Integrating Public Health into Forest and Fire Management

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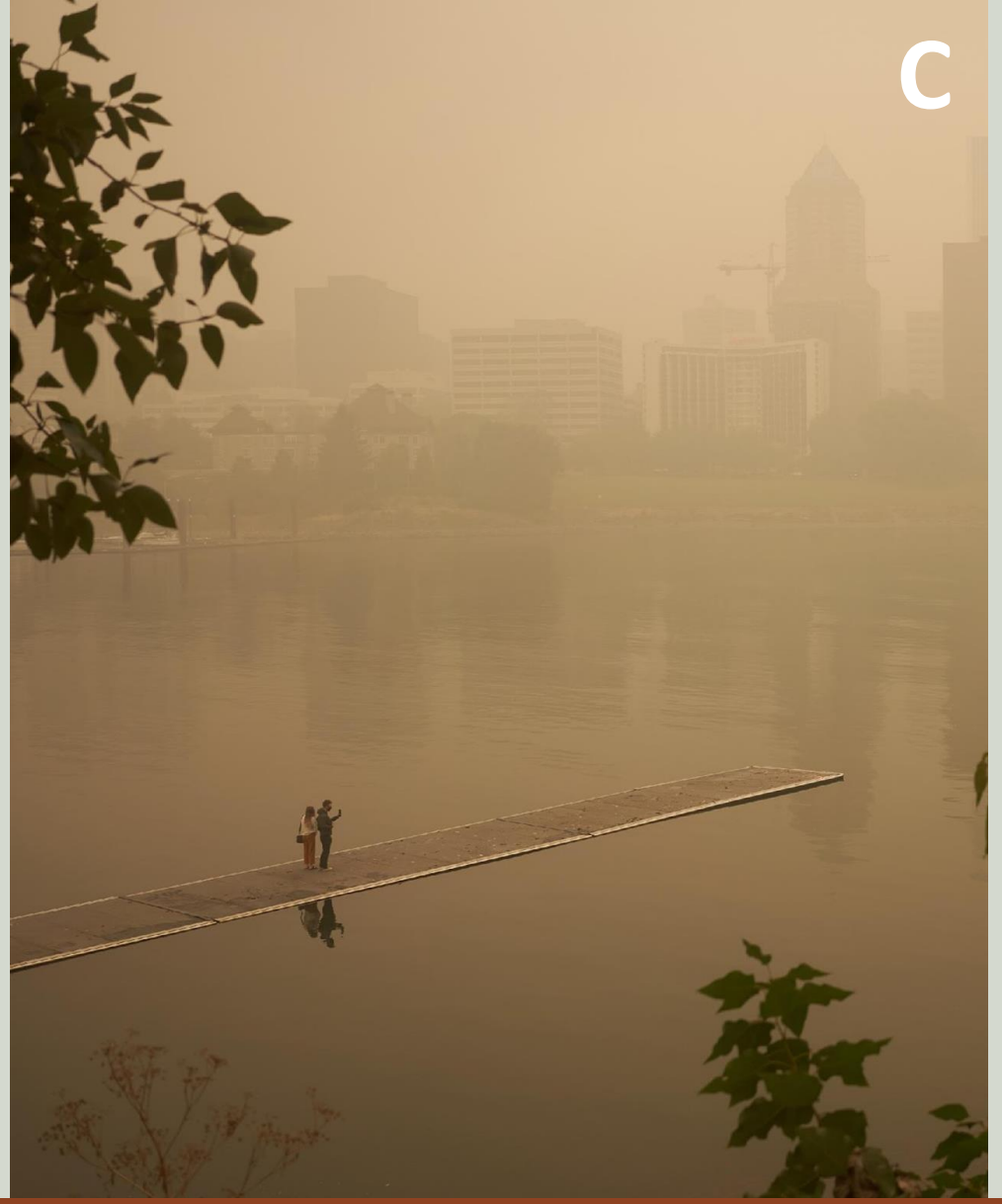

Which image resonates most with you?

What is your discipline?

What is your perspective when it comes to thinking about and working with wildland fire?

Forest and Fire Management

Public and Human Health

Air Quality and Regulation

Forest and Fire Management

Public and Human Health

Air Quality and Regulation

At times, we are unintentional adversaries…

Environmental Justice, Ethics and Policy (M Tondel and M Jones, Section Editors) | Open Access |
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Wildfire, Smoke Exposure, Human Health, and Environmental Justice Need to be Integrated into Forest Restoration and Management

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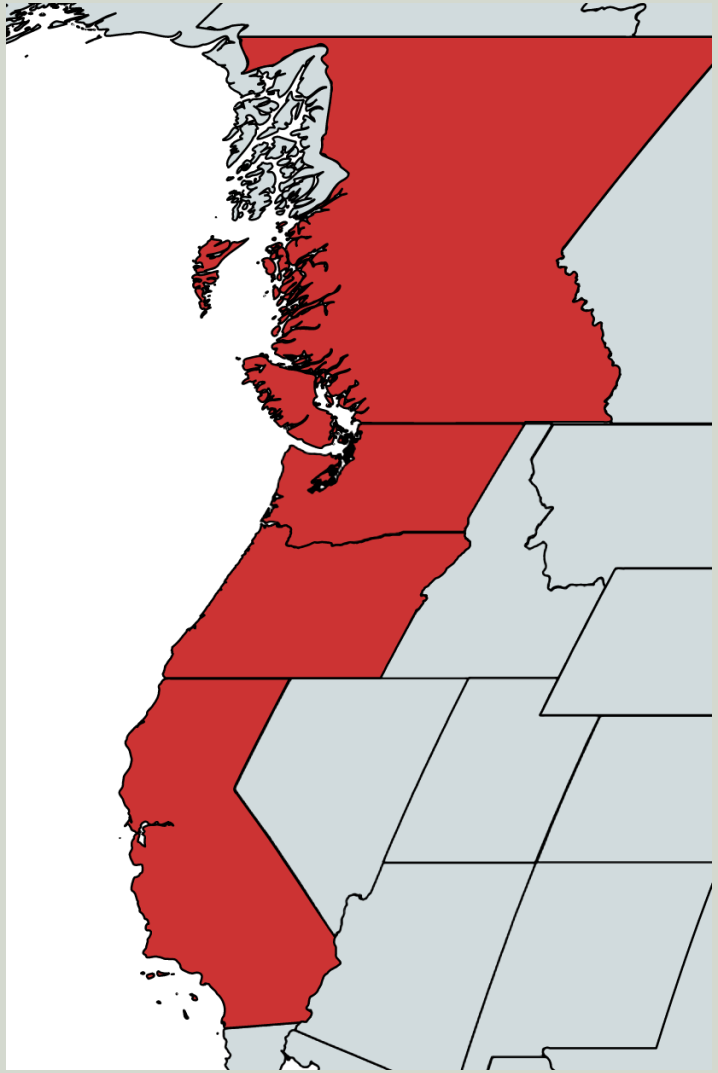
The Nature Conservancy
Partnership for Air Matters
Tribal Health Homes Network




Forest and Fire Management
Public and Human Health
Air Quality and Regulation

The goal.

(1) find **common ground** to provide a transdisciplinary view of how forest and fire management, (**specifically prescribed and managed fire**), intersects with human health **through the impacts of smoke** and

(2) articulate the need for a more **integrated approach**

Transdisciplinary Consensus, an Interdisciplinary Approach

1 We recognize the need to listen to and integrate a diversity of perspectives, in particular those embodied by Indigenous peoples who have successfully used fire as an ecological tool for thousands of years.

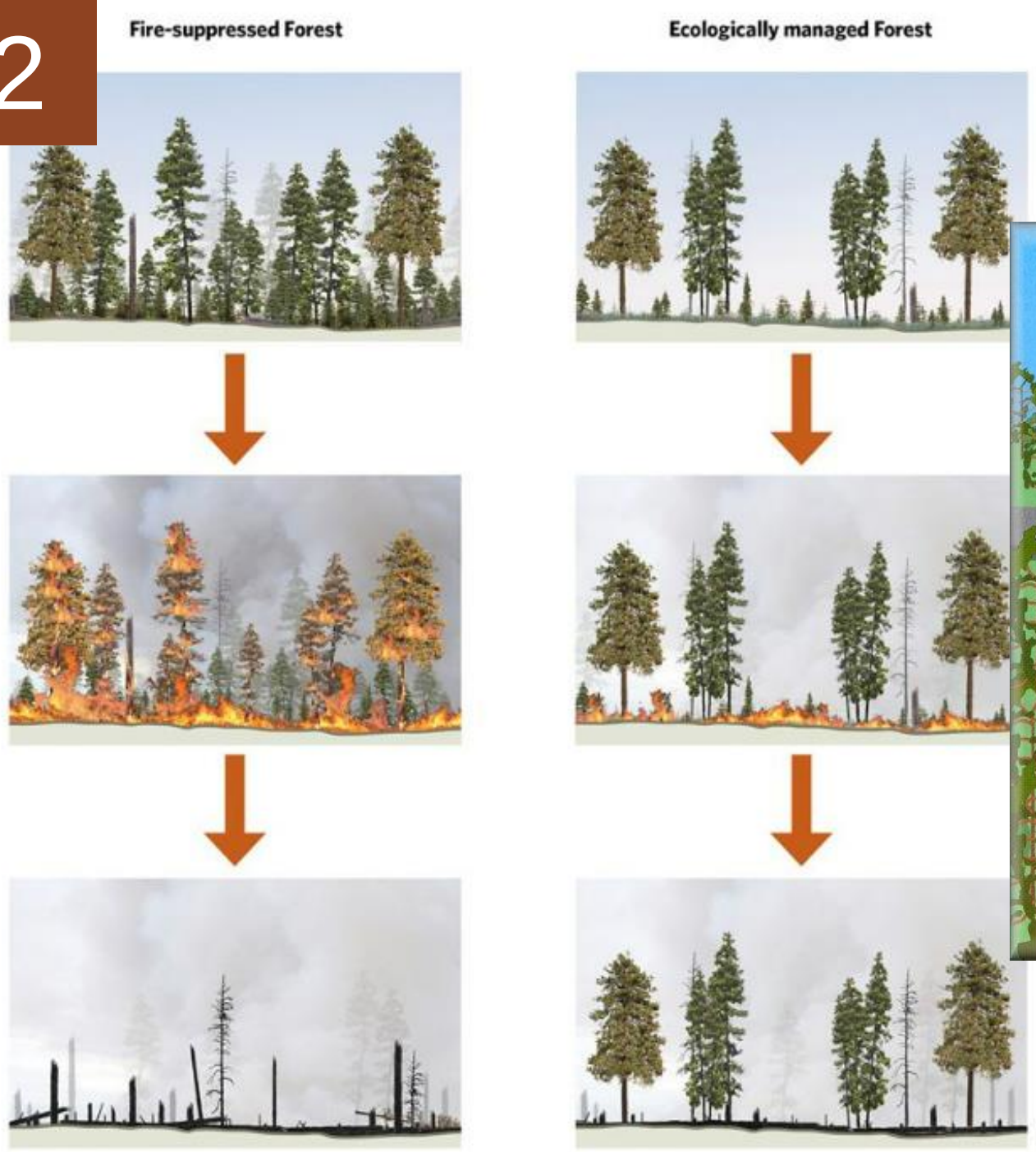
1

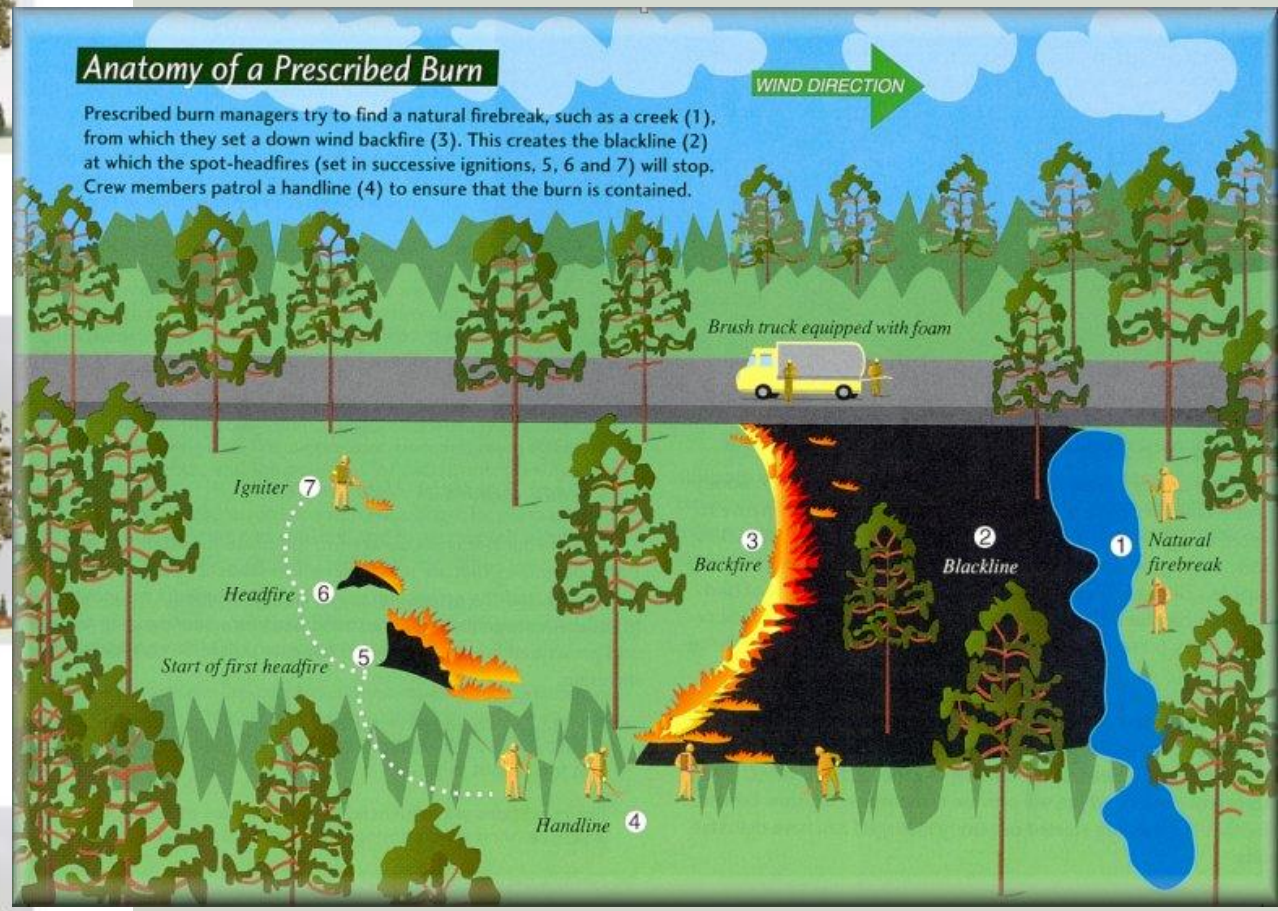
“I'm getting a point across is that we have the knowledge, and there's a reason why we burned, and under ideal conditions so that people understand that. It was outlawed and we weren't allowed to, because we wanted to suppress fire. Not us, but when the different way of thinking came. We learned that this is a fire habitat and you got to learn to live with fire. And use it as a tool, use it properly, and under the right conditions.”

- Leadership Interviewee, Tribal

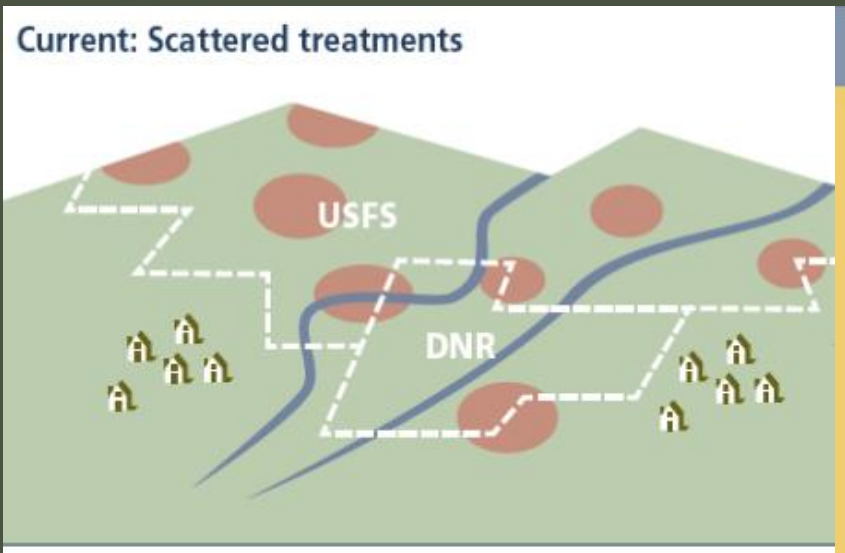
2 Prescribed fires in addition to managed fires for resource benefit are both necessary management techniques to keep forests resilient and to lessen the negative ecological and public health impacts of wildfires.

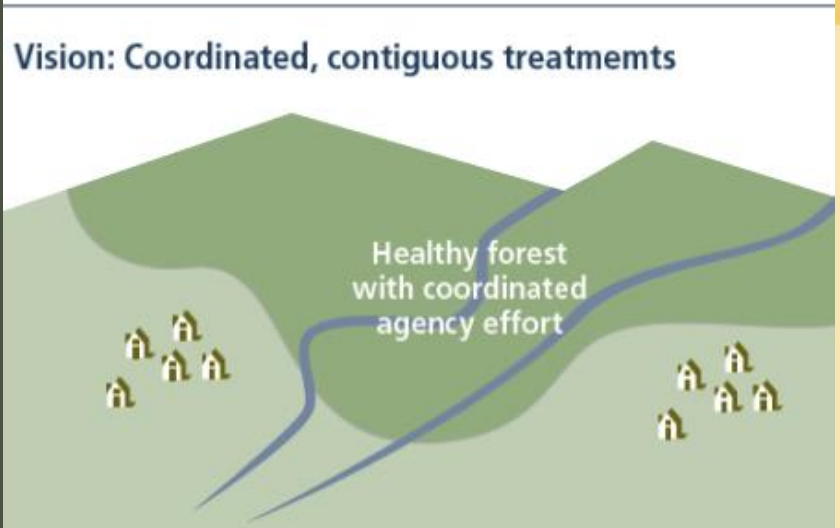
2

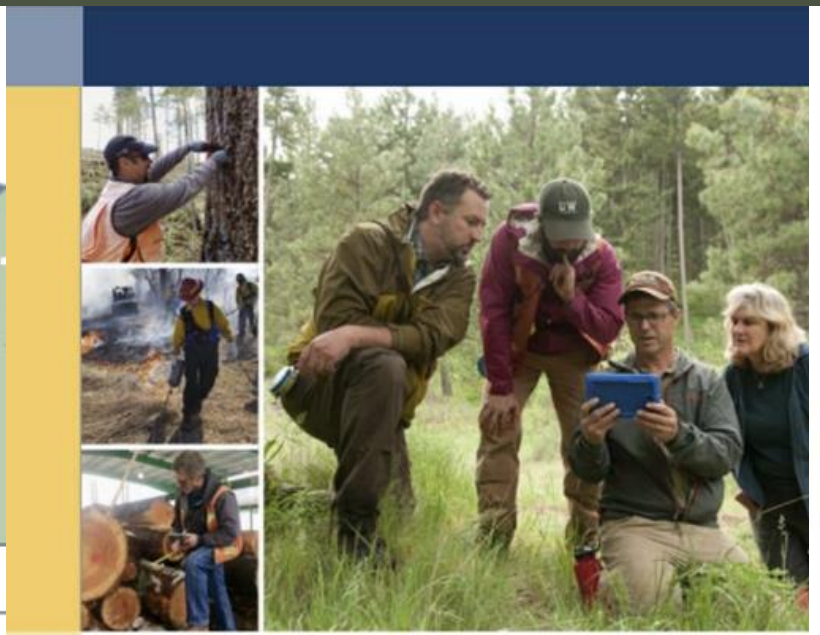

Fire-suppressed Forest
Ecologically managed Forest


Anatomy of a Prescribed Burn
Prescribed burn managers try to find a natural firebreak, such as a creek (1), from which they set a down wind backfire (3). This creates the blackline (2) at which the spot-headfires (set in successive ignitions, 5, 6 and 7) will stop. Crew members patrol a handline (4) to ensure that the burn is contained.
WIND DIRECTION
Brush truck equipped with foam
Igniter 7
Headfire 6
Start of first headfire 5
3 Backfire
2 Blackline
1 Natural firebreak
Handline 4

2 Burn Plans



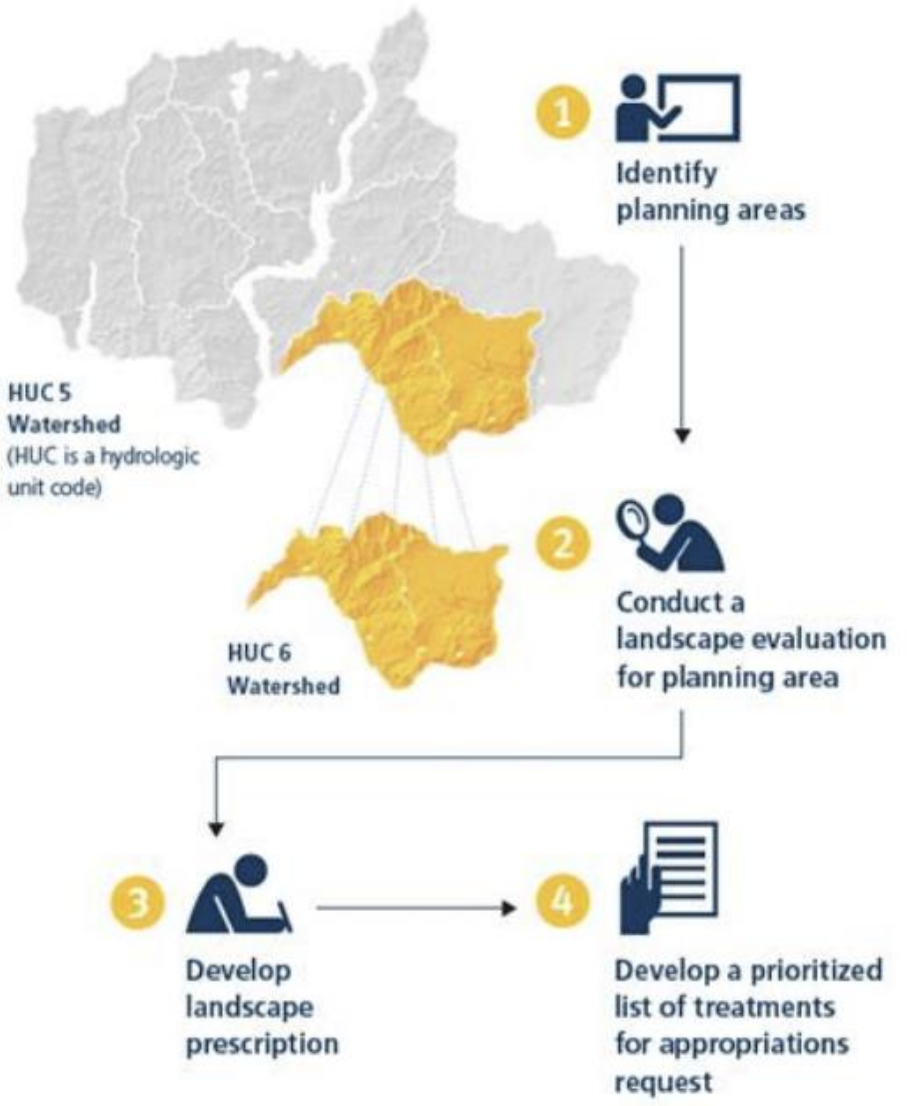




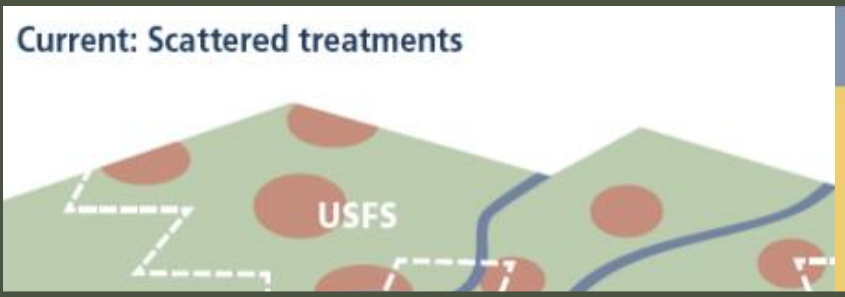
20-YEAR FOREST HEALTH STRATEGIC PLAN

EASTERN WASHINGTON

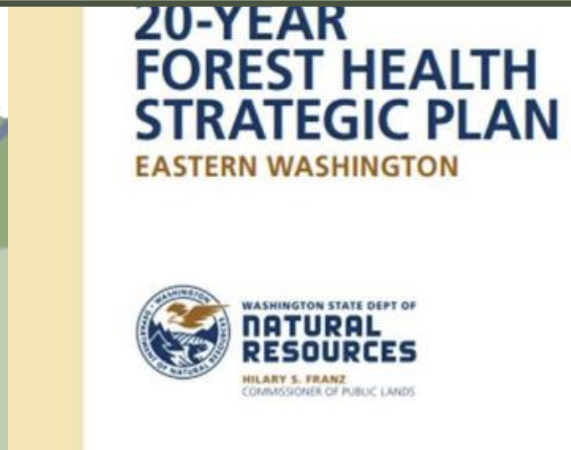
WASHINGTON STATE DEPT OF NATURAL RESOURCES
HILARY S. FRANZ
COMMISSIONER OF PUBLIC LANDS



2 Burn Plans



Burners across the Western United States hope to increase Rx acres burned by 30-50% in the next five years.

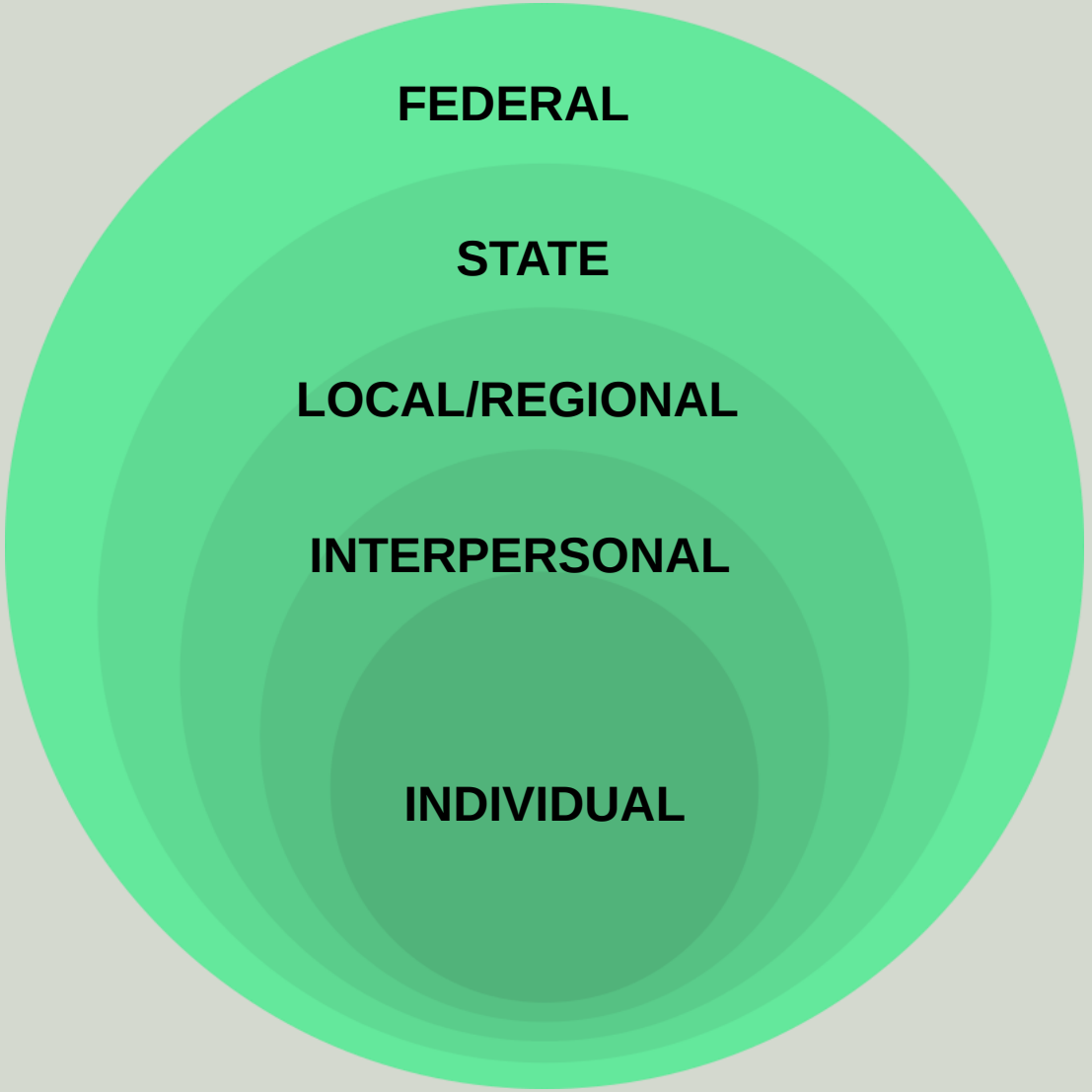


3

Certain regions of the western US will experience more smoke days with heightened use of prescribed and managed fire; however, we expect the impacts of smoke exposure to be reduced over the long term in comparison with untreated land burned by wildfires. With these techniques, exposure in affected communities can be planned and lessened.

3 Examples of regulation at various levels (non-Tribal land)

- **Federal level:** Clean Air Act and Regional Haze Rule
- **State level:** SIPs and smoke management plans
- **Local/regional level:** air district "go/no go" decisions and county/fire district burn bans
- **Interpersonal:** agency and community norms, protocols, and culture; social acceptability
- **Individual:** risk aversion and cost-benefit analysis



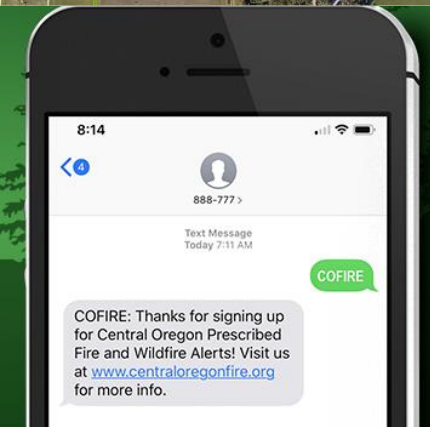
3 Exposure can be planned and lessened

PLANNED PRESCRIBED BURN

A BURN IS CURRENTLY PLANNED FOR THE UNDEVELOPED PARK LAND ON THE NORTHWEST SECTION OF YOUTH COMMUNITY PARK IN THE CITY OF SANTA ROSA. THE BURN SECTION IS BETWEEN PARADISE LN AND FULTON ROAD, SOUTH OF PINER RD IN THE ORANGE HIGHLIGHTED AREA OF THE MAP.

MORNING OF:

- JULY 25TH
- JULY 26TH
- JULY 28TH



Central Oregon:

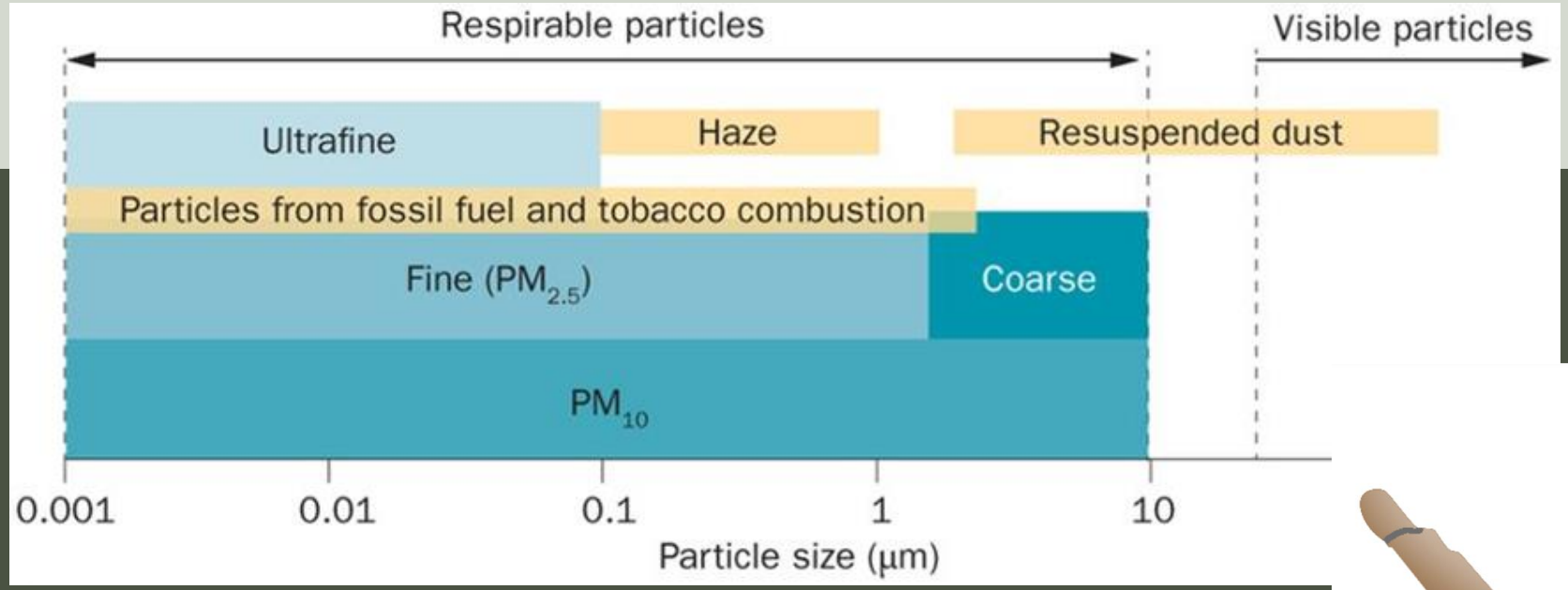
GET ALERTS ON THE GO.

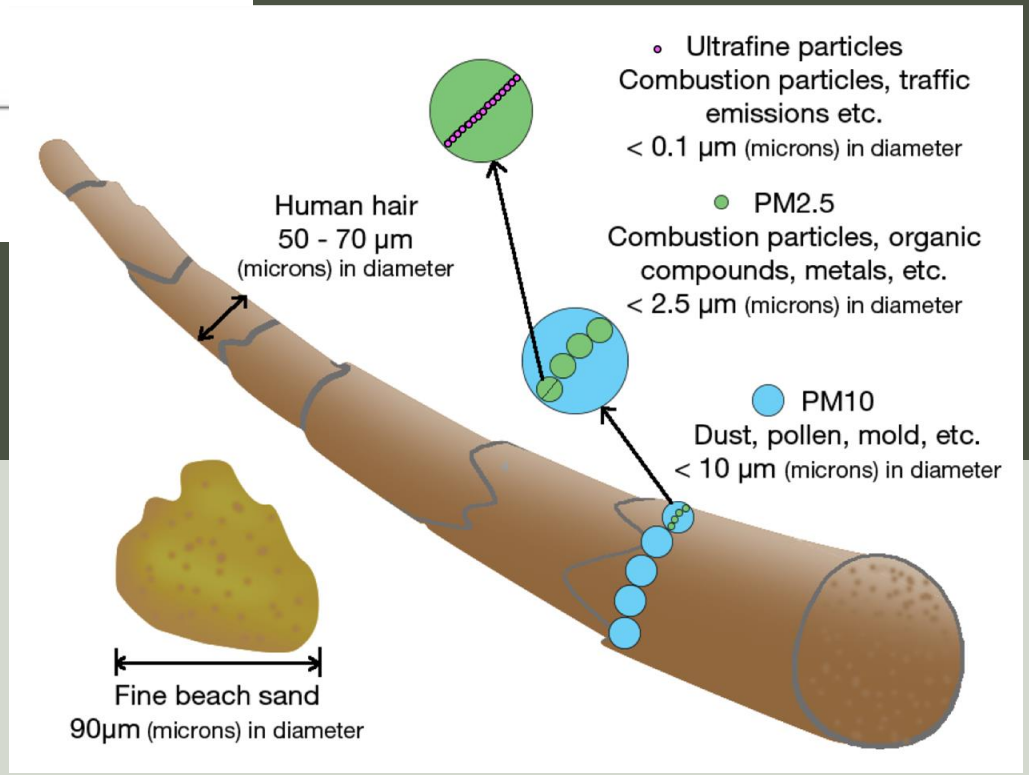
Text COFIRE to 888777*
to receive updates on prescribed fires and wildfires in Central Oregon.

4

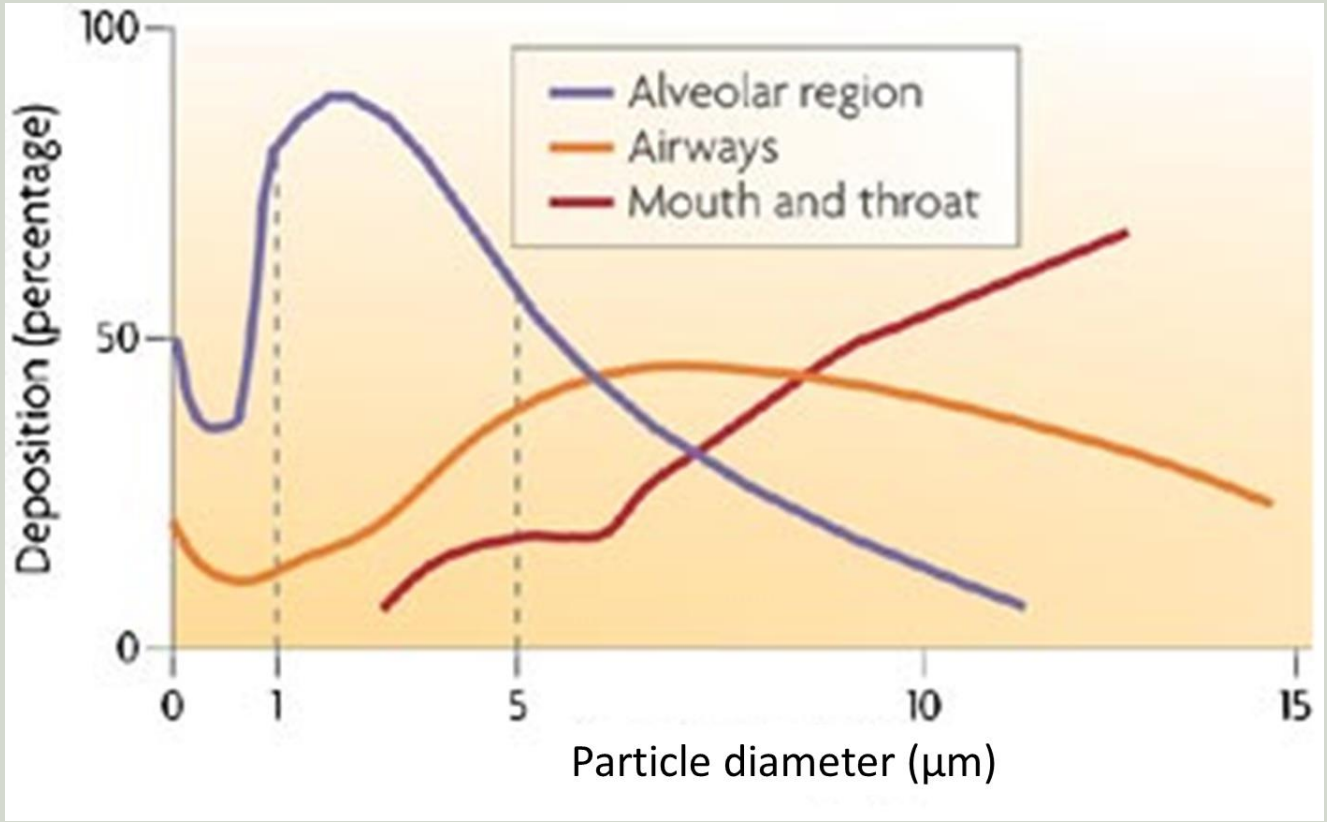
No degree of smoke exposure is without risk. However, additional investment in advance preparation for affected populations can lower associated health risks. A smoke-resilient community is resilient to smoke from any type of fire.

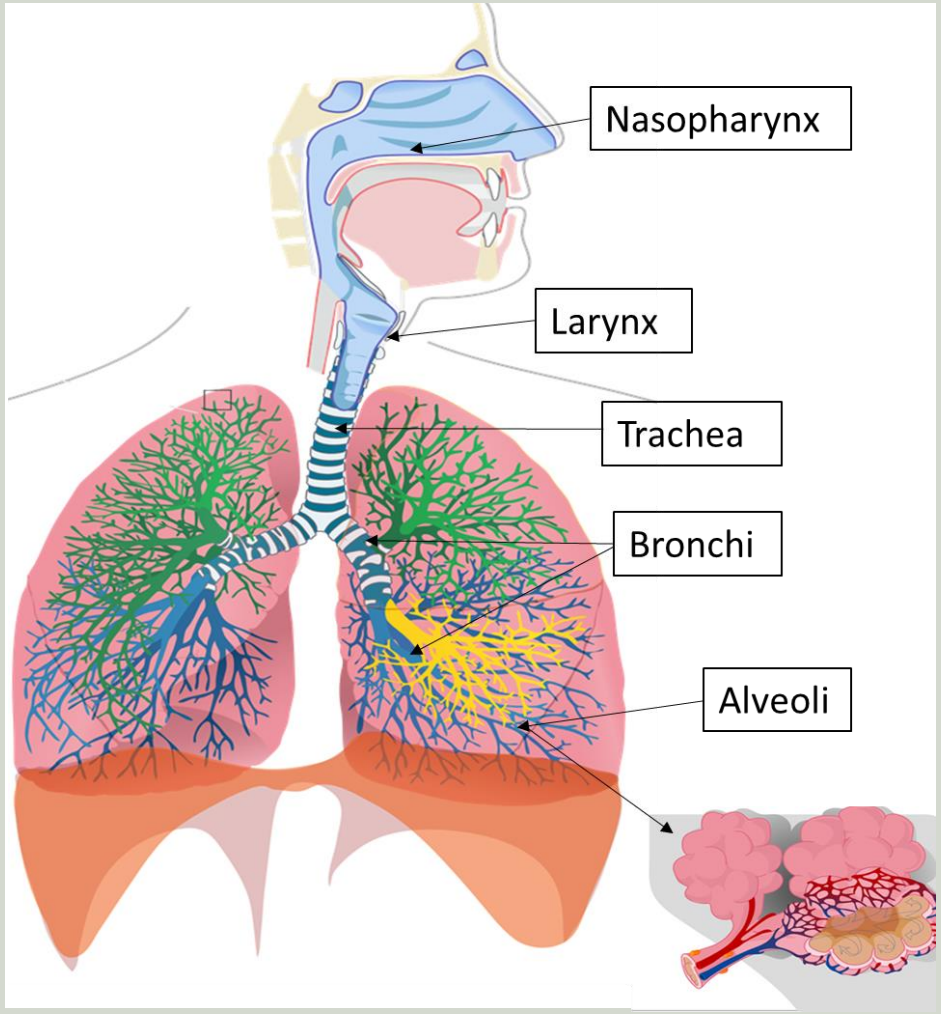
4 Particulate Matter and Wildfire Smoke



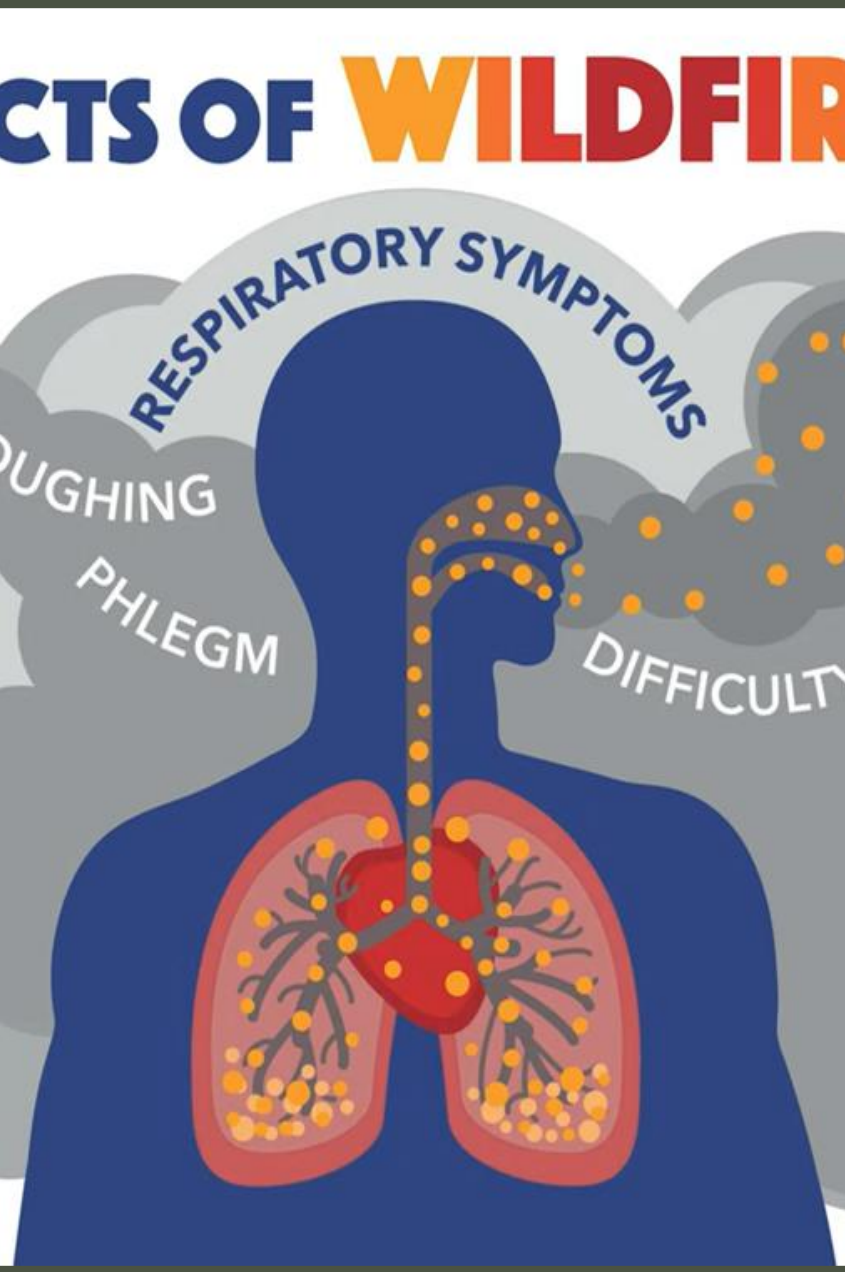


4 Importance of Particle Size and Deposition





HEALTH EFFECTS OF WILDFIRE SMOKE



Respiratory effects

- Bronchitis
- Reduced lung function
- Asthma & other lung diseases aggravated
- Emergency room visits & hospital admissions

RESPIRATORY SYMPTOMS

COUGHING

PHLEGM

DIFFICULTY BREATHING

WHEEZING

Cardiovascular effects

- Heart failure
- Heart attack
- Stroke
- Emergency room visits & hospital admissions

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Recommended Practices and Resources

1. Use of AQI to inform daily activities
2. Use of guidelines for activity
3. Use of air cleaners, purifiers & filters
4. Use of masks

Air Quality Index & Data Availability

The Air Quality Index (AQI) is the principal risk communication tool used by air quality agencies and is a measure of five air pollutants regulated by the Clean Air Act:

- Ground-level Ozone
- Particulate Matter
- Carbon Monoxide
- Sulfur Dioxide
- Nitrogen Dioxide

Source: US Environmental Protection Agency, AirNOW Program

US AQI Level		PM2.5 (µg/m³)	Health Recommendation (for 24 hour exposure)
WHO PM2.5 (µg/m³) Recommended Guidelines as of September 22, 2021: **0-5.0**			
 Good	0-50	0-12.0	Air quality is satisfactory and poses little or no risk.
 Moderate	51-100	12.1-35.4	Sensitive individuals should avoid outdoor activity as they may experience respiratory symptoms.
 Unhealthy for Sensitive Groups	101-150	35.5-55.4	General public and sensitive individuals in particular are at risk to experience irritation and respiratory problems.
 Unhealthy	151-200	55.5-150.4	Increased likelihood of adverse effects and aggravation to the heart and lungs among general public.
 Very Unhealthy	201-300	150.5-250.4	General public will be noticeably affected. Sensitive groups should restrict outdoor activities.
 Hazardous	301+	250.5+	General public at high risk of experiencing strong irritations and adverse health effects. Should avoid outdoor activities.

Air Cleaners and Filters

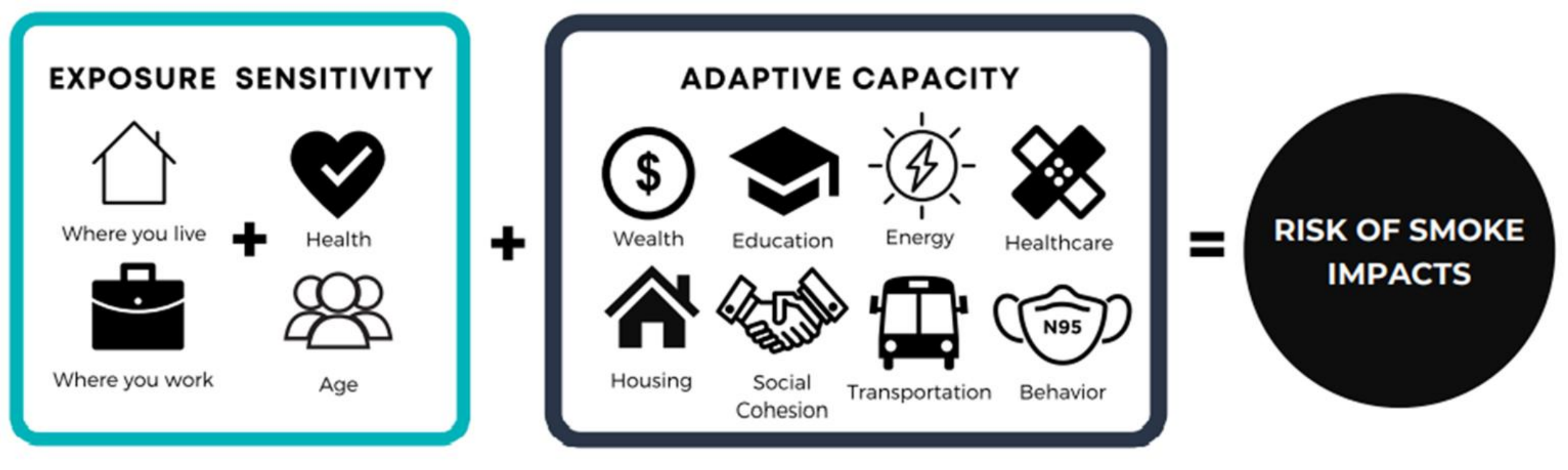
**** No ozone producing or "ionic" air cleaners***

HEPA filter and highest MERV rating that furnace allows

Box fan filter

5 We must work to promote both equity in process (e.g. who has a say in decision making) and equity in outcomes (e.g. who gets exposed to the smoke) within those communities and populations experiencing disproportionate impacts from smoke.

5


EXPOSURE SENSITIVITY
Where you live
Health
Where you work
Age
ADAPTIVE CAPACITY
Wealth
Education
Energy
Healthcare
Housing
Social Cohesion
Transportation
N95
Behavior
RISK OF SMOKE IMPACTS

5

- Communication around smoke, as well as preparation for wildfire events, is not consistent across worksites
- Farmworkers appreciated the in-person platform to share and discuss these topics
- Evacuation notices and smoke information is not widely shared among farmworkers in this region
- In the moment, emergency notifications on air quality need to be improved

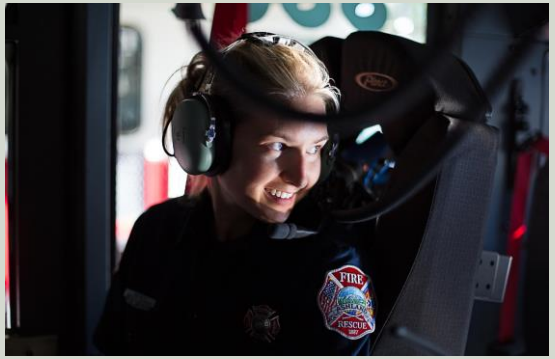
5

“It’s interesting, because when it's very, very, very hot, they do stop the harvest or they stop the activity, because they say: “It’s too much – it’s too hot” Or when it's very cold, they also stop work just like when it is hot. And they follow those rules. But when it comes to fires, which goes directly to the lung and damages it - it can affect your performance if you don't breathe well - I haven't seen them stop the activity.“

“I would like them to teach us, like through workshop, or somehow share information in the community. Like when the smoke and fire season is coming, what measures could we take? More information, because the truth is they don't tell us anything."

6

We are missing opportunities for positive impact by working as separate disciplines. We recommend that further and intentional integration of forest/fire and health disciplines (including the practitioners, tools, and resources) needs to occur to lessen the human health effects of smoke exposure due to prescribed and managed fires.



6

What big idea do you want to see happen?

"Build smoke-ready communities…

- Create new organization, state-level w/ communications experts, project managers, consultants, etc. to provide community support and smoke-action plans

- Inter-agency funded: DOH, ECY, DNR etc..."

Wildfires are an interdisciplinary crisis that need an interdisciplinary solution.

Community Impacts

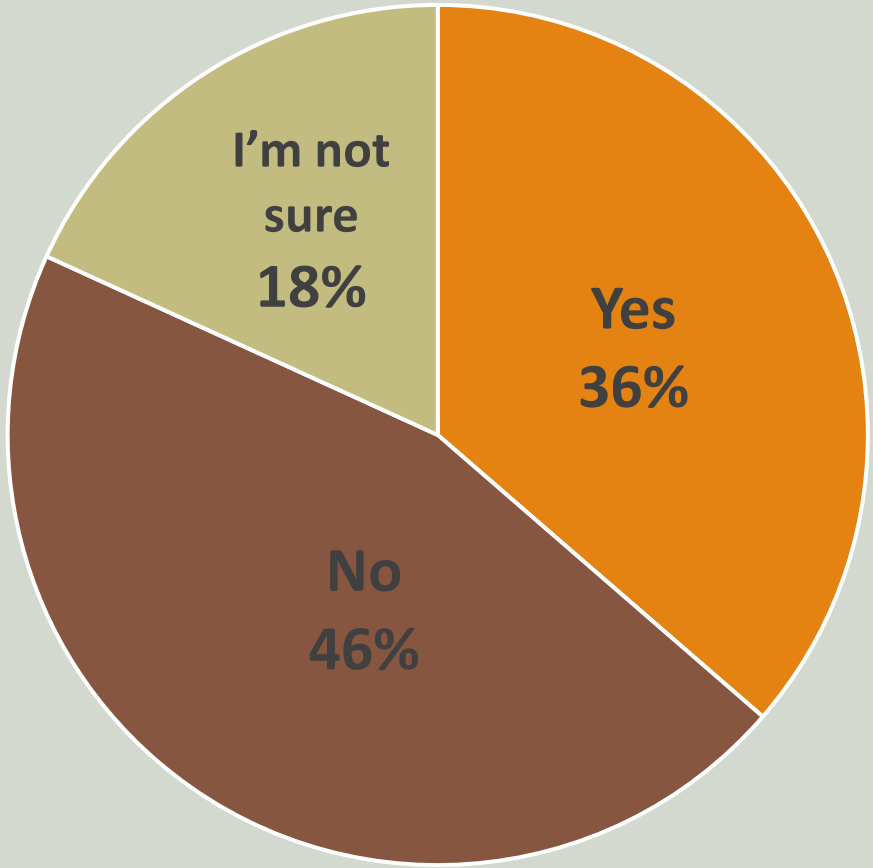
Property Damage or Destruction

Economic Loss

Health Effects

Air Pollution

Communities do not feel prepared for fire or smoke season.



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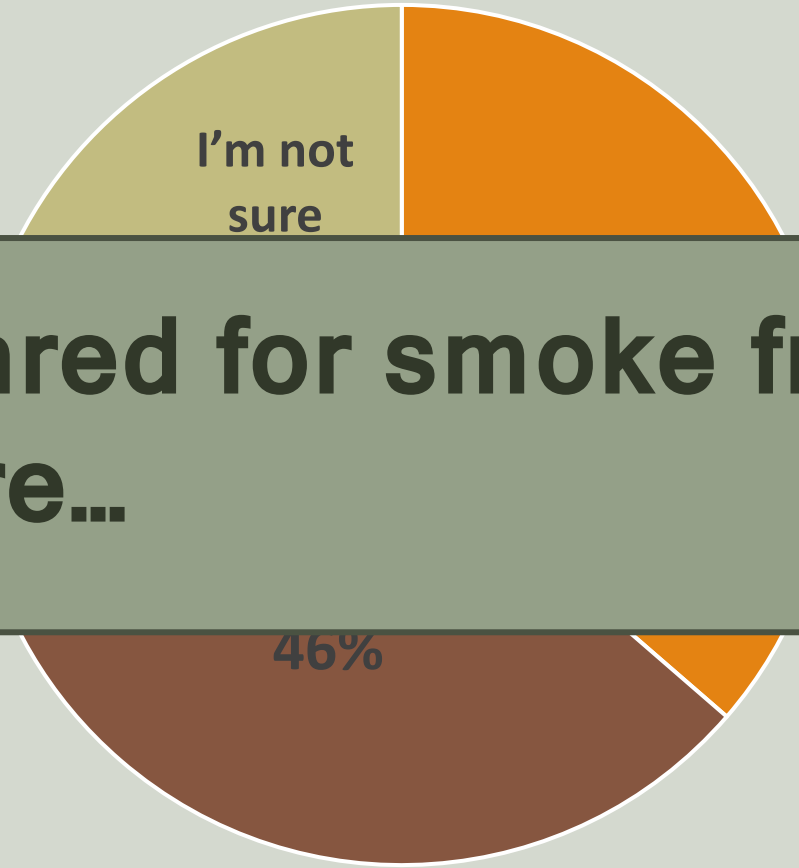
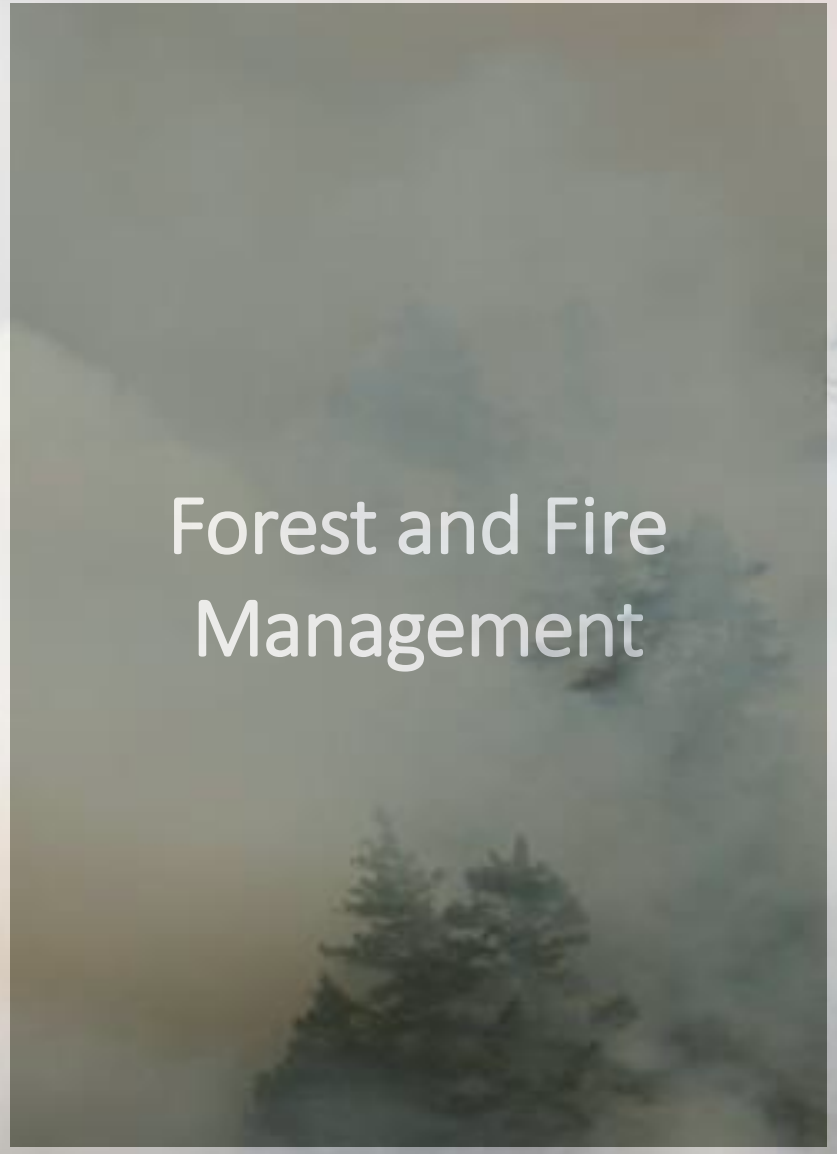


This means they are not prepared for smoke from any type of fire…

Interdisciplinary Preparation & Collaboration

- Improved and increased risk communication for at-risk populations
- Community clean air shelters & improved access to N95 masks and air filters/cleaners
- Protections for outdoor workers
- Collaboration across fields and between local groups
- Improved funding for research at the intersection of human health & forest health
- Address and mitigate increasingly frequent and severe wildfires
- Acknowledge and emphasize there is no level of “good smoke”


Forest and Fire Management


Public and Human Health


Air Quality and Regulation

Thank you!

PNASH

The Nature Conservancy

SNAPP
Science for Nature and People PARTNERSHIP

Questions?

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