

# Smoke Mitigation Efforts in Oregon

DEQ Air Quality Planning

Oregon Health Authority

Jan. 10, 2025

Portland, Oregon

# Fostering confidence and trust with people in Oregon to ensure the responsible use of prescribed fire in our forested ecosystems



# Statewide Communication



FACT SHEET

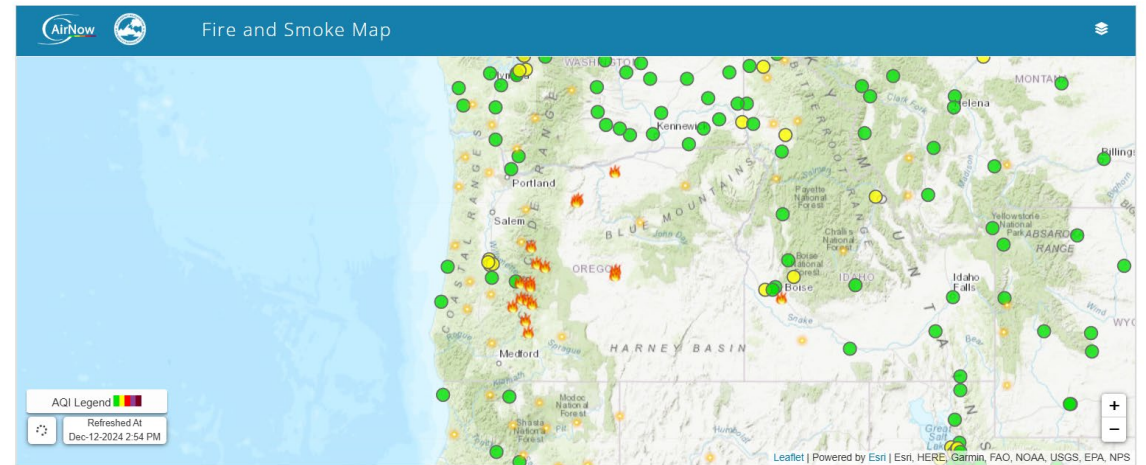
**Hazy, smoky air: Do you know what to do?**



OREGON SMOKE INFORMATION

[Español](#)

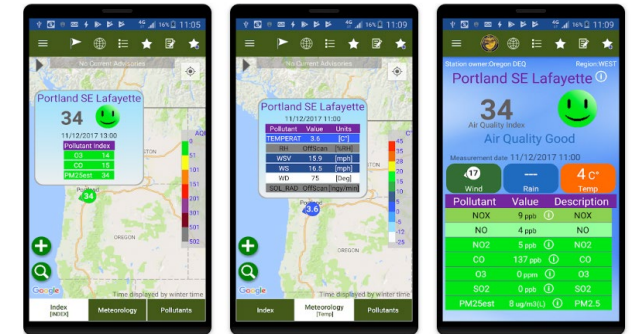
SEARCH



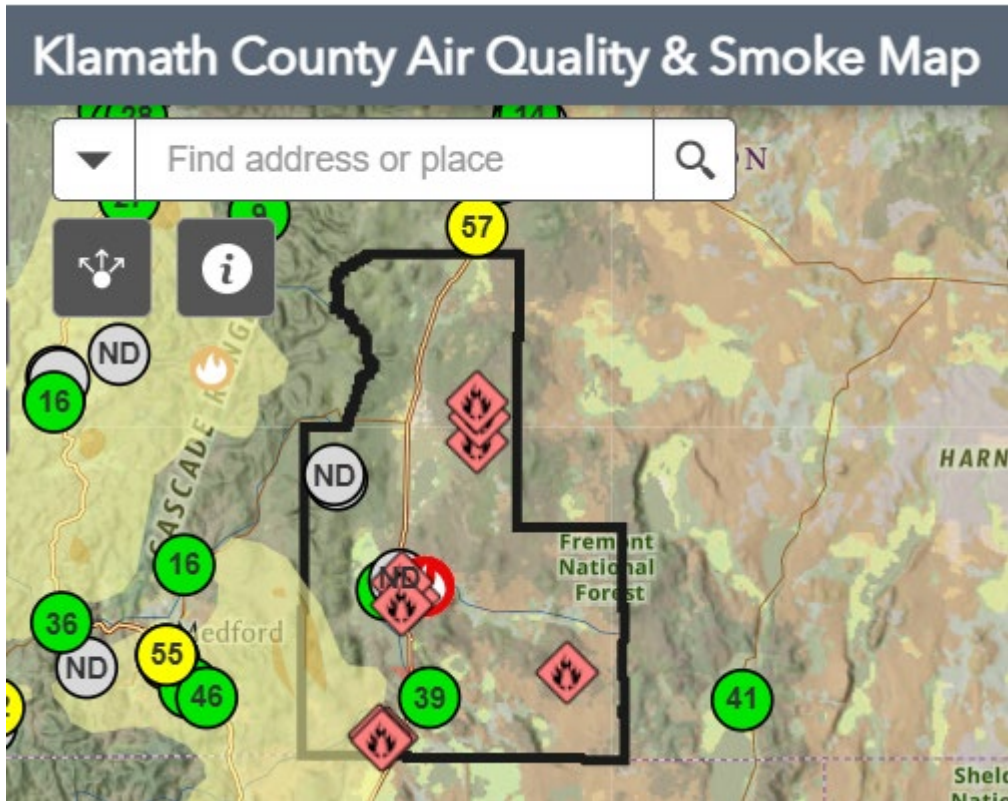
[www.oregonsmoke.org](http://www.oregonsmoke.org)



OregonAIR



# Local Communication



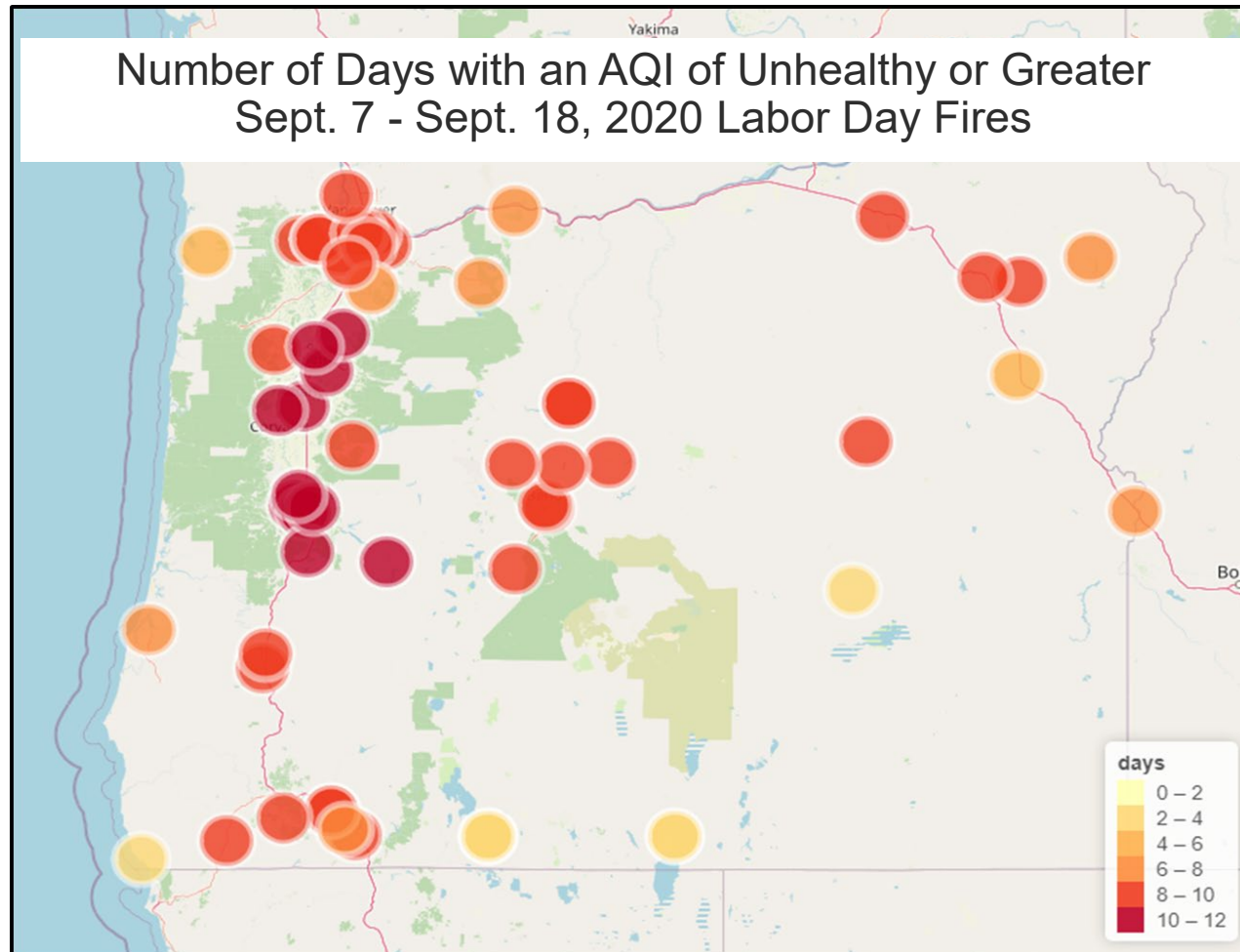
TEXT "COFIRE" TO 888-777 TO RECEIVE WILDFIRE & PRESCRIBED FIRE TEXT ALERTS

CENTRAL OREGON FIRE INFO

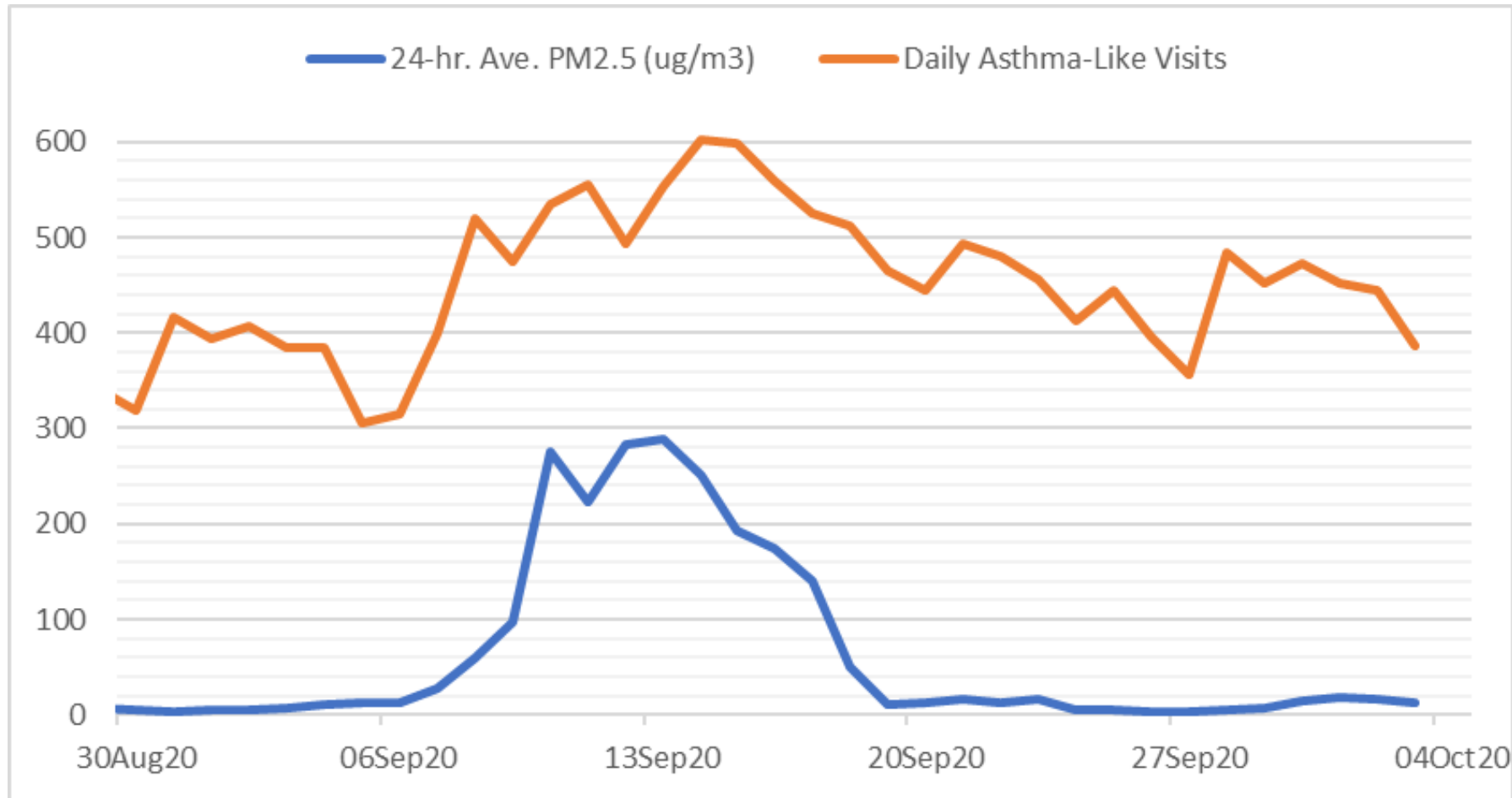


Opt-in for non-emergency notifications for controlled burning and summer wildfire smoke messages by texting WATERSHED in the message line to 888-777.

# Smoke and Health



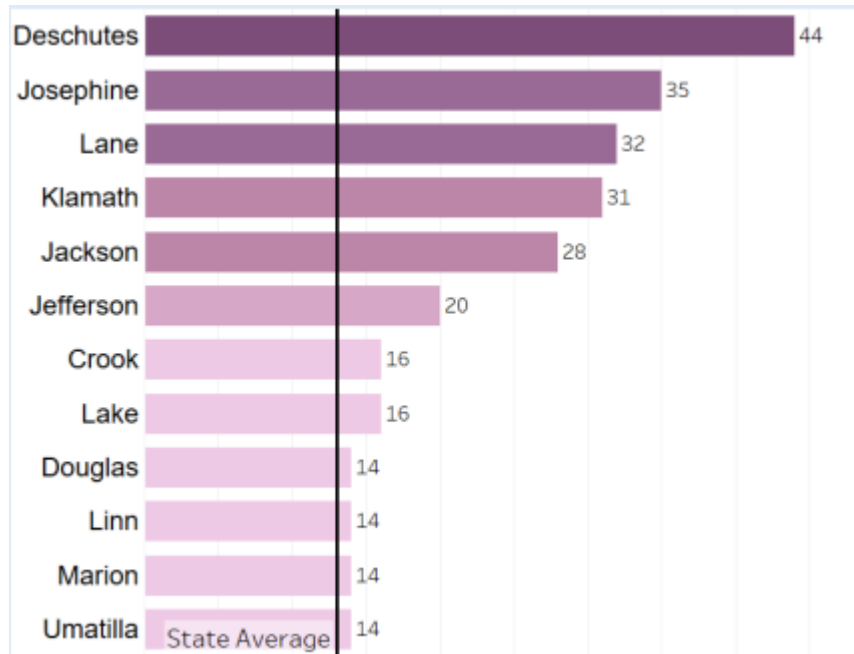
# September 2020 Wildfire Health Impacts



- Orange: Emergency department and urgent care asthma-like visits from near-real-time syndromic surveillance (ESSENCE)
- Blue: PM2.5 daily 24-hour average concentrations (provisional data from state, regional and tribal air quality monitoring)

# Where do impacts fall?

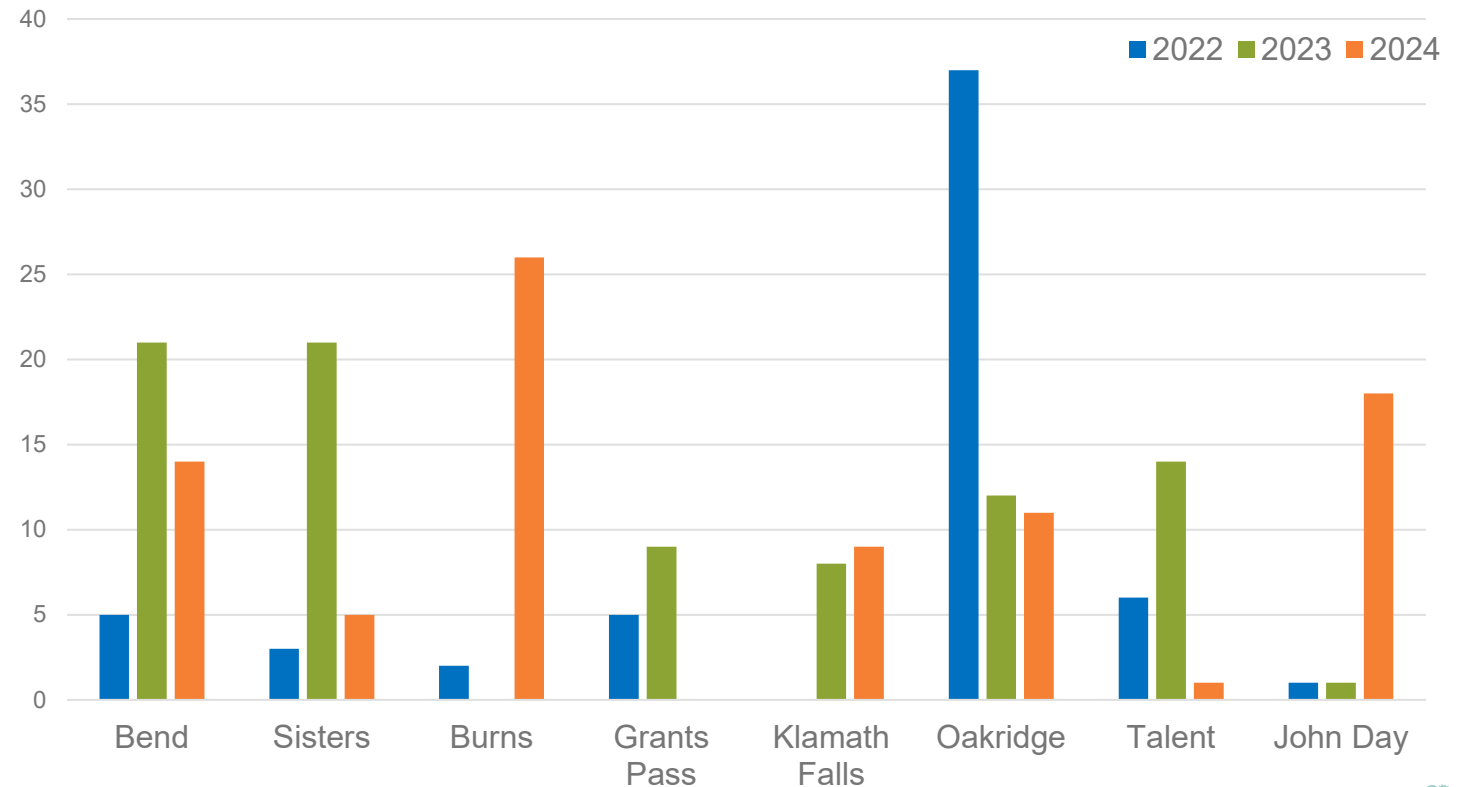
OR counties w/≥ 14 days of heat index ≥ 80°F concurrent w/compromised air quality ≥ moderate AQI, May-October 2023



Source: OHA. Climate and Health in Oregon 2023. Available at [oregon.gov/climatehealth](https://oregon.gov/climatehealth)

Annual variability of smoke impacts by community

AQI Days at USG or Greater



# Who is impacted?

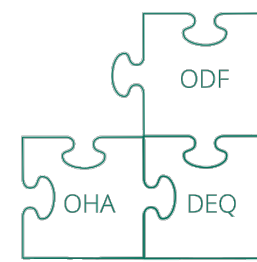
Statewide rates of non-infectious respiratory illness visits by race and ethnicity, May-October 2023

Race/Ethnicity	2023 Rate of Visits (per 1,000 people)
NH-American Indian/Alaska Native	44.2
NH-Asian	10.3
NH-Black/African American	45.2
NH-Native Hawaiian/Other Pacific Islander	42.3
NH-White	23.5
Hispanic or Latino (of any race)	13.7
STATEWIDE RATE	22.0

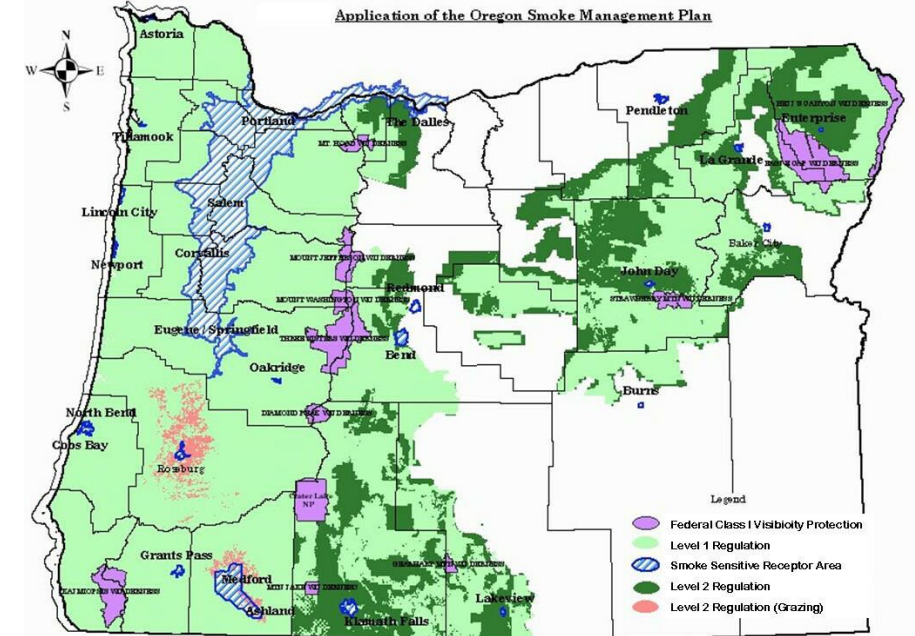
Source: Oregon Health Authority. *Climate and Health in Oregon 2023*. Available at [oregon.gov/climatehealth](https://oregon.gov/climatehealth)



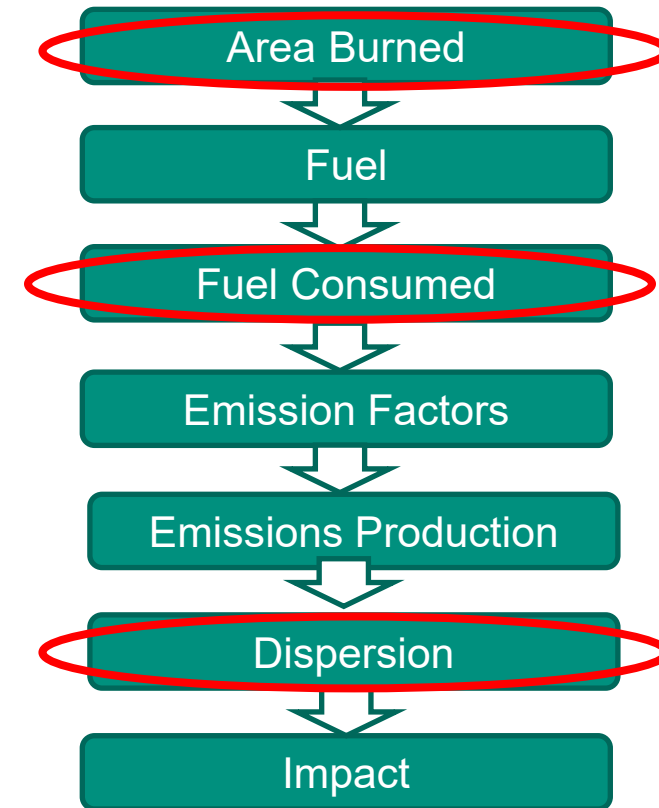
# Oregon Smoke Management Plan



- Smoke Management Plan was developed as a voluntary program to reduce prescribed fire smoke impacts to communities in 1969; adopted as a regulatory program in 1972
- In 1989, the Legislature established the Smoke Management Advisory Committee (aka SMAC) in statute
- The plan is multifaceted and is built in collaboration between the Oregon Department of Environmental Quality, the Oregon Department of Forestry, and the Oregon Health Authority
- The smoke management program is implemented by ODF with support from the other partnering agencies



# Smoke Management Techniques



# Evolution of Smoke Management Program

## Pre-2019

- Any amount of smoke entering a community was considered an intrusion

## Post-2019

- Updated definition of “intrusion” and “incident”
- Added definition of “vulnerable populations”
- Added sections including for Community Response Planning and Exemption Requests
- Planning to protect communities
- Bullets for smoke intrusion and incident thresholds

### Smoke Intrusion Threshold

PM2.5 average at or above 70 ug/m<sup>3</sup> for one-hour and/or averages at or above 26 ug/m<sup>3</sup> for a 24-hour period



# Smoke Management is Risk Management

## Smoke Sensitive Receptor Areas:

Astoria	John Day	Roseburg
Baker City	Klamath Falls	Sheridan
Bend	La Grande	Silverton
Burns	Lakeview	Springfield
Carlton	Lincoln City	St. Helens
Corvallis	McMinnville	Stayton
Cottage Grove	Newport	Sublimity
Coos Bay	North Bend	The Dalles
Dallas	Oakridge	Tillamook
Eugene	Pendleton	Veneta
Enterprise	Portland	Willamina
Grants Pass	Redmond	Yamhill



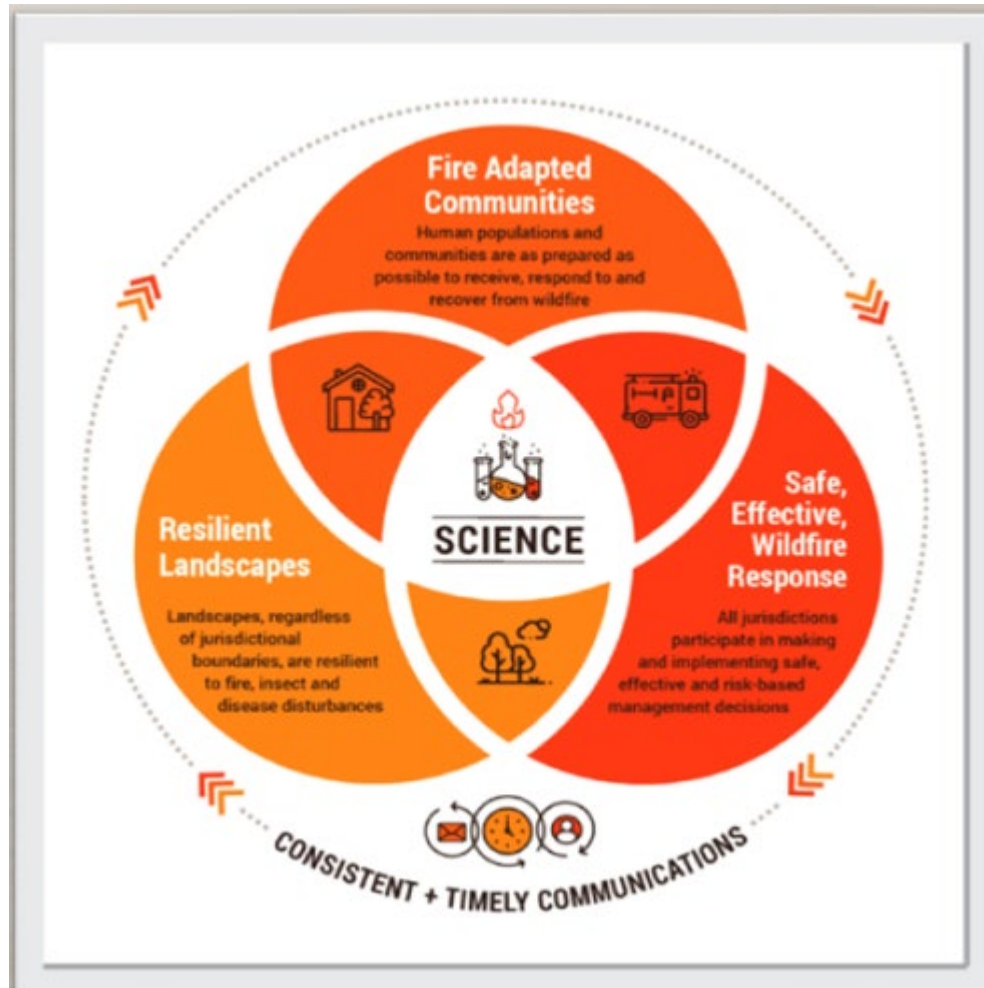
# Community Response Plans

Completed CRP	Exemption Requested and Approved
Bend	Yes
Ashland	Yes
Enterprise	Yes
Lakeview	Revisions necessary
Oakridge	Revisions necessary
Klamath County	Not requested
La Grande/Union County	Not requested
Wasco and Hood River	Not requested
Jackson County	Not requested

## CRP Development:

- Project Introduction and Initiation
- Smoke Event Coordination
- Smoke Communications Coordination
- Smoke Response Coordination
- Community Outreach and Piloting Draft Plan
- Finalize Plan

# Background: National Cohesive Wildland Fire Management Strategy



2012: National Cohesive Wildland Fire Management Strategy

2019: Governors Wildfire Council

2019: Shared Stewardship MOU

2021: SB-762

2023: 20-Year Landscape Resiliency Strategy

# Actions to Achieve Resilient Landscapes

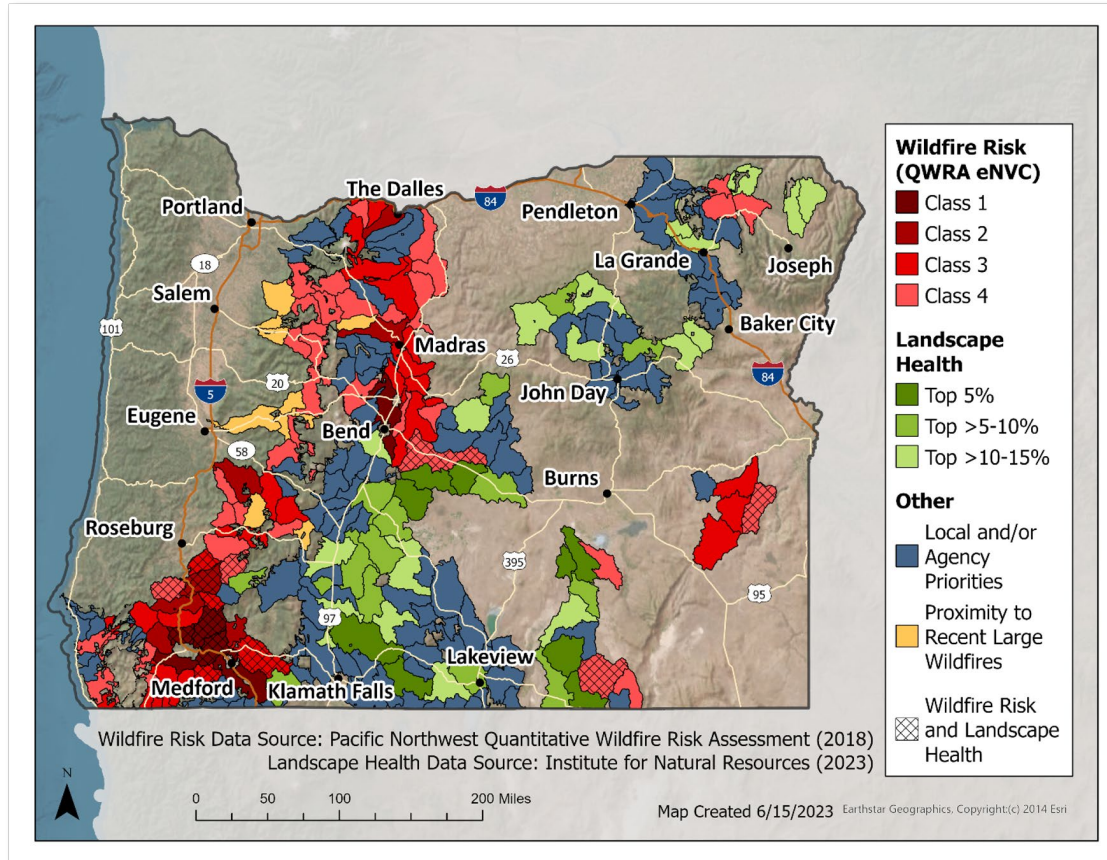


## On the Ground Treatments

- Hand and Mechanical Treatments
- Fine Fuels Reduction
- Invasive Species Removal
- Prescribed and Managed Fire
- Maintenance of Treatments



# Aligning Funding in High Priority Areas



## Agency Funding Programs and Authorities

### Oregon Department of Forestry

- Landscape Resiliency Program (LRP)
- Small Forestland Grant Program (SFG)
- Federal Forest Restoration Program (FFR)
- Western States Fire Managers Community Assistance
- Landscape Scale Restoration (LSR)
- Community Wildfire Defense Grant
- Emergency Forest Restoration Program
- Forest Legacy Program
- Forest Stewardship Program
- NRCS Statewide Agreement
- Statewide Bark Beetle Mitigation
- Sudden Oak Death

### Oregon Watershed Enhancement Board

- Open Solicitation grant programs:
  - Restoration grants
  - Technical Assistance grants
  - Stakeholder Engagement grants
  - Monitoring grants
- Focused Investment Partnership Program (FIP)
- Small Grant Program
- Land Acquisition Grant Program
- Partnership Technical Assistance Grant Program
- Forest Collaborative Grant Program

### U.S Forest Service

- Collaborative Forest Landscape Restoration Program (CFLRP)
- Joint Chiefs Landscape Restoration Partners
- Tribal Forest Protection Act
- Great American Outdoor Act

### Natural Resource Conservation Service

- Joint Chiefs Landscape Restoration Partners
- Regional Conservation Partnership Program (RCPP)
- Environmental Quality Incentives Program (EQIP)

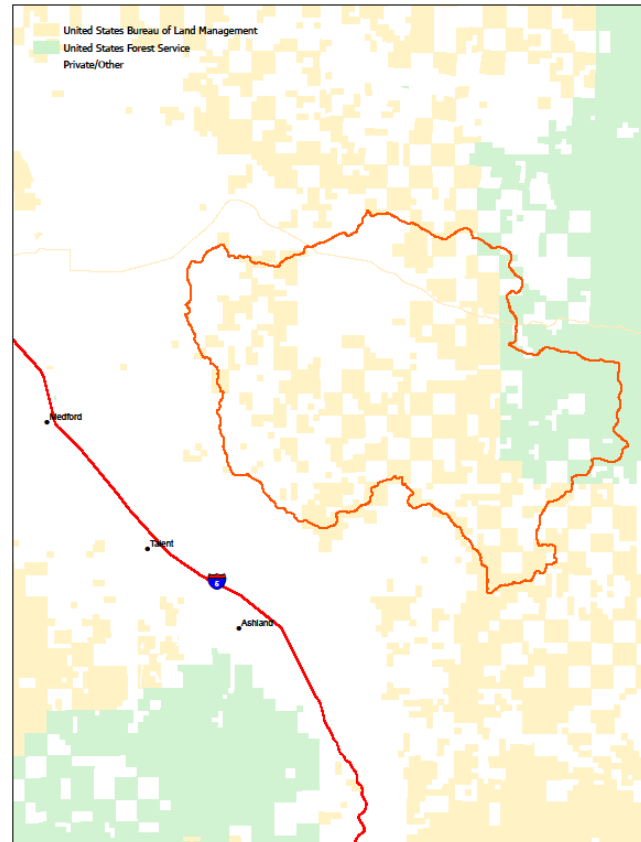
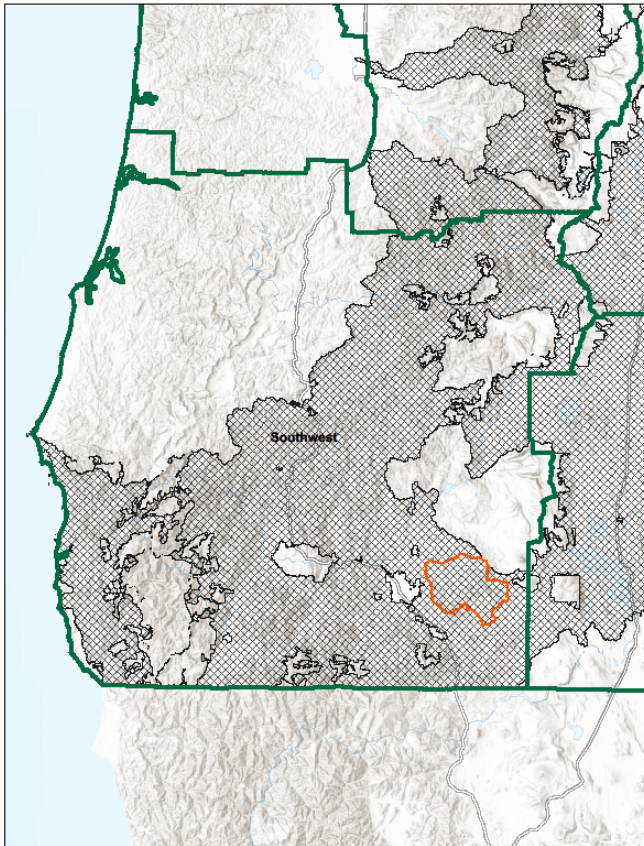
### Oregon Department of Fish and Wildlife

- Access and Habitat Program
- Restoration and Enhancement Program
- Oregon Conservation and Recreation Fund
- State Wildlife Grants
- Private Forest Accord Mitigation Fund Grant Program
- Good Neighbor Authority

### Bureau of Land Management

- Forests and Woodlands Resource Management
- OR/WA IJIA Fuels Management and Community Fire Assistance

# Right Place, Right Scale, Right Tools



- Strengthen partnerships
- Identify project areas
- Establish metrics
- Develop work plans
- Implement projects

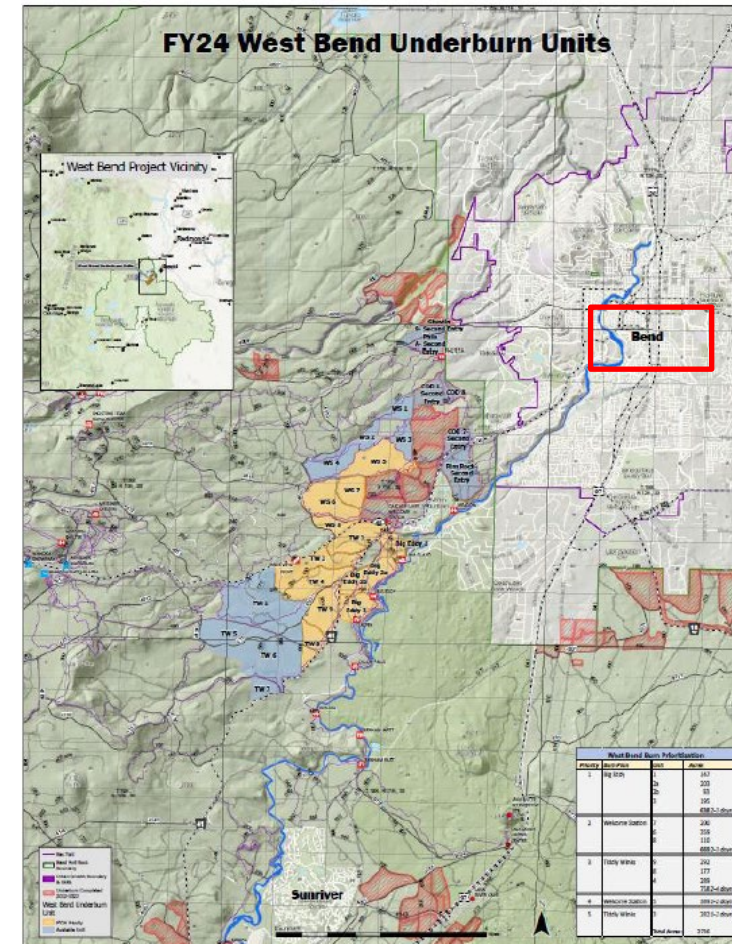
# 2024 Pacific NW Prescribed Fire Agreement

- Act with urgency
- Protect public health, safety, and property
- Identify and address most limiting factors to implementing prescribed fire at scale as a management tool
- Test new approaches, learn from them, and adapt based on experience
- Be innovative and comprehensive, applying best practices



# West Bend Pilot

- Average of 233 acres per year
- Targeted areas adjacent to community that pose high wildfire risk
- Fuels reduction completed prior to burns to reduce emissions
- Pilot resulted in successful burning of 1,864 acres across five days



# West Bend Pilot Burn Accomplishments

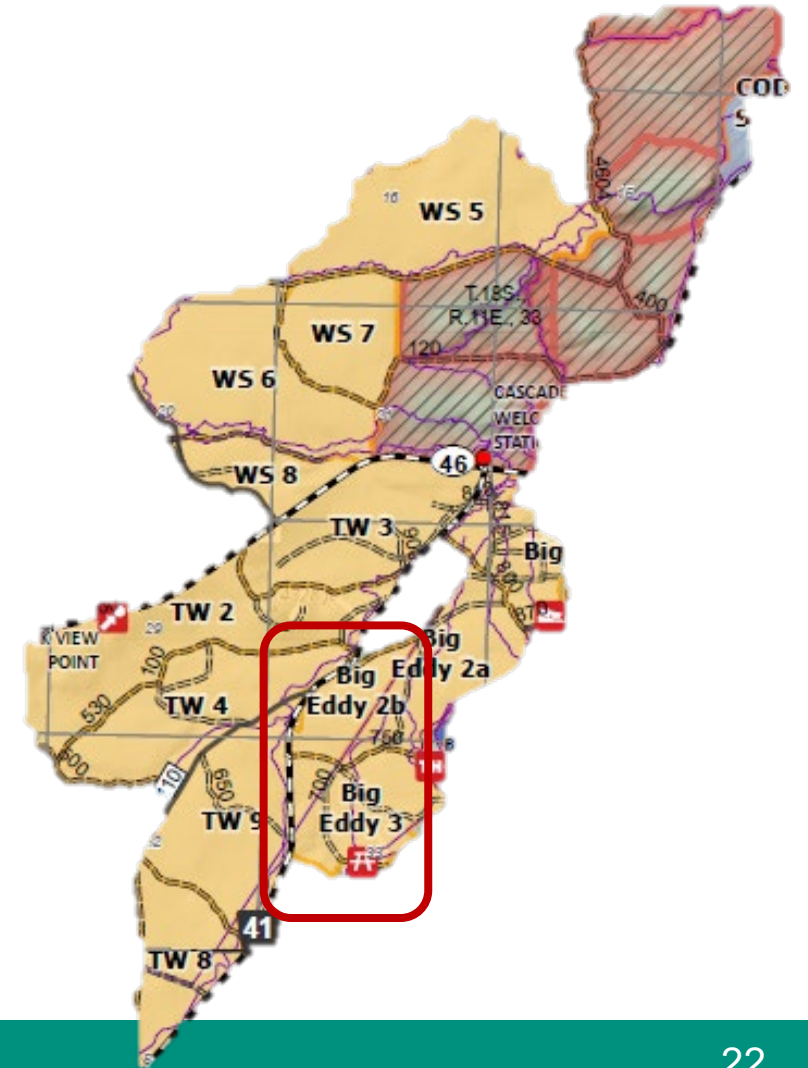
Date	Unit	Acreage	Completed	24 hr PM2.5	Highest PM	Impact Date	Impact Duration	Return to "Good"
May 9, 2024	Taylor (non-USFS land but adjacent)	431	Yes	7.5	35	5/10/2024	2:00 am - 4:30 am	5:00 AM
May 10, 2024	Welcome Station 6a and 8	209	No	NA	NA	NA	NA	NA
May 14, 2024	Welcome Station 6a and 8	209	Yes	48.04	493.2	5/15/2024	2:00 am - 6:30 am	7:00 AM
May 15, 2024	Welcome Station 6 and 7	412	Yes	30.86	301.8	5/16/2024	12:00 am - 6:00 am	6:00 AM
May 20, 2024	Tiddlywinks Block 8 and 9	344	Yes	14.72	110	5/21/2024	2:00 am - 6:30 am	7:00 AM
May 29, 2024	Big Eddy Block 3 and 2B	468	Yes	73.84	470.1	5/30/2024	1:00 am - 9:00 am	9:00 AM
May 30, 2024	Big Eddy Block 1	113	No	NA	NA	NA	NA	NA
June 5, 2024	Big Eddy Block 1	113	No	NA	NA	NA	NA	NA
June 16, 2024	Big Eddy Block 1	113	No	NA	NA	NA	NA	NA

Total USFS Acres:	<b>1,433</b>
Total Acres with Taylor:	<b>1,864</b>

AQI Category and Index Value	ug/m3 Values
Good (0 - 50)	0.0 - 9.0
Moderate (51 - 100)	9.1 - 35.4
Unhealthy for Sensitive Groups (101 - 150)	35.5 - 55.4
Unhealthy (151 - 200)	55.5 - 125.4
Very Unhealthy (201 - 300)	125.5 - 225.4
Hazardous (300 +)	225.5 +

# West Bend - Big Eddy Prescribed Burn

- 468 acres were accomplished
- Active mop up continued the following three days
- Last 2024 spring operation in West Bend



# Notable Takeaways for Public Health

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Foundation for this success resulted from system changes:

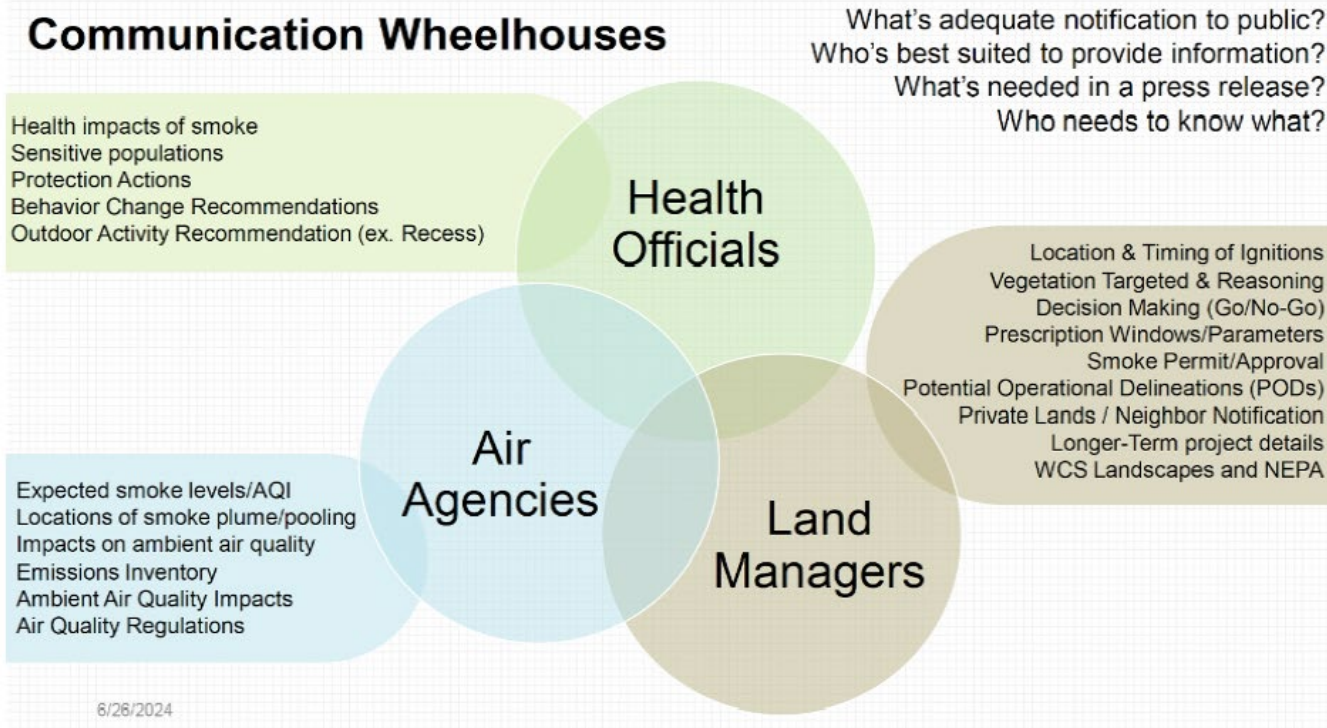
- Smoke Management Plan Rule changes
- Community Response Plan investments
- Public Health Modernization investments
- Federal/Regional cooperation agreements and resources

Results:

- ✓ Unprecedented collaboration between the National Forest and County Public Health Department, many other partners
- ✓ Unprecedented acreage treated with few observable health impacts

# Lessons Learned

## Communication Wheelhouses



“Communication Wheelhouses” figure developed by Dr. Amber Ortega, U.S. Forest Service Regional Smoke Coordinator and Air Resource Advisor, Rocky Mountain Region. Last updated 6/26/24.

## Lessons Learned

- Broad regional communication strategies needed to reach all areas impacted by smoke
- Pivot to year-round, whole community and airshed preparedness
- Address organizational challenges in planning and implementation by advancing coordination and clarifying roles
- Improve the integration and use of smoke modeling and forecasts by public information teams

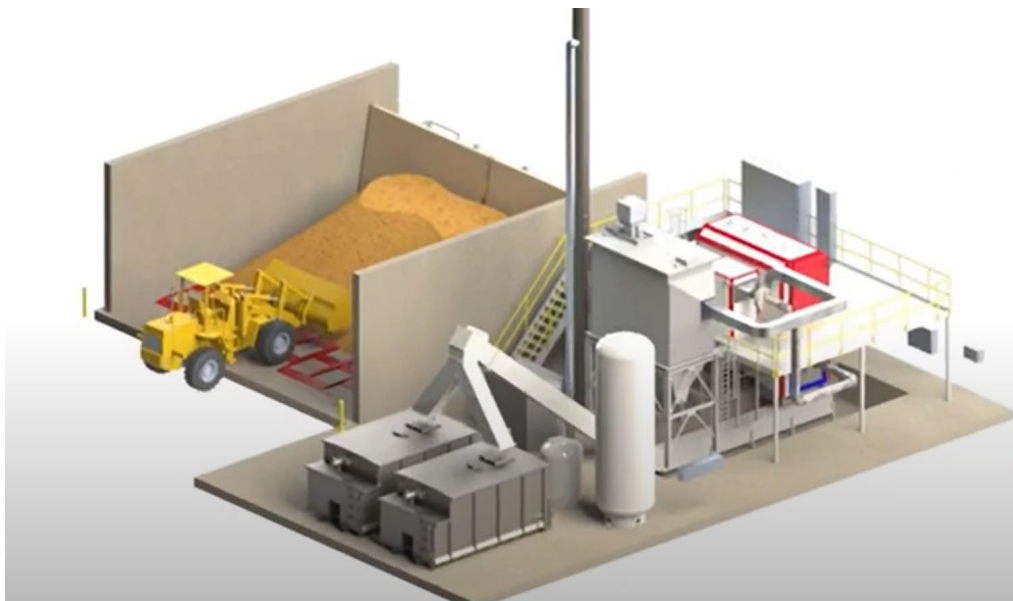


# Underburning vs. Pile Burning



# Biomass Utilization

Biomass utilization removes non-merchantable material from the forest and redirects it to markets including bioenergy and biochar.



## Bioenergy in Oregon

Wood and Other Biomass:



- Total Capacity in Oregon: 212 MW
- Facilities in Oregon (1.5 to 51.5 MW): 16
- Total Generation (2020): 631,206 MWh
- Total Exports (2020): 413,898 MWh
- Total Consumption (2018): 700,841 MWh

# Biomass Utilization Working Group

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- Formed in 2021 to examine biomass utilization as an alternative to open burning to reduce emissions from fuel treatments while addressing hazardous fuels reduction projects.
- Group continues to support utilization projects, grant applications, and education and outreach.

# Air Curtain Incinerators



# Emission Factor Comparison

Scenario	Emission Factors				
	PM/PM2.5 (lbs./ton)	% Reduction	CO (lbs./ton)	% Reduction	Source
ACI Source Test	4.25 (total PM)	<b>NA</b>	14.5	<b>NA</b>	DEQ Source Test
ACI Permit Limits	1.1 (PM2.5) 1.7 (total PM)	<b>+60%</b>	2.6	<b>+82%</b>	USFS Study
Pile Burning	25.5 (PM2.5)	<b>-83.3%</b>	179	<b>-91.9%</b>	USFS Study
Broadcast Burning	36.0 (PM2.5)	<b>-88.2%</b>	180	<b>-91.9%</b>	USFS Study
Open Burning	17 (total PM)	<b>-75%</b>	140	<b>-89.6%</b>	EPA AP 42
Hardwood Broadcast Burning	36 (total PM)	<b>-88.2%</b>	224	<b>-93.5%</b>	EPA AP 42
Conifer Dozer Piled	12 (total PM)	<b>-64.6 %</b>	74	<b>-80.4%</b>	EPA Ap 42

ACIs significantly reduce emissions compared to broadcast and pile burning.

# ACI Rule and Permit Updates

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Permit Number: AQGP-031

Expiration Date: 09/01/2032

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**OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY**  
**GENERAL AIR CONTAMINANT DISCHARGE PERMIT**

Air Operation Section  
700 NE Multnomah Street, Suite 600  
Portland, OR 97232-4100  
Telephone: (503) 229-5696

This permit is being issued in accordance with the provisions of ORS 468A.040.

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**ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY**

# Recap and Next Steps

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- Smoke management and wildfire risk are multi-faceted problems that require collaboration between agencies at all levels of government.
- Public health needs to continue to be a large part of the conversation around fuels reduction projects, especially when they occur near communities.
- Oregon has been, and will continue to be, a leader in addressing smoke from both prescribed fire and wildfire.
- The use of prescribed fire needs to continue to expand, along with projects that create opportunities for fuel reduction that do not involve burning.

A photograph of a volcanic eruption. A large, dark, conical volcano is in the center, with a massive, billowing plume of ash and smoke rising from its summit. The plume is a mix of grey and reddish-brown, filling the upper two-thirds of the frame. The foreground shows a valley with green fields and some buildings, partially obscured by the low-lying ash clouds.

# Thank you!

DEQ – Michael Orman and Jennifer Horton

OHA – Gabriela Goldfarb

ODF – Nathan Beckman



# Title VI and Alternative Formats

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