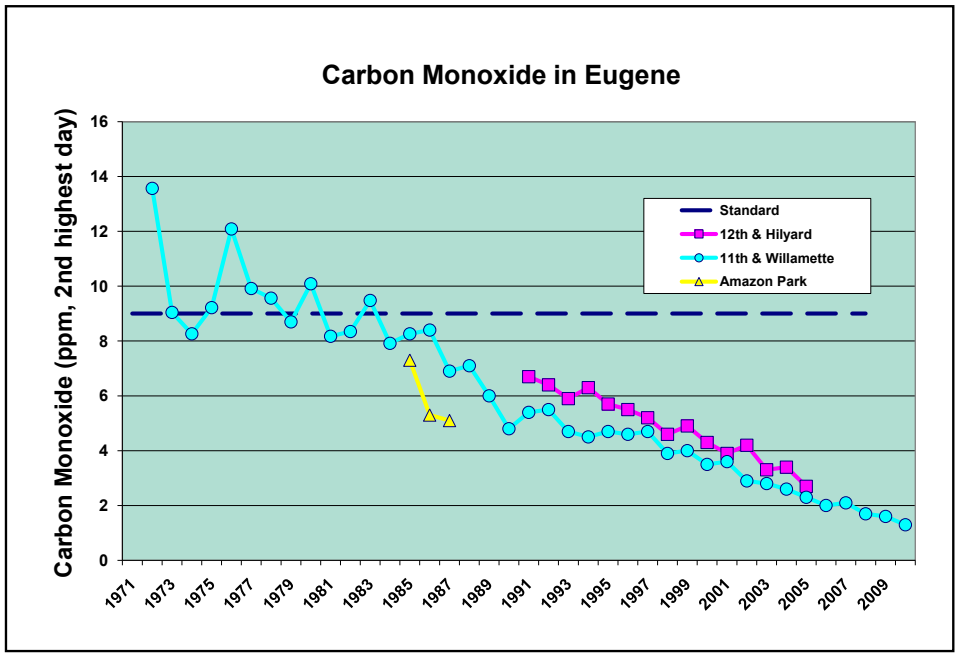
As PM_{10} levels have decreased in the last 20 years, focus has shifted to $PM_{2.5}$, also referred to as respirable particulate matter or fine particulate. Exposure to fine particulate can aggravate asthma, allergies, and heart and respiratory diseases. Sources of fine particulate include smoke from home wood heating, forest slash burns, vehicle exhaust, and industry. Levels of $PM_{2.5}$ have consistently decreased over the last 20 years, with measured levels in 2010 being the lowest on record.

Lane County Trends

Often considered a big city problem, increased ozone levels can be found in rural areas because ozone and pollutants that form it can be carried by wind hundreds of miles away from their original sources.



Ozone is not a directly emitted pollutant, but is formed when volatile organic compounds and oxides of nitrogen undergo a chemical reaction when exposed to the sun's heat. Temperatures above 90 degrees and low wind speeds are favorable for ozone formation. Better pollution controls in Lane County and upwind of the southern Willamette Valley have helped keep ozone levels within the standard. Ozone levels have dropped since the late 1980's and remain below the revised tighter primary and secondary eight-hour standards despite large population increases in the Eugene/Springfield metro area.



Carbon monoxide levels have been measured at various sites in Eugene since the early 1970's. Measured levels have declined significantly since monitoring began and are well below the standard.

Data Charts

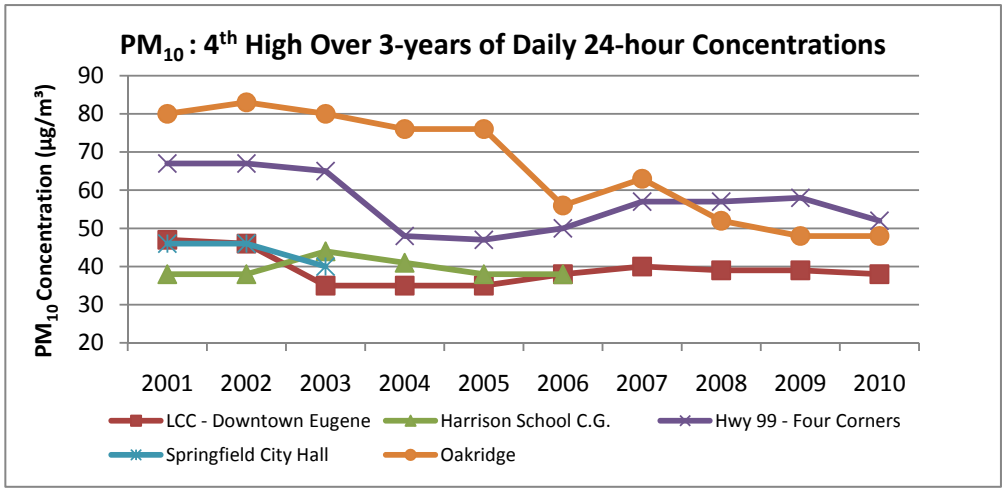
Particulate Matter Data – PM_{10}

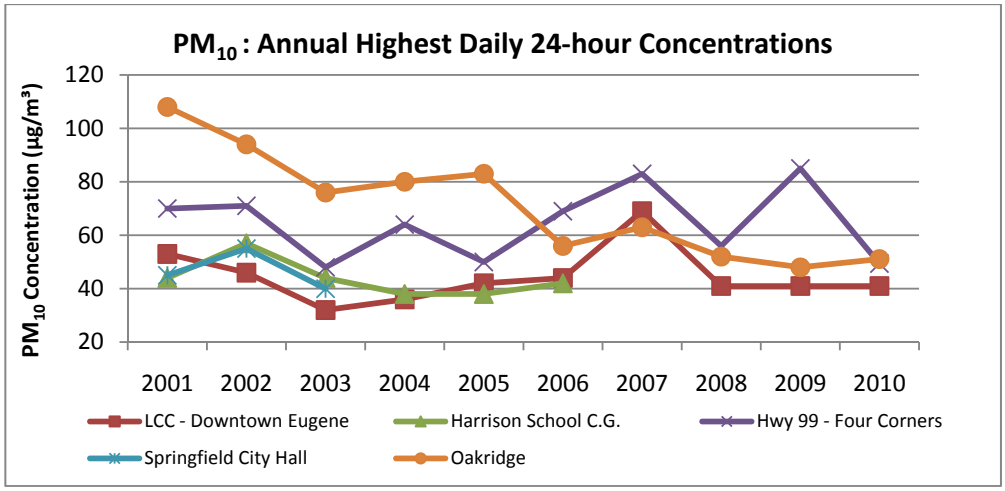
EPA has designated the following National Ambient Air Quality Standards (NAAQS) for PM_{10}:

Level	Averaging Time	Description
150 µg/m^3	24-hour	Not to be exceeded more than once per year on average over 3 years.

24-hour Average PM_{10} Levels 2001 - 2010 (µg/m³)

Site Name		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
LCC–Downtown Eugene	Highest 24-hour	53	46	32	36	42	44	69	41	41	41
	3-year 4th high	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**40**	**30**
Harrison School Cottage Grove	Highest 24-hour	44	57	44	38	38	42	---	---	---	---
	3-year 4th high	**40**	**40**	**40**	**40**	**40**	**40**	**---**	**---**	**---**	**---**
Hwy 99 - Four Corners	Highest 24-hour	70	71	48	64	50	69	83	56	85	49
	3-year 4th high	**60**	**60**	**60**	**50**	**50**	**50**	**60**	**60**	**60**	**50**
Springfield City Hall	Highest 24-hour	45	55	40	---	---	---	---	---	---	---
	3-year 4th high	**50**	**50**	**40**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
Oakridge	Highest 24-hour	108	94	76	80	83	56	63	52	48	51
	3-year 4th high	**80**	**80**	**80**	**70**	**60**	**60**	**60**	**50**	**50**	**40**





Data Charts

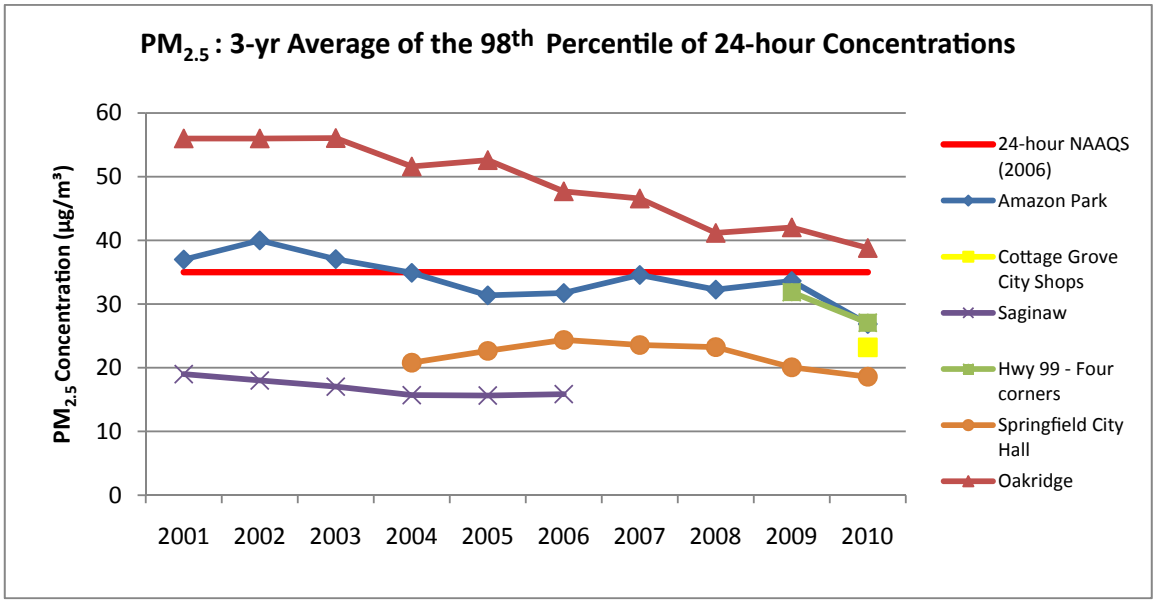
Particulate Matter Data – $PM_{2.5}$

EPA has designated the following National Ambient Air Quality Standards (NAAQS) for $PM_{2.5}$:

Level	Averaging Time	Description
15.0 µg/m^3	Annual (Arithmetic Average)	To attain this standard, the 3-year average of the annual mean PM2.5 concentrations from monitors must not exceed 15.0 µg/m^3.
35 µg/m^3	24-hour	To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations must not exceed 35 µg/m^3 (effective December 17, 2006).

24-hour Average $PM_{2.5}$ Levels 2001 - 2010 (µg/m^3)

Site Name		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Amazon Park	Annual mean	9.4	9.9	8.9	8.7	9.1	8.4	7.3	7.8	8.5	5.7
	Highest 24-hour	50.6	56.2	39.5	37.9	39.6	43.3	43.0	40.0	59.9	21.0
	Annual 98th %-ile	34.3	46.2	30.7	27.8	35.6	31.8	36.3	28.7	35.9	16.0
	3 year 98th %-ile	**37**	**40**	**37**	**35**	**31**	**32**	**35**	**32**	**34**	**27**
Cottage Grove City Shops	Annual mean	---	---	---	---	---	---	---	8.1	8.5	6.9
	Highest 24-hour	---	---	---	---	---	---	---	31.8	33.6	21.1
	Annual 98th %-ile	---	---	---	---	---	---	---	21.1	30.2	18.3
	3 year 98th %-ile	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**23**
Saginaw	Annual mean	7.0	6.7	6.2	6.0	6.8	5.5	---	---	---	---
	Highest 24-hour	26.8	22.0	17.0	13.8	24.7	16.6	---	---	---	---
	Annual 98th %-ile	17.1	18.1	15.9	13.1	17.9	16.6	---	---	---	---
	3 year 98th %-ile	**19**	**18**	**17**	**16**	**16**	**16**	**---**	**---**	**---**	**---**
Hwy 99 - Four Corners	Annual mean	---	---	---	---	---	---	8.3	8.3	8.2	6.3
	Highest 24-hour	---	---	---	---	---	---	53.5	32.4	47.9	22.9
	Annual 98th %-ile	---	---	---	---	---	---	33.9	25.3	36.4	19.5
	3 year 98th %-ile	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**32**	**27**
Springfield City Hall	Annual mean	---	---	---	7.6	8.0	7.4	6.8	6.9	6.5	5.8
	Highest 24-hour	---	---	---	21.0	32.1	30.2	38.6	32.3	21.9	17.9
	Annual 98th %-ile	---	---	---	20.8	24.5	27.8	18.4	23.5	18.3	14.0
	3 year 98th %-ile	**---**	**---**	**---**	**21**	**23**	**24**	**24**	**23**	**20**	**19**
Oakridge	Annual mean	13.7	14.0	12.3	12.0	12.8	11.1	10.5	11.5	11.8	8.9
	Highest 24-hour	95.7	80.3	69.0	69.3	73.0	47.0	52.5	43.5	44.1	43.1
	Annual 98th %-ile	59.5	55.4	53.3	46.1	58.4	38.6	42.7	42.2	41.2	33.0
	3 year 98th %-ile	**56**	**56**	**56**	**52**	**53**	**48**	**47**	**41**	**42**	**39**



Data Charts

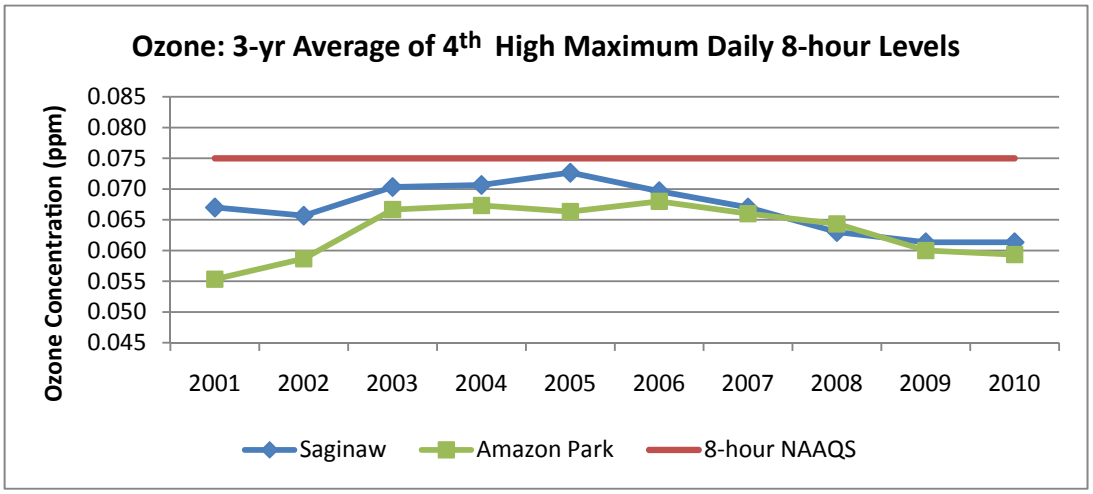
Ozone Data

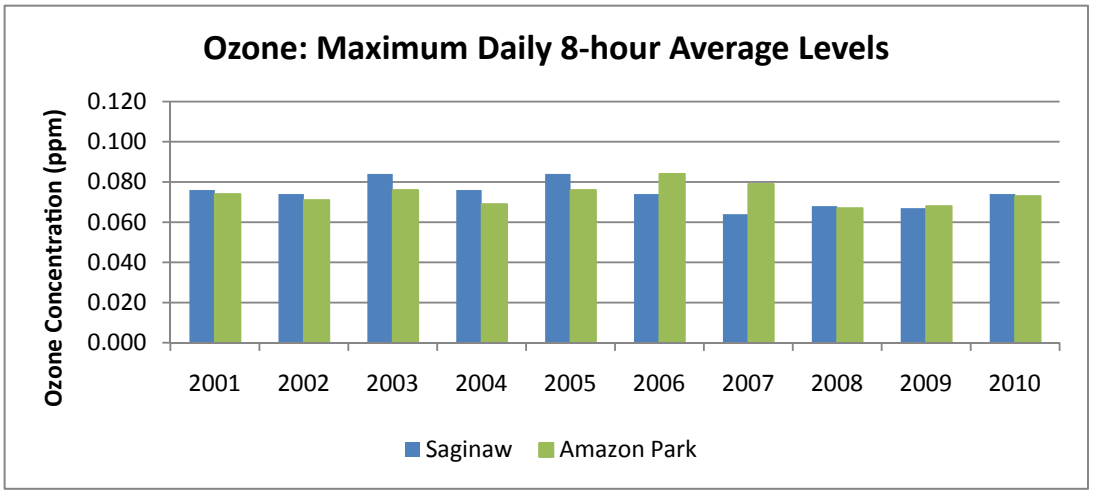
EPA has designated the following National Ambient Air Quality Standards (NAAQS) for Ozone:

Level	Averaging Time	Description
0.075 ppm	8-hour	To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)

8-hour Average Ozone Levels 2001 - 2010 (ppm)

Site Name		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Saginaw	Maximum	0.076	0.074	0.084	0.076	0.084	0.074	0.064	0.068	0.067	0.074
	4th highest	0.067	0.065	0.079	0.068	0.071	0.070	0.060	0.059	0.065	0.060
	3-year 4th high	**0.067**	**0.066**	**0.070**	**0.071**	**0.073**	**0.070**	**0.067**	**0.063**	**0.061**	**0.061**
	# Exceedances	0	0	0	0	0	0	0	0	0	0
Amazon Park	Maximum	0.074	0.071	0.076	0.069	0.076	0.084	0.079	0.067	0.068	0.073
	4th highest	0.062	0.067	0.071	0.064	0.064	0.076	0.058	0.059	0.063	0.056
	3-year 4th high	**0.055**	**0.059**	**0.067**	**0.067**	**0.066**	**0.068**	**0.066**	**0.064**	**0.060**	**0.059**
	# Exceedances	0	0	0	0	0	0	0	0	0	0





Data Charts

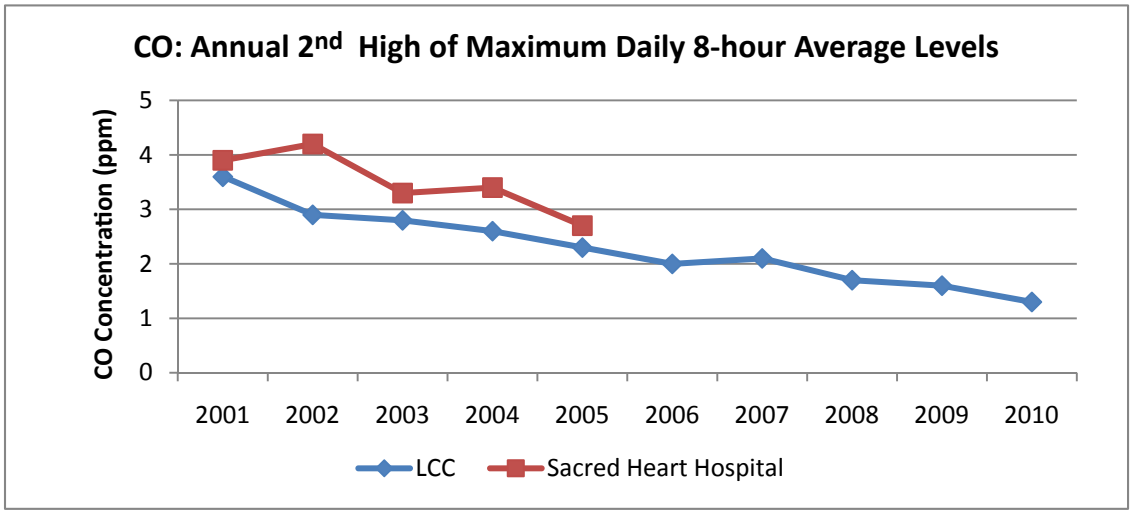
Carbon Monoxide Data

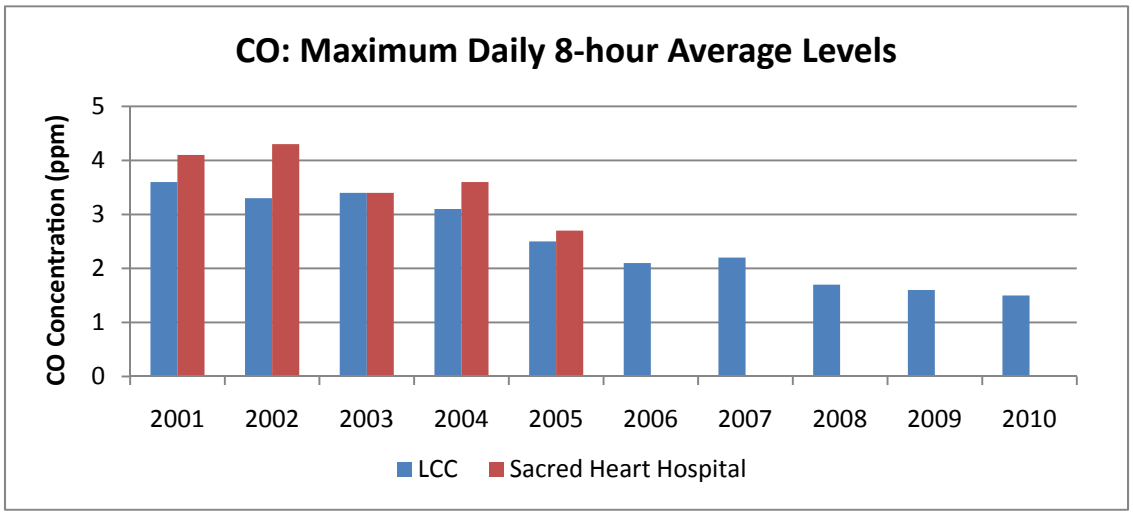
EPA has designated the following National Ambient Air Quality Standards (NAAQS) for CO:

Level	Averaging Time	Description
9 ppm	8-hour	Not to be exceeded more than once per year.
35 ppm	1-hour	Not to be exceeded more than once per year.

Carbon Monoxide (CO) Levels 2001 - 2010 (ppm)

Site Name		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
LCC - Downtown Eugene	Highest 8-hour	3.6	3.3	3.4	3.1	2.5	2.1	2.2	1.7	1.6	1.5
	2nd high 8-hour	**3.6**	**2.9**	**2.8**	**2.6**	**2.3**	**2**	**2.1**	**1.7**	**1.6**	**1.3**
	# Exceedances	0	0	0	0	0	0	0	0	0	0
Sacred Heart Hospital	Highest 8-hour	4.1	4.3	3.4	3.6	2.7	---	---	---	---	---
	2nd high 8-hour	**3.9**	**4.2**	**3.3**	**3.4**	**2.7**	**---**	**---**	**---**	**---**	**---**
	# Exceedances	0	0	0	0	0	---	---	---	---	---





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