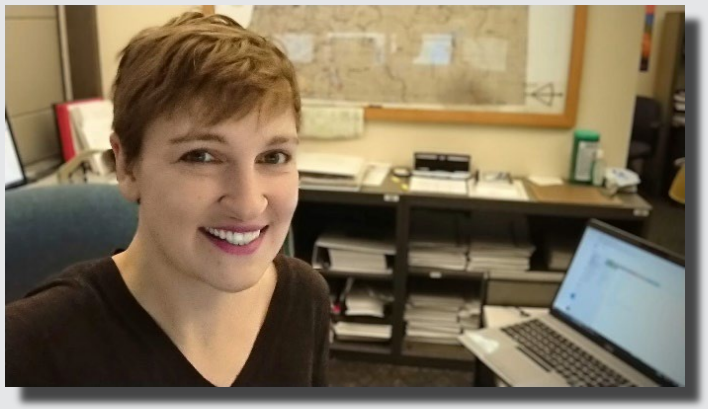
Smoke Management & Forecasting

April 9, 2026

Presentation Outline

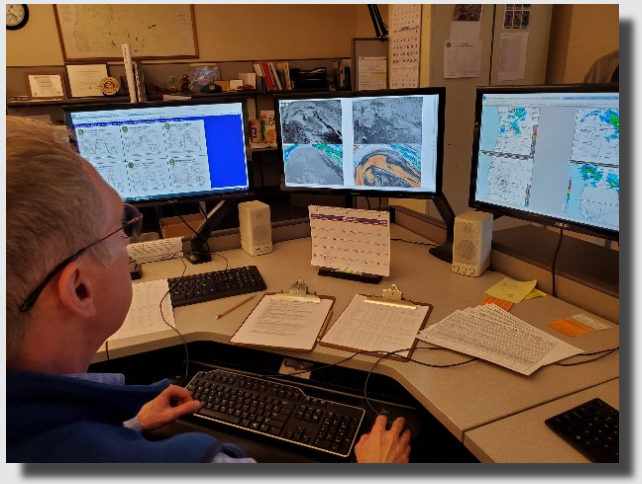
- What we do.
- How we do it (forecasting).
- Getting the smoke instructions to you.

Weather Team



Sherri Pugh

Meteorologist



Pete Parsons

Lead Meteorologist

Gary Votaw

Meteorologist

Our Mission

Maximize essential forestland burning while minimizing smoke emissions and smoke impacts to public health.

Who We Support

Smoke Management Advisory Committee: committee of five various statewide stakeholders (SMAC, 1989)

Meteorological support for

- Oregon Smoke Management Plan (SMP)
- Oregon Department of Environmental Quality
- Oregon Department of Agriculture

In a Year

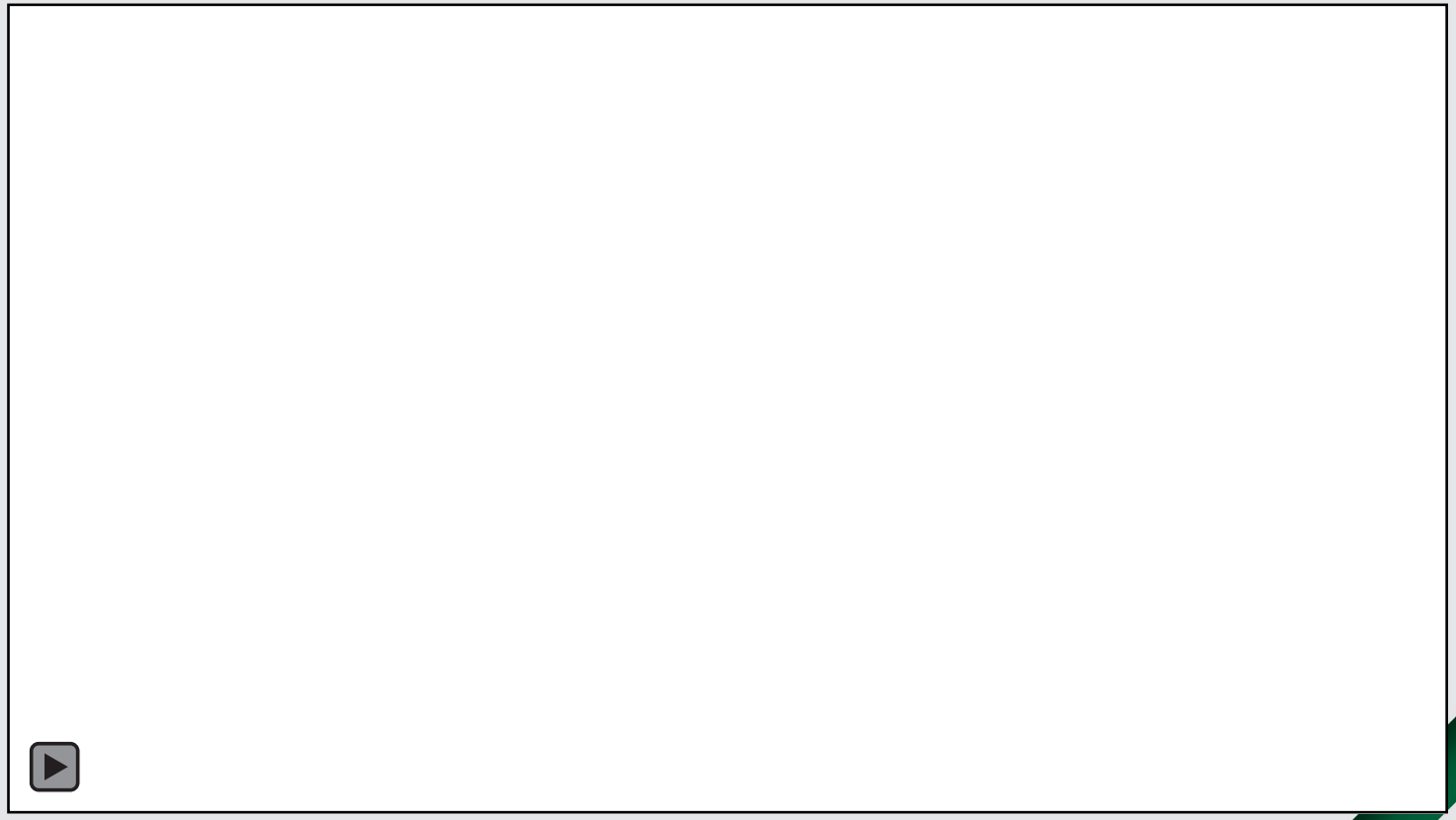
Spring
Prescribed burning

July - September
Agriculture field burning

Fall & Winter
Prescribed burning

Daily (year-round)
Agricultural Burning

Monthly (year-round)
Seasonal Climate Forecast



Field Burning

Wheat and grass seed burning

Benefits:

- Reduction of pests, weeds, and diseases
- Increase in seed yields
- Increase in stand life
- Minimizes the need for tillage and controls erosion

Prescribed Fire

- Reduces hazardous forest fuels
- Reduces the potential for high-intensity wildfires and the huge volume of smoke produced by them
- Provides for safer fire suppression where controlled burns have occurred
- Prepares logged sites for replanting, recycling nutrients back into the soil and reducing pests and disease
- Lit when fire danger is low and weather conditions are favorable for protecting smoke sensitive receptor area (SSRA) communities from smoke

Prescribed Burning Forecast

Mixing heights

Sounding forecast and actual, model analysis

Transport wind direction & speed

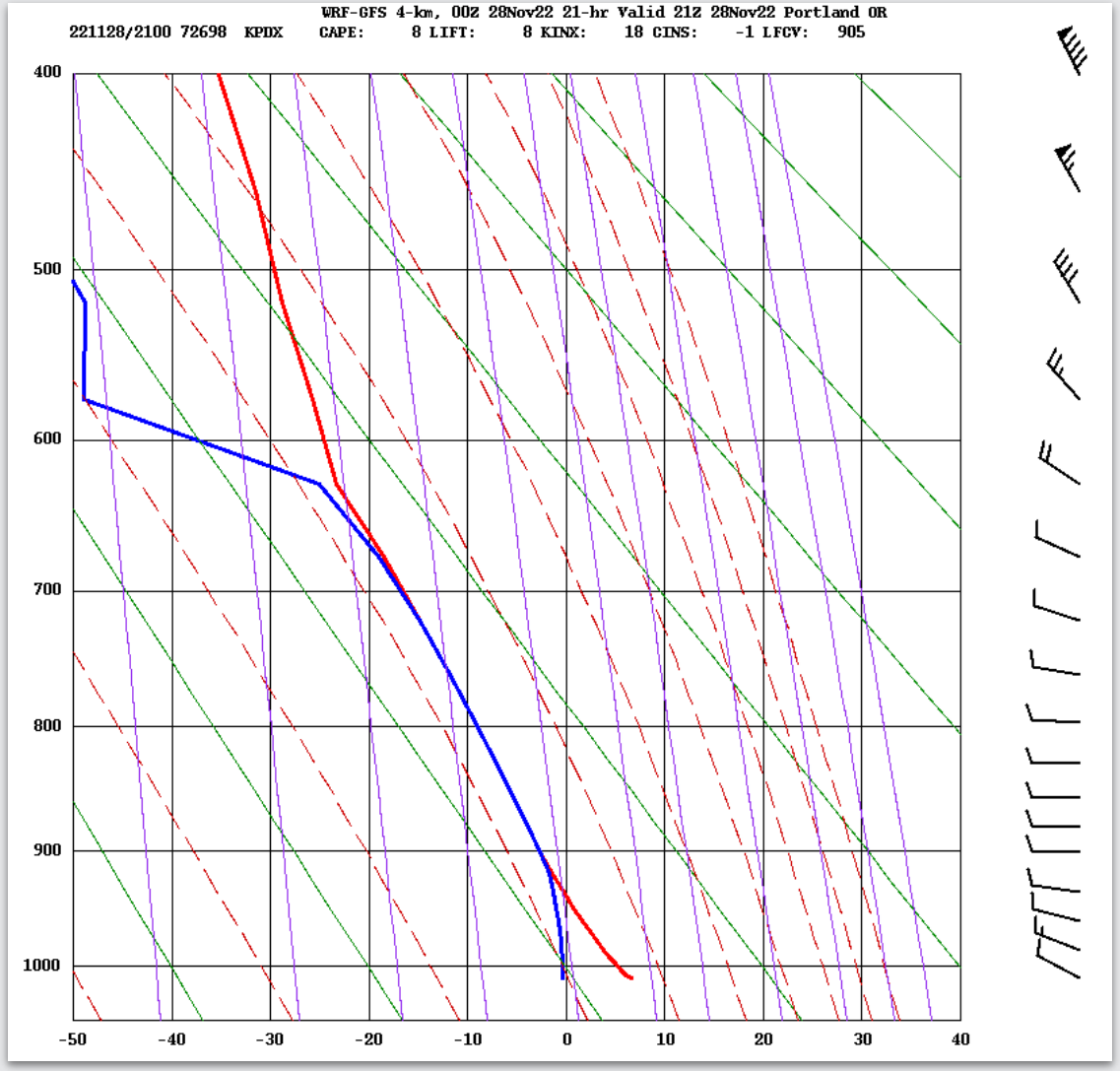
Surface to mixing height wind

Distance to SSRA

Highest level of protection; calculate plume length

Drainage flows & other effects

Reduce burning to avoid excessive/funneling smoke



Mixing Height

5000+ feet best, 2-3000 feet minimum

Transport/Surface Wind

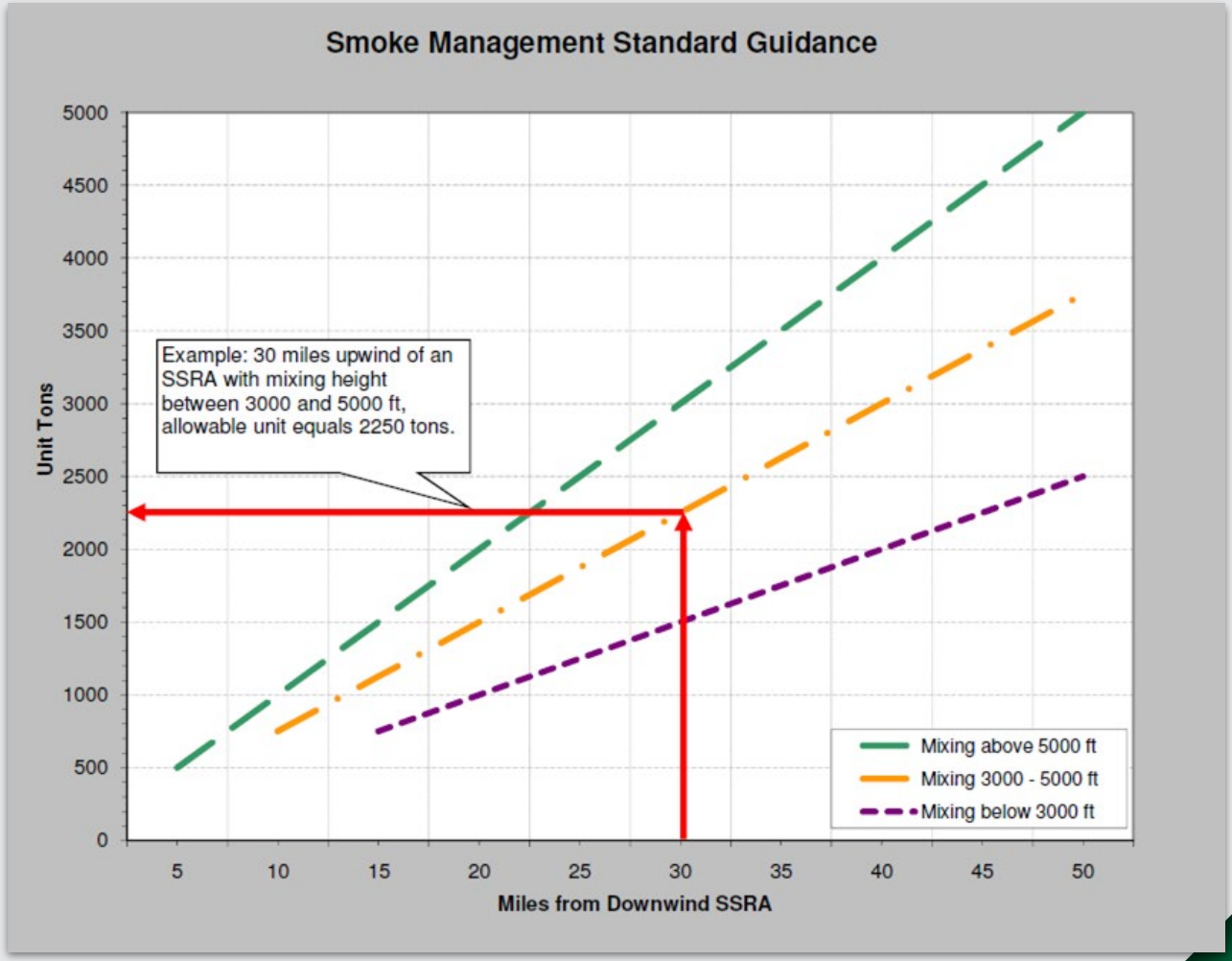
Depends on location, onshore vs offshore

Other factors

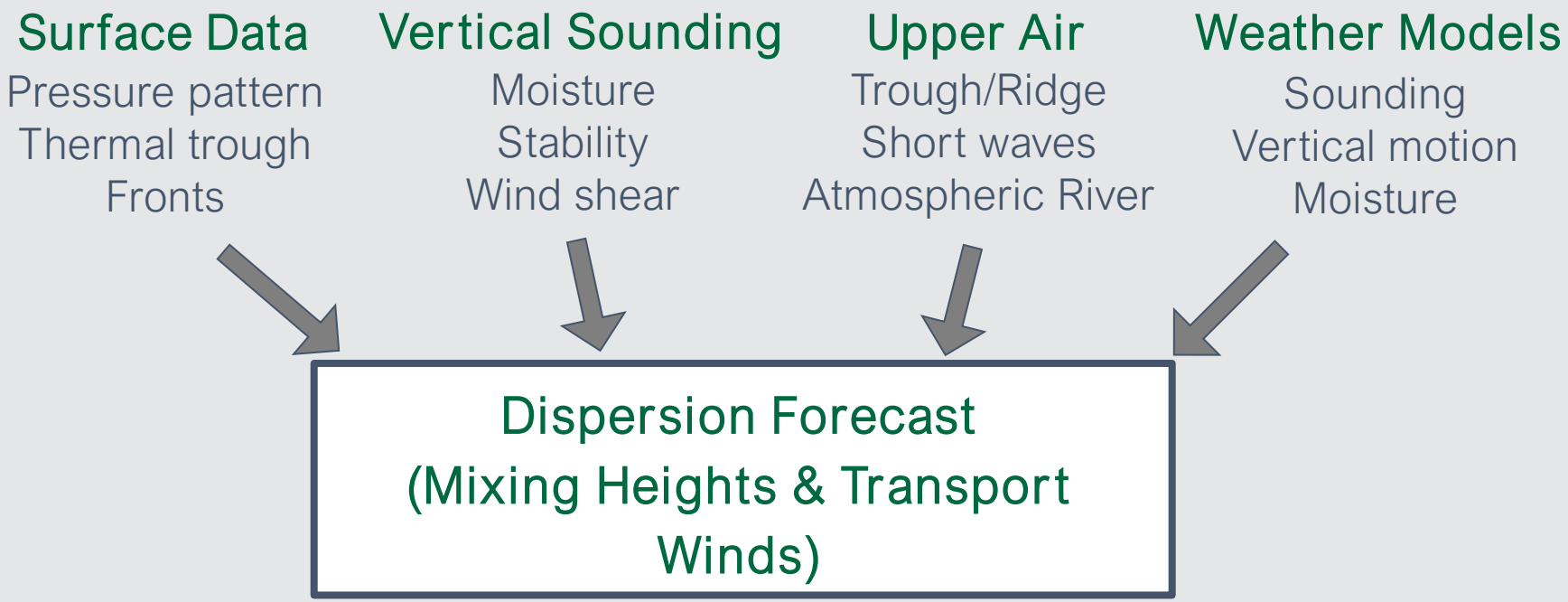
- Inversions
- Ventilation/Dispersion

Smoke Plume Distance

Lower mixing height = farther plume travel



Forecast Preparation



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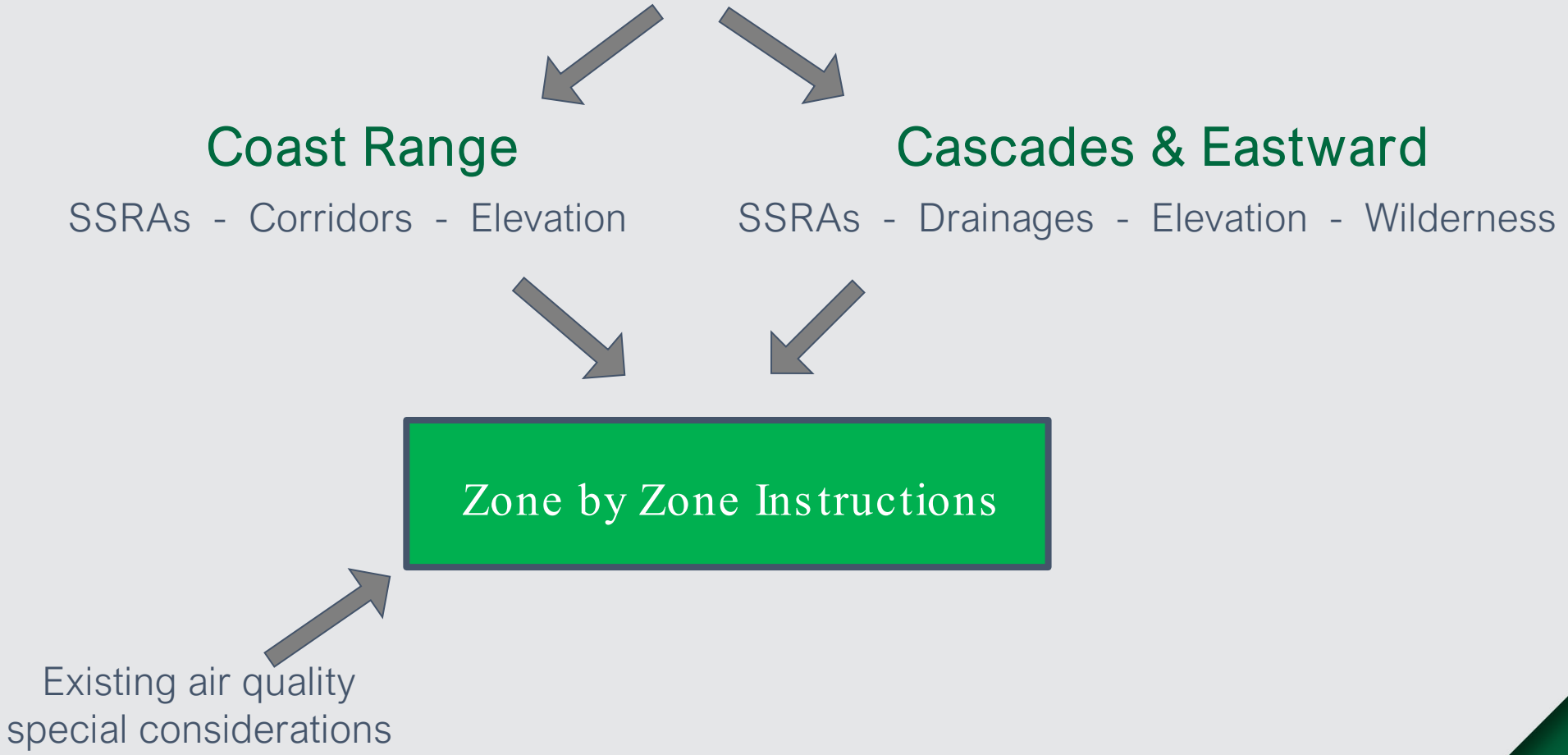
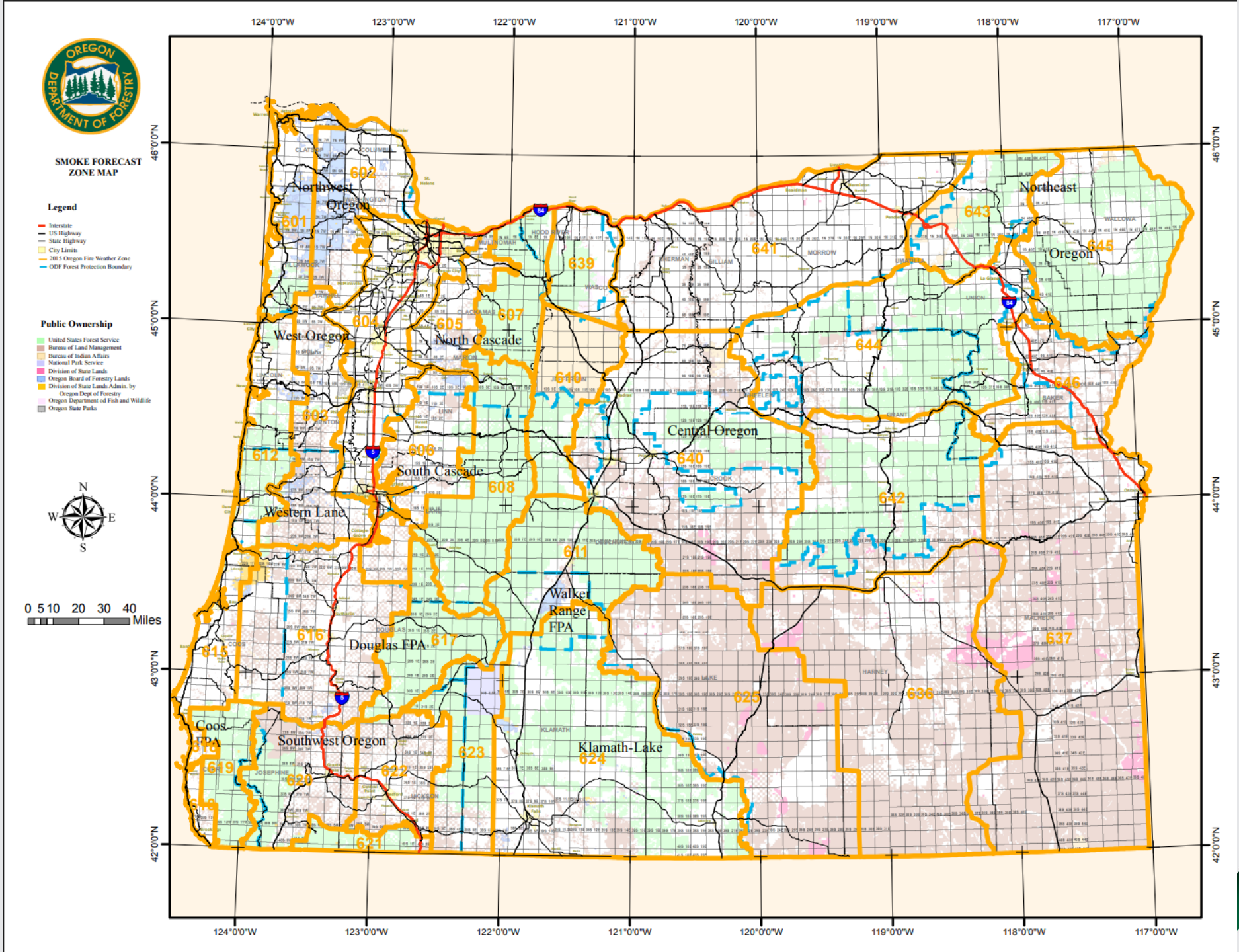
Instruction Preparation




SMOKE FORECAST ZONE MAP
Legend
Interstate
US Highway
State Highway
City Limits
2015 Oregon Fire Weather Zone
ODF Forest Protection Boundary
Public Ownership
United States Forest Service
Bureau of Land Management
Bureau of Indian Affairs
National Park Service
Division of State Lands
Oregon Board of Forestry Lands
Division of State Lands Admin. by Oregon Dept of Forestry
Oregon Department od Fish and Wildlife
Oregon State Parks
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122°0'0"W
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119°0'0"W
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117°0'0"W
46°0'0"N
45°0'0"N
44°0'0"N
43°0'0"N
42°0'0"N
Northwest Oregon
West Oregon
North Cascade
South Cascade
Western Lane
Central Oregon
Northeast Oregon
Douglas FPA
Walker Range FPA
Coos FPA
Southwest Oregon
Klamath-Lake
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Prescribed Burning Instructions

Three regions of Oregon

General forecast discussion (1)

Dispersion details (2)

Where/how much may be burned (3)

- Maximum consumable tons
- Distance from SSRAs
- Based on smoke zones

Extra rules, advisories

SMOKE MANAGEMENT FORECAST AND INSTRUCTIONS
SALEM FORESTRY WEATHER CENTER
OREGON DEPARTMENT OF FORESTRY

ISSUED: Sunday, Novembe
Pete Parsons

1. DISCUSSION AND FORE
AREA FORECAST ZONES 60

SHORT-TERM DISCUSSION
A strong cold front wi
this evening. Steady
showery overnight with
Snow levels will drop
lower under heavier sh
from .25" to .75" can
with several inches of
A strong upper-level t
shower activity on Mon
near 2-3000 feet. Prec
.25" will be common.
mixing with SE-SW tran

EXTENDED DISCUSSION
The upper-level trough
southward on Tuesday w
the north. A signific
offshore transport win
levels of the atmosphe
unseasonably cold, wit
That should continue t
A drier northerly flow
After a frosty start,
struggle into the mid-
afternoon clearing. U
suppress daytime mixin
and may reverse to ligh

2. DISPERSION

MONDAY

Zone 601-612 and 639 (North Coast Range and Cascades):

MORNING
Mixing height 3000 - 40
Transport wind SSE to S
Surface wind SE to SSW

AFTERNOON
Mixing height rising ab
Transport wind SSE to S
Surface wind similar to

EVENING
Mixing height 2000 - 30
Transport wind decrease
Surface wind decreases

Zone 615-620 (South Coa

MORNING
Mixing height 3000 - 40
Transport wind SSE to S
Surface wind SSE to SSW

AFTERNOON
Mixing height rising ab
Transport wind similar
Surface wind similar to

EVENING
Mixing height 2000 - 30
Transport wind decrease
Surface wind SE to SSW

3. **BURNING INSTRUCTIONS FOR ALL ZONES IN THE WESTERN OREGON AREA**
- Valid for burning done Monday, November 7, 2022.

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Coast Range

All Zones
Use standard guidance matrix - see section 5 below.
Ensure adequate distance from downwind SSRAs for smoke to dissipate.

Cascades

Zone 605, 606, 607, 608, 639, 610, 617, 620, 622, and 623
Use standard guidance matrix - see section 5 below.
Ensure adequate distance from downwind SSRAs for smoke to dissipate. Verify transport winds away from SSRA if burning within 10 miles of the SSRA in Zone 605 and 606.

Zone 611 and 616
Units should be 1500 tons or less, spaced 3 miles apart, and 5 miles from downwind SSRAs. In zone 616 avoid ignitions north of T24S. South of T29S higher tonnage is possible - call the forecaster.

Siskiyous
Units should be 1500 tons or less, spaced 3 miles apart, and 5 miles from downwind SSRAs.

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5. STANDARD GUIDANCE MATRIX:

- ➔ Greater than 5000 ft mixing height: Limit to 150 tons per mile from downwind SSRAs.
  Example: 75 tons allowed if burned a half mile from a downwind SSRA.

- ➔ 3000 - 5000 ft mixing height: Limit to 50 tons per mile if burning within 5 miles of downwind SSRAs. Limit to 100 tons per mile if burning 5 miles or beyond downwind SSRAs.
  Example #1: 200 tons allowed if burned 4 miles from a downwind SSRA.
  Example #2: 500 tons allowed if burned 5 miles from a downwind SSRA.

- ➔ Less than 3000 ft mixing height: No burning within 5 miles of downwind SSRAs. Limit to 60 tons per mile from downwind SSRAs.
  Example: 300 tons allowed if burned 5 miles from a downwind SSRA.

- Ensure adequate spacing between units when burning near downwind SSRAs.

- Use of polyethylene (PE) sheeting on greater than 75 percent of piles in a unit with 60 percent coverage per pile will allow a 50 percent increase in tonnage over the existing instruction tonnage for that zone.

- All exceptions must be coordinated with the duty forecaster prior to ignition.

Key Notes

Smoke instructions:

- Issued 2:30-3:15pm Mon-Fri (not holidays or weekends)
- Friday instructions include the weekend and Monday
- Check AM email for updates

Phone calls:

- If “cleared” by instructions, no call necessary
- Call with any questions and concerns, 2000+ ton burns

Key Notes

Tips for phone calls:

- Leave a message for the forecaster on duty
- Provide **name**, **affiliation**, and **phone number**
- Planned **burn legal location**, **type**, **total consumable tons**, **day of burn**

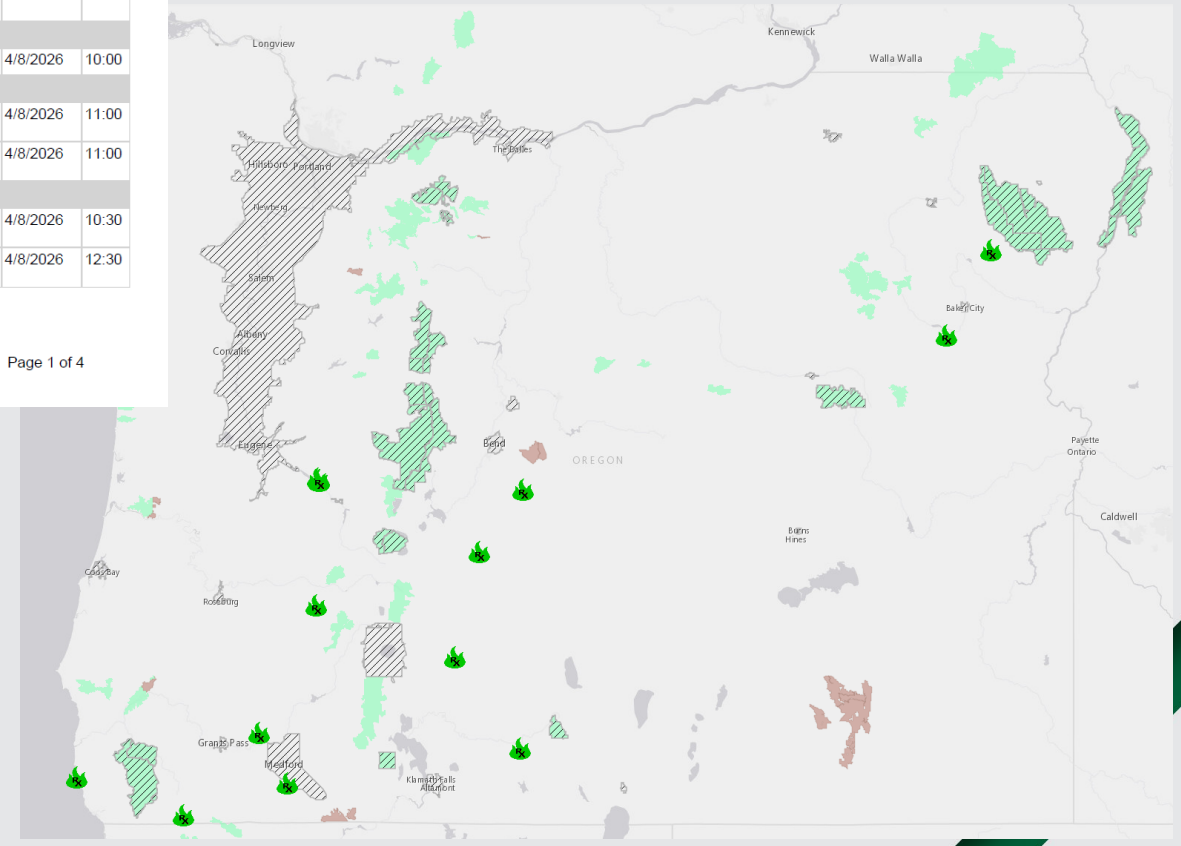
Tips for smoke forecasts and instructions:

- Special headers for air stagnation, SPZ notes, schedule changes, etc
- Helpful information at the bottom

Daily Plans Report

District Name	Registration #	Legal	Elev	RA	Burn Type	Ownership	Burn Boss	Phone	Acres	Unit Tons	Plan	Plan Date	Time
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	54	270	270	4/8/2026	10:00
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	3[redacted]	9240	1780	4/8/2026	10:00
[redacted] Total:									**410**	**9510**	**2050**		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	266	21000	2128	4/8/2026	11:00
[redacted] Total:									**266**	**21000**	**2128**		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	7	20	20	4/8/2026	10:00
[redacted] Total:									**7**	**20**	**20**		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	10	40	40	4/8/2026	10:00
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	6	73	15	4/8/2026	11:00
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	3	9	6	4/8/2026	10:00
[redacted] Total:									**19**	**122**	**61**		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	3	3	3	4/8/2026	10:00
[redacted] Total:									**3**	**3**	**3**		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	234	1872	1872	4/8/2026	11:00
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	200	1200	1200	4/8/2026	11:00
[redacted] Total:									**434**	**3072**	**3072**		
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	12	480	96	4/8/2026	10:30
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	8	320	48	4/8/2026	12:30

Report compiled: 4/8/2026 11:00:10 AM



Key Notes

Mailing list:

- Sign up for 3 forecast areas
- Respond to confirmation email
- Also available on webpages

Sign up here for email lists: http://weather.smkmgt.com/mailman/listinfo/

Western & North-Central Oregon: http://www.odf.state.or.us/DIVISIONS/protection/fire_protection/daily/smi.htm

South-Central Oregon: http://www.odf.state.or.us/DIVISIONS/protection/fire_protection/daily/lmt.htm

NE Oregon: http://www.odf.state.or.us/DIVISIONS/protection/fire_protection/daily/neo.htm