



# OREGON COUNCIL ON WILDFIRE RESPONSE

## November 2019 Report and Recommendations

### Purpose

In January 2019, Governor Kate Brown tasked the Council on Wildfire Response to review Oregon's current model for wildfire prevention, preparedness and response, analyzing whether or not the current model is sustainable given our increasing wildfire risks.

## Summary of Recommendations

Executive Order 19-01 established Oregon Wildfire Response Council in January 2019 and directed the Council to evaluate Oregon's wildfire systems to discern sufficiency and sustainability and, where needed, to render recommendations. The following summarizes the Council's findings.

### Maintain and Monitor

1. Property insurance access and affordability
2. Oregon Department of Forestry (ODF) workforce prioritizing suppression during fire season
3. Rangeland Fire Protection Association (RFPA) model of independent landowner suppression associations, with support from ODF
4. ODF contract with the Bureau of Land Management (BLM) to provide fire suppression services on BLM's Oregon and California lands
5. Lloyd's of London insurance policy against large wildfire suppression costs

### Moderate Course Correction Needed

1. Public engagement to reduce accidental ignitions, educate communities, enable prescribed burning and train landowners
2. Baseline fire protection on croplands and other unprotected or "under-protected" lands
3. Federal suppression capacity
4. Health systems, particularly in response to smoke exposure, but also potential water contamination from mudslides
5. Disaster recovery systems fully considering wildfire
6. Property insurance incentives to landowners (e.g., defensible space, hardening homes, water sources, access)
7. State-federal interagency collaboration during "unified command" (joint decision authority)
8. Workforce development for fuel treatments and firefighting
9. Governance, strategic planning and comprehensive budgeting for wildfire
10. Coordinated wildfire research

### Significant Course Correction Needed

1. Utilities wildfire mitigation plans
2. Land use planning for wildfire (zoning, building codes, defensible space, access)
3. Fuel treatments
4. Suppression capacity on state-protected lands
5. Overall funding capacity
6. ODF financing facility (invoicing, receivables from suppression)

## Call to Action

Wildfire has been and will remain a permanent part of life in the West. But fundamental shifts in wildfire behavior in Oregon and other western states have produced record fire losses, costs and damage to communities. Over a century of land management practices and changing policy, starting with the removal of tribal communities and the loss of their controlled burning practices, followed by widespread fire suppression and shifts in land use, has enabled fuels to accumulate far beyond historic conditions. Population growth has increased human-caused ignitions, putting people and developments in harm's way. And fire seasons have become longer, drier and hotter, owing to climate impacts.

The effects in Oregon have been profound. Air quality has suffered in fire-prone regions like central and southwestern Oregon and in Portland and the Willamette Valley as well. Whether in urban or rural areas, fire frequently affects Oregon's most vulnerable populations. Recent power outages in California, driven by increased wildfire risk, are powerful reminders of the breadth and reach of wildfire's impacts and its particular threat to vulnerable populations.

Wildfire is a natural force on the landscape and in some regions a necessary catalyst for balance and resilience. But current conditions are out of balance and demand a swift and enduring response. Oregon must enact a cohesive strategy encompassing communities, natural landscapes and effective wildfire response, combining immediate investments and policies to address the symptoms of uncharacteristic and harmful wildfire, with long-term investments to help Oregon adapt to a new wildfire reality.



### *The Evidence is Compelling*

Three graphs are provided, at the end of this *Call-to-Action* section that illustrate the history of wildfire here in Oregon. Several points are noteworthy. First, significant decade-to-decade increases in burned acres have occurred on both ODF-protected land, and all Oregon lands. Second, for each of the past three decades, 92-93% of all burned acres occurred on land outside ODF jurisdiction, namely federal land, which comprises 60% of forested land in Oregon. Any call-to-action in Oregon must involve federal management in a meaningful way, as will be discussed throughout this report. Third, direct suppression costs for large fires on ODF-protected land grew six-fold over the past seven-year period, when compared to the prior seven-year period.

Several studies, however, indicate direct suppression costs represent just a fraction of the true costs of wildfire. Headwaters Economics, a Montana-based non-profit specializing in landscape economics, estimates suppression costs, on average, represent just 9% of total wildfire costs, which include numerous effects that take years to fully manifest.<sup>1</sup> The Federal Reserve Bank of Minneapolis states “Estimates of the total cost of large wildfires to landowners, investors and taxpayers range from 10 to 50 times the cost of fire suppression.”<sup>2</sup> In 2018, combined state and federal suppression costs were estimated at \$533 million in Oregon. Should the 9% average cited by Headwaters apply, the true loss to Oregon would total \$6 billion from 2018 alone.

The following table includes short-term expenses and long-term damages cited in the Headwaters report, along with less quantifiable human loss and other costs experienced in Oregon and across the West.

Short-Term Expenses	Long-Term Damage	Other Human Loss
Suppression Costs – federal	Public Finances -foregone tax revenues -siphoning of public funds toward suppression and away from other public services including ODF programs -challenges processing / collecting receivables	Human Lives
Suppression Costs – state	Ecosystem Services including Habitat Loss (e.g., spotted owl, sage grouse)	Respiratory and Cardiovascular health
Home and Property Loss	Depreciated Property Values	Mental health
Immediate Road & Landscape Stabilization	Natural Resource Loss -timber, crops, livestock forage, livestock, wine quality	Cultural Resources for Tribal Communities
Aid & Evacuation Relief	Tourism & Recreation (e.g., Shakespeare Festival, Cycle Oregon, Sisters Folk Festival)	Family Dislocation
	Other Business Loss, Risk of Insolvency	Job Disruption
	Energy Infrastructure	Athletics / Outdoor Activities
	Water Infrastructure, Mudslides, Contamination	Community Vitality
	Transportation Infrastructure	
	Long-term Landscape Rehabilitation, Invasive Species Management	
	Insurance Premiums	

<sup>1</sup> Headwaters Economics. 2018. <https://headwaterseconomics.org/wildfire/homes-risk/full-community-costs-of-wildfire/>

<sup>2</sup> [https://www.minneapolisfed.org/publications/fedgazette/counting-the-full-cost-of-wildfires?sc\\_campaign=16C883BC3D314E2E899021FBD04A7AF9](https://www.minneapolisfed.org/publications/fedgazette/counting-the-full-cost-of-wildfires?sc_campaign=16C883BC3D314E2E899021FBD04A7AF9)

Of note, according to the Headwaters study, while federal and state agencies incur the majority of direct suppression costs, the bulk of long-term damage and human loss is borne by local communities where wildfire occurs. Further, these impacts are often most pronounced with *vulnerable populations*, including communities of color, the elderly and disabled, children, and renters lacking home insurance. Recent tragedies in California, including the historic Camp Fire and devastation to the small community of Paradise, demonstrate the difficulties in evacuating disabled and elderly citizens, and reuniting children with families.

“Certain life stages and populations may be at greater risk of experiencing health effects, including people with respiratory cardiovascular diseases, children and older adults, pregnant women, people of lower socioeconomic status, and outdoor workers.”<sup>3</sup>

- Environmental Protection Agency

### **California Power Outages up the Stakes**

It is estimated that 2 million people experienced power outages in California in early October, owing to high wind conditions and elevated fire risk. Disruptions to families and business were ubiquitous, but most acutely felt by vulnerable populations who lack resources for generators or solar panels with battery backup power. Among the most affected are those requiring reliable electricity to power life-support systems.

A 2009 expert study of fires in Southern California dating back to 1960 found that, power line fires are, on average, 10x larger than other fires<sup>4</sup>. In California, of the top 20 most destructive wildfires in state history, 8 were power line fires, including the deadly Camp Fire, and 6 of these occurred between 2015-2017.<sup>5</sup> In response, California utilities have supplemented other risk mitigation measures (vegetative fuel removal, equipment upgrades) with forced power outages. Proactive power outages substantially elevate the costs of wildfire to include costs to avoid *potential* wildfire, in addition to costs incurred from actual wildfire.

As California is witnessing, despite the public outcry for action in the aftermath of the Camp Fire tragedy, there are limits to the public appetite for change. One clear lesson for Oregon is the need to prioritize: as with all wildfire policies, there is a finite amount of *political* capital, along with financial capital, at policy-makers’ disposal.

### **Core Causes Trending in the Wrong Direction**

The comprehensive costs of wildfire described above are symptoms of larger problems, which are trending in the wrong direction. In March 2018, Oregon State University hosted the inaugural Fire Summit in Portland, which included approximately 30 scientists, land managers and forest policy experts from five states and British Columbia. The Summit report concluded:

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<sup>3</sup> Environmental Protection Agency. 2019. <https://www3.epa.gov/airnow/wildfire-smoke/wildfire-smoke-guide-revised-2019.pdf>

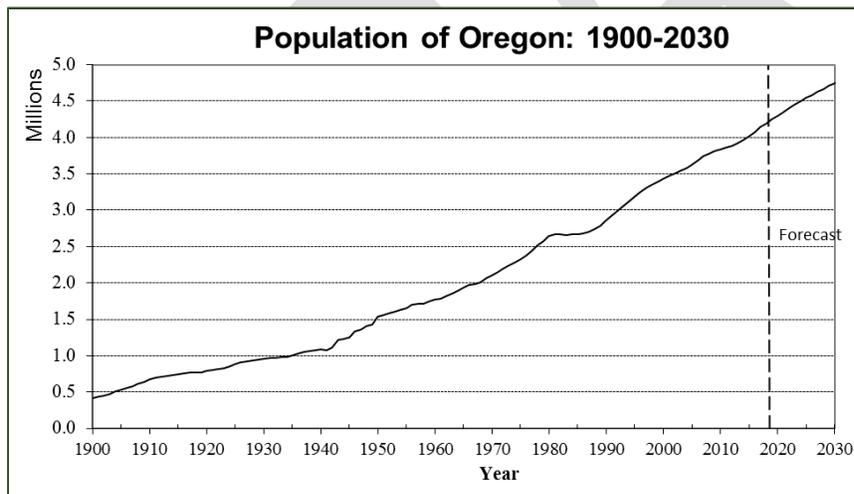
<sup>4</sup> Mitchell, Joseph W; Power Lines and Catastrophic Wildland Fire in Southern California; Fire & Materials 2009, San Francisco CA, Jan 26, 2009

<sup>5</sup> California Public Utilities Commission. 2019. [https://www.fire.ca.gov/media/5511/top20\\_destruction.pdf](https://www.fire.ca.gov/media/5511/top20_destruction.pdf)

“We live in unprecedented conditions; the forest landscape neither looks nor functions as it did 200 years ago. The landscape contains more biomass, and thus more fuel, than ever before. The fuel base is more contiguous and more homogenous. Furthermore, greater numbers of citizens are more closely connected to forests in communities that have an extended area of wildland-urban-interface. Meanwhile, the climate is warming and the forests are becoming drier making fire seasons longer and stretching resources further.”<sup>6</sup>

Over a century of fire suppression, changes in land use, and resource management policies have combined to alter landscapes and grow fuels hazardous for wildfires. The accumulation of fuels on fire-prone federal forests is particularly impactful to Oregonians, as 92-93% of burned acres occur on federal lands, as described previously.

As referenced above, population growth increases the risks of accidental human-caused fires, and new development places additional values at risk, requiring greater protection. Oregon’s population has approximately doubled over the past 50 years, with much construction occurring before fire-resilient materials and designs were broadly implemented. As these structures continue to age, and nearby fuel loads accumulate, fire risk rises absent meaningful risk mitigation. At the same time, an additional half-million people are expected to call Oregon home over the next decade, growing from 4.2 million in 2018 to 4.7 million in 2030, as Oregon ranks among the fastest growing (11<sup>th</sup>) populations in the country.<sup>7</sup> Much of this growth will occur in Oregon’s wildland-urban-interface (WUI), where the number of homes expanded by 41% from 1990-2010.<sup>8</sup>



Source: U.S. Bureau of Census; Oregon Office of Economic Analysis.

<sup>6</sup> Oregon State University Fire Summit. 2018.

<https://www.forestry.oregonstate.edu/sites/default/files/firesummitreport.pdf>

<sup>7</sup> Oregon Department of Administrative. 2019. <https://www.oregon.gov/das/OEA/Documents/forecast0519.pdf>

<sup>8</sup> US Forest Service Research Data Archive. 2017. <https://doi.org/10.2737/RDS-2015-0012-2>

Climate change is increasing wildfire incidence, and is projected to drive further increases in the decades ahead, as described in the following two excerpts from reports published by the Oregon Climate Change Research Institute:

“The most obvious impact of climate change in the West has been fire. Recent catastrophic fires in California and major wildfires in Oregon highlight the vulnerability of the state to increasing wildfire in a warming climate. The Eagle Creek Fire September 2017 closed I-84, a crucial transportation corridor between western and eastern Oregon. Fire risk is projected to increase across the entire state by mid-century, with the largest increases in the Willamette Valley and eastern Oregon. The associated wildfire smoke creates a health hazard for vulnerable communities, especially outdoor laborers and children, who may be exposed to poor air quality.”<sup>9</sup>

- Oregon Climate Change Research Institute

The lengthening of the fire season is largely due to declining mountain snowpack and earlier spring snowmelt. In the Pacific Northwest, the fire season length increased over each of the last four decades, from 23 days in the 1970s, to 43 days in the 1980s, 84 days in the 1990s, and 116 days in the 2000s.<sup>10</sup> Recent wildfire activity in forested ecosystems is partially attributed to human-caused climate change: during the period 1984–2015, about half of the observed increase in fuel aridity and 4.2 million hectares (or more than 16,000 square miles) of burned area in the western United States were due to human-caused climate change.<sup>11, 12</sup>

- Oregon Climate Change Research Institute

The frequency of lightning is likely to increase with rising temperatures. The November 13, 2014 edition of *Science* cites a study by Romsps et al. predicting lightning rates will increase 12% per every degree Celsius rise in global temperatures.<sup>13</sup> If accurate, this could mean a 50% increase in lightning activity by 2100 across the globe. For perspective, in 2018, Oregon experienced 686 wildfires initiated by lightning, or 35% of total wildfire ignitions.<sup>14</sup> Historically, lightning-induced wildfire is associated with larger wildfires, as human-caused wildfire is more quickly detected and proximate to suppression resources.

### ***Business-As-Usual Scenario is Not Sustainable***

Many of Oregon’s systems for mitigating the impacts of wildfire were designed for another time: before fuel accumulations; before rapid population growth particularly in the WUI; before the spate of tragic power line fires in California; and before climate change began to intensify and extend fire seasons across the West. Contributors to wildfire are projected to worsen in the years ahead. Business-as-usual practices portend greater threats to human life, ballooning suppression costs, increased smoke and related health ailments, and further ecosystem degradation and long-term economic damage.

<sup>9</sup> Oregon Climate Change Research Institute. 2019. <http://www.occri.net/media/1095/ocar4full.pdf>

<sup>10</sup> Westerling, A. 2016. <https://doi.org/10.1098/rstb.2015.0178>

<sup>11</sup> Abatzoglou, J. and Williams, A. 2016. <https://doi.org/10.1073/pnas.1607171113>

<sup>12</sup> Oregon Climate Change Research Institute. 2017. [http://www.occri.net/media/1049/5ocar3\\_final\\_forest.pdf](http://www.occri.net/media/1049/5ocar3_final_forest.pdf)

<sup>13</sup> Romsps et al. 2014. <https://science.sciencemag.org/content/346/6211/851>

<sup>14</sup> Bureau of Land Management and USDA Forest Service. 2018. [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd611322.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd611322.pdf)

## ***A Cohesive Response is needed***

Oregon is not alone recognizing the shifts in wildfire behavior and the need for change.

The National Cohesive Wildland Fire Management Strategy was launched in 2014, with input from leading fire experts across the country and research drawn from across the globe. It sets forth best practices, based foremost on the assumption that communities must learn to live with wildfire, which is a natural component of ecosystems that should be aligned with community objectives. The three primary components of the strategy are:



### ***Questions Informing an Oregon Wildfire Strategy***

1. What can be done to prevent catastrophic wildfire?
2. What can be done to help communities anticipate and respond to smoke events including unplanned wildfire and planned fire such as prescribed burns?
3. How can Oregon prevent water contamination from wildfire and mudslides, and protect other critical infrastructure built during a lower-fire era?
4. What is the right policy mix to protect Oregon's most vulnerable communities, including health care, emergency response and disaster recovery, employment and financial assistance?



5. To reduce fire risk within the Wildland Urban Interface, stemming from (a) fuels within defensible space and home ignition zones; (b) non-resilient building materials and design; and (c) development within high fire-risk zones, what is the appropriate partnership between the State and Counties?
6. How can Oregon prevent catastrophic power line failures as seen in California?
7. To restore fire-resilient landscapes, what is the optimal strategy including (a) mechanical thinning; (b) managed wildfire; and (c) suppression? How much should the State allocate its limited resources toward fuel treatments versus suppression?
8. To fund forest restoration projects, what is the appropriate role of State investment, federal investment, timber monetization, and new funding including water and carbon?
9. What is the best approach to build upon the success of collaboratives and the Federal Forest Restoration Program, to implement forest restoration projects, at the required pace & scale?

10. With Oregon’s natural landscapes mostly owned by federal agencies, where decision authority resides outside the state, what is the optimal form of partnership to meet State and national objectives?
11. What is the comprehensive approach to wildfire with respect to climate change? How are forests best managed for resiliency to wildfire and climate change? For mitigating climate change through carbon storage and avoided emissions? How can we use climate science to predict wildfire risk?
12. Overall, how should the State allocate its limited resources, including financial capital, political capital and public goodwill? How should it define its objectives, measure uplift, and set priorities to generate return-on-investment for public resources? How does the state measure and monitor its policies and investments?
13. How should the State engage the public, as wildfire has become a **statewide** issue, with broad, shared interest from rural and urban communities? How to unite rural and urban communities toward shared solutions?
14. Who in the state should wake up every morning thinking about a long-term cohesive wildfire strategy, encompassing health care, emergency response, disaster recovery, land use, the power grid, forest management, fire suppression? How should this be governed?

### **Many Pieces in Place in Oregon**

While Oregon faces substantial wildfire challenges, there is a strong foundation upon which to build:

<b>Public Engagement</b>	Effective communications underlie all elements of the Cohesive Strategy. Oregonians self-identify with forests and rangelands, and Oregon has a history of adopting public policy to protect its natural assets. There is also a well-established network of forest and fire educators including Keep Oregon Green (established 1941), the World Forestry Center, and numerous school and other public programs.
<b>Collaboratives</b>	Oregon’s leadership with forest collaboratives has created a national model for local, community-based project planning and restoration. At present, approximately two dozen collaboratives are active across the state bringing diverse stakeholders together in the interest of resilient natural landscapes.
<b>Land Use Systems</b>	Oregon’s nation-leading land use systems have limited the impact of sprawl within the WUI to an extent not possible elsewhere. Headwaters Economics emphasizes the importance of land use throughout its reports.
<b>Fire Suppression Systems</b>	The Cohesive Strategy asserts that suppression of non-desired wildfire will remain integral to the overall strategy. Oregon’s Complete and Coordinated Wildfire Protection System remains one of the most highly-regarded systems in the nation for putting out fires.
<b>Wildfire Research</b>	Oregon State University is home to the top-ranked forestry school in the US, with wildfire-related research including ecology, climate change and forest products (e.g., mass timber) needed to fund restoration work. Federal agencies including the US Forest Service and Bureau of Land

	Management conduct extensive research on wildfire science and have developed advanced technology spanning most aspects of wildfire. The Nature Conservancy and other NGOs have focused heavily on wildfire ecology and landscape restoration.
<b>Forest Products Industry</b>	As other states, including California and Arizona, are seeking to re-attract industry investment, in order to fund restoration treatments, Oregon retains an industry foundation upon which to build. Of note, Oregon’s industry in the fire-prone regions of central and eastern Oregon has experienced significant attrition, given shortages in wood supply, and supporting the remaining infrastructure is a high priority.
<b>Federal Partnership</b>	Oregon is a national leader in its partnerships between state and federal agencies, as evidenced by collaborative work through the Federal Forest Restoration Group, the Good Neighbor Authority, stewardship contracts and, most recently, the Shared Stewardship Agreement.
<b>Leadership</b>	Perhaps more than virtually any other state, Oregon’s federal / state / county / city / civic leadership prioritizes natural resources, mirroring the public’s identification with this rich state tradition. The degree of engagement, and diversity of participation, on the Wildfire Council itself reflect leadership’s desire to take action.

***An Improved Public-Private-Partnership Reoriented toward Wildfire***

The scale of Oregon’s wildfire challenge – including community adaptation, fuel treatments and wildfire response – is beyond the capacity of any individual organization or sector. The power of public-private-partnership, oriented toward wildfire solutions, is needed. While public and private resources are currently addressing Oregon’s wildfire challenges, the State must better leverage these resources toward further alignment, optimization and coordination around a common cohesive wildfire strategy.

***Oregon Wildfire Response Council Recommends Specific Changes and a New Approach***

The Oregon Wildfire Response Council was established by Governor Kate Brown on January 30, 2019 via Executive Order 19-01. The Council was directed to evaluate Oregon’s systems related to wildfire to determine their sufficiency and sustainability given current and expected demands from wildfire. To the extent systems were not deemed sufficient or sustainable, the Council was directed to deliver recommendations.

The Council assembled a diverse array of leaders from across Oregon, mirroring the variety of Oregonians affected by wildfire. In addition to forestry, agriculture and conservation interests, the Council recruited leaders from tribal communities, fire fighters, Oregon counties and cities, tenants’ rights advocacy, Medicaid recipients, outdoor workers, power utilities, transportation, property insurance and roofers. Ex-Officio and committee leaders were sought to bring specific expertise in wildfire, state and federal forestry, agriculture, health care, tourism, economic development, academic research and numerous other areas. Likewise, the Council sought federal and state legislative leadership, and invited four state legislators as well as staff from the Oregon federal delegation. In generating this report, the Council met on nine occasions from March-November 2019, in addition to

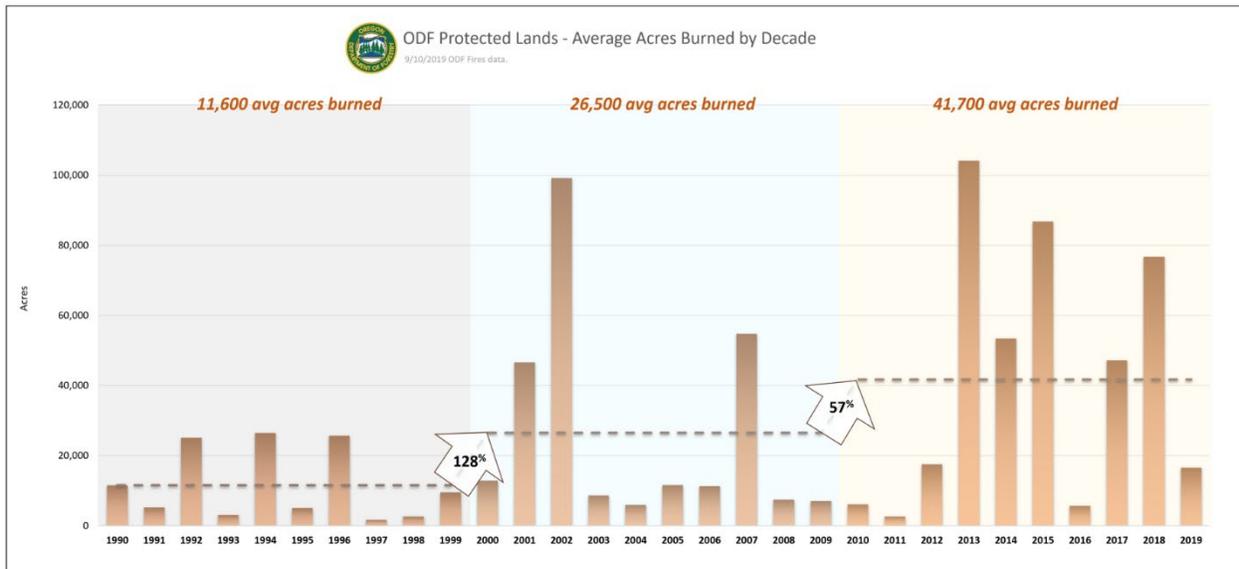
dozens of meetings and calls between three main committees, three additional sub-committees and numerous smaller initiatives.



The Council is pleased to deliver this initial set of recommendations, which are intended to be actionable, providing both immediate and long-term benefits to all Oregonians. The Council further wishes to reiterate that wildfire is a permanent aspect of life in Oregon, and the importance of wildfire is growing with a changing climate and growing population. Yet, at present, wildfire-related policies are siloed, scattered, and incongruent. Such an approach may have been adequate for another era, but must now be reconsidered. An enduring and cohesive strategy and governance structure are warranted, given the new realities of wildfire evident in Oregon today.

November 2019

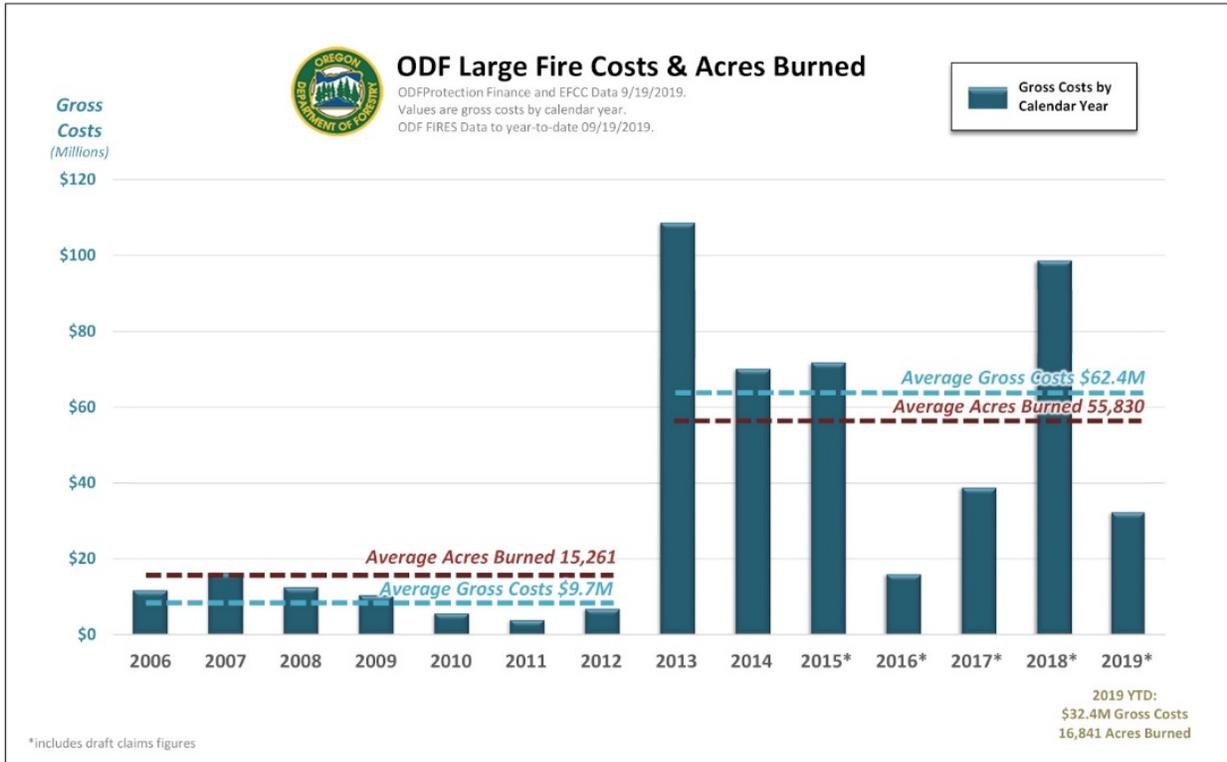
## ODF Protected Lands Average Acres Burned by Decade



## Oregon Statewide – All Agencies Average Acres Burned by Decade



# Large Fire Costs and Acres Burned



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## Overarching Strategy

<b>NATIONAL VISION</b>	<i>Safely and effectively extinguish fire when needed; use fire where allowable; manage our natural resources; and, as a nation, live with fire.</i>
<b>GOALS</b>	<ul style="list-style-type: none"><li>• Fire Adapted Communities</li><li>• Restore and Maintain Landscapes</li><li>• Wildfire Response</li></ul>
<b>CHALLENGES</b>	<ul style="list-style-type: none"><li>• Homes, Communities and Values at Risk</li><li>• Human-caused Ignitions</li><li>• Vegetation and Fuels</li></ul>

### **Regional Context: Wildfire Issues Confronting Western States**

- Increased wildfire incidence and suppression costs
- Vegetative growth and landscapes outside historic norms
- Population growth
- Development inside the wildland-urban-interface
- Climate change

### **Oregon Context**

- Significant federal ownership (60% of forestland<sup>15</sup>, 53% of total<sup>16</sup>)
- High fire incidence on federal lands (92-93% of burned acres over past three decades)
- Complexity of managing federal-state-county partnership (including county timber payments)
- Strength of state land use systems provides protections
- Small economy limits public finances (43% of Washington state GDP<sup>17</sup>)
- Large land area to protect (44% larger than Washington state, source<sup>18</sup>)
- Large land area requiring fuel treatments (Mitigation Committee had identified 5.2 million acres of Oregon forest and rangeland needing treatment, Washington has identified 1.25 million acres of forest<sup>19</sup>; rangeland unknown)
- Strong forest products industry creates funding options for fuel treatments and job opportunities, expectations for timber-dependent communities
- Leadership in forest collaboratives
- Strong academic, non-profit research network

<sup>15</sup> <https://oregonforests.org/faq>

<sup>16</sup> <https://time.com/4167983/federal-government-land-oregon/>

<sup>17</sup> <https://www.bea.gov/>

<sup>18</sup> <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

<sup>19</sup>

## **Strategic Objectives for Oregon**

“Reducing long-term risk requires prioritization of investment and use of resources, acceptance of increased short-term risk, and greater collective investment.”

-National Cohesive Wildland Fire Management Strategy

### **Strategic Objective 1: Prioritize Allocation of Limited Resources; Emphasize Community Values**

The State should prioritize limited financial and political capital toward areas of greatest need (utilities risk management, fuel treatments, suppression capacity on state-protected lands, overall funding capacity) and opportunity (land use systems).

### **Strategic Objective 2: Expand Available Resources through Public-Private-Partnership**

The State should “grow the pie” and leverage its own investments with (a) federal investments; (b) other investments including conservation finance; and (c) timber and non-timber monetization.

### **Strategic Objective 3: Leverage Natural Systems (e.g., wildfire) to Manage Fuels**

The State should leverage wildfire to strategically reduce fuels in a safe and cost-effective manner consistent with community objectives and tolerance for health and asset risk.

### **Strategic Objective 4: Adjust Investments over Time**

The State should eventually seek to adjust investments downward, as possible, as benefits of long-term investments are realized.

### **Strategic Objective 5: Support Cohesive Strategy with Communications, Collaboration, Alignment**

The State should engage communities to (a) adapt to wildfire; (b) reduce accidental human ignitions; (c) align wildfire strategies with community input.

## Wildfire Funding Strategy

### Overview

Oregon needs sustained funding to support a cohesive wildfire strategy encompassing: creating fire-adapted communities, restoring and maintaining resilient landscapes, and responding safely and effectively to wildfire. A cohesive wildfire strategy generates substantial public value, and so the bulk of sustained funding should be comprised of state and federal funding sources. In addition, specific stakeholders derive disproportionate value, and so state and federal funding should be complemented with targeted funding from specific stakeholders including property owners (e.g., suppression) and perhaps carbon emitters (e.g., fuel treatments) should Oregon adapt a cap-and-invest program. Finally, opportunities exist to offset wildfire costs by leveraging private enterprise (e.g., timber) for public purpose (e.g., fuel treatments). On this last point, the Council has explored the role of timber revenues to fund fuel treatments, and believes there is an opportunity for Oregon to “turn-the-page” from longstanding timber disputes, and prioritize sustainable forest management practices to confront the challenges posed by a new era of wildfire risk. Much progress has been made on this front, both here in Oregon, and in the neighboring states of Washington and California, where community collaboratives craft and implement socially-acceptable and ecologically appropriate timber management plans.

Under any scenario, the magnitude of the funding need is significant, and investments must be scrutinized through the lens of the comprehensive costs of wildfire, and the return-on-investment generated by avoiding these costs. This document summarizes current thinking, with regards to the comprehensive costs of wildfire; specifies needed uses of wildfire funding; and identifies potential funding sources. Given the need to significantly expand the funding for fuel treatments, and the modernization of the State’s suppression resources, it is recommended that sustainable funding is complemented with a one-time, significant funding infusion to catalyze needed investment.

Finally, as a next step, it is recommended that a wildfire funding workgroup, to include members of the Governor’s office and Legislative Fiscal Office, be commissioned to build-out a wildfire funding strategy.

## Comprehensive Costs of Wildfire

### Types of Loss

1. Short-term expenses including suppression (readily quantified)
2. Long-term damage including broader economic impacts, infrastructure loss, landscape rehabilitation (less quantifiable)
3. Other human loss including human safety, health, cultural resources (difficult to quantify)

### Method 1: Multiple of Suppression Costs

- Estimates range broadly, from 2-50x suppression costs. Average 11x per Headwaters report
- Approximately half of comprehensive costs borne by local communities
- Human costs (e.g., loss of life, smoke and health) not fully considered

- Historic studies do not consider power outages and implications for families, current business, and retaining / attracting employers
- If Oregon averages \$300 mm /yr of suppression costs over the next decade, comprehensive costs could exceed \$3 billion / yr (assuming 11x average)
  - Before impacts of power outages
  - Actual costs 2018 \$533 mm
- If wildfire risk spreads to populous western part of state, multiples will increase significantly

## Method 2: Avoided Costs

- Flagstaff commissioned study suggesting one-time **\$10 million** fuel reductions investment (municipal bond, proceeds used on federal forests) protects against potential **\$1 billion loss**
- Primary avoided costs: wildfire damage, flood damage
- Treated forests located upstream from high-value public, private assets
- Assumes 100% effectiveness of fuel treatments

## Funding Uses

- Community Adaptation
  - Total costs unknown
  - Utilities risk management (pass-through to ratepayer)
  - Defensible space treatments (esp. low income)
  - Hardening homes (same)
  - Health / smoke (same)
- Fuel Treatment
  - \$4 billion over 20 years direct
  - Agency resources
- Suppression
  - \$145 mm 2019-21 biennium budget (\$51 mm general fund; \$18 mm federal; \$76 mm other)
- Enabling Systems & Strategies
  - Public Engagement
  - Workforce Development
  - OSU Fire Center
- Total Costs
  - Under development

## Funding Sources

**Current funding sources are wide-ranging:** Most Community Adaptation costs related to Land Use (zoning, defensible space, building codes) are borne by private landowners, whereas costs related to Utilities mitigation plans will ultimately be borne by rate payers. Community Adaptation costs related to Health are borne by private individuals, health insurers, business, and local and state governments. Fuel

treatment costs are borne mainly by federal agencies, accompanied by lesser State investment since 2013. Timber receipts through Stewardship Contracts and Good Neighbor Authority contracts fund portions of fuel treatment projects. Suppression costs are borne by federal, state and local governments, as well as private landowners. Enabling systems and strategies, including OSU research and public engagement and funded through multiple federal, state, local and private resources.

**Earlier work informs our options for additional funding:** In 2013, SB357 required the Oregon Department of Forestry to conduct a study of how to increase the pace and scale of federal forest management. That [report](#) established important foundational thinking with regard to the nature and source of funds available to carry-out that work. New issues – those related to public health, education, equity, and community resilience – can and should be added to our thinking. SB 357 and the associated report were designed to identify what leadership actions Oregon can take at the state-level that met two criteria:

- Relatively within its ability to control, and
- Will have long-term, pragmatic effects in advancing the pace and scale of federal forest management.

A wide range of funding options were identified, including:

- State Bonding Authority – limited to creating one-time revenue out of a committed stream of cash flows.
- Municipal Bonds for Fuel Reduction projects – local bond options notoriously challenging to pass and fail to address broader responsibility to address needs.
- Residential Property or Water bill Assessment – potential within the WUI to assess residential property, but fairness and implementation issues for both methods.
- Fire-Related Insurance Assessment – Significant alignment between insurance market and the risk of forest fire statewide. Moderate assessment could raise significant recurring revenue.
- Retail tax on outdoor gear or other products – New tax collection infrastructure required for tenuous connection to risk mitigation and suppression in Oregon.
- Philanthropic investments – Likely challenging to find enough investments to reduce a broad-based risk into the future.
- Capture/Share savings in fire suppression costs – Helpful approach for burden-sharing with partners, but existing authorities are already short on funds.
- Using stewardship authority to create ‘revolving loan’ from state funds – Need dedicated state funding, changes to federal legislation
- Increasing value of small diameter wood (e.g., wood waste) – Requires market-altering incentives, and therefore, additional expense.

**Precedents:** We can also look to other examples from western states struggling with similar challenges.

- [California](#) connected carbon auction funding (\$1 billion over 5 years), doubling the funds dedicated to wildfire.
- [Denver](#) created a “Forests to Faucets” program, a watershed management partnership that generates \$6 million per year -- roughly 2/3 state and city funds; 1/3 federal dollars

- [Rio Grande Water Fund](#), an 83-member partnership that generates \$3.6 million private funds and \$30 million public dollars to protect its watershed.
- [Flagstaff Municipal Bond](#) provides \$10 million to protect its watershed through forest management.
- [Ashland Water assessment](#) generates \$300k per year to assess its water condition and relationship to forest management.
- Washington 2019 property insurance surcharge, increase from 2% to 2.52% (\$62.5 million/yr) - FAILED

**Other Concepts:** Oregon has additional funding sources outside the general fund.

- Ending fund balance
- Oregon State Lottery funds
- Income Tax “Kicker” revenues
- Cap and Invest revenues from carbon fees

**Partnership on federal funding is critical:** Over ninety percent of wildfires in Oregon occur on federal forests -- nearly sixty percent of Oregon’s 30 million forested acres held by the federal government. Overall federal funding has been in decline, and remainder has been increasingly devoted to suppression. The FY2018 Omnibus Spending Package, which received significant leadership from the Oregon delegation, provides a new funding structure from FY 2020 through FY2027, to enable non-suppression work from going forward without having funds diverted to cover rising suppression costs. While current federal funding is inadequate to address long term forest health, new partnerships like the [Shared Stewardship Agreement](#) create opportunities to partner with the federal government to finance forest management and fire response.

### Questions We Need to Answer

- How much revenue is needed?
  - Goal is to align the needs of forest fire resilience with potential sources.
  - Notionally, over time the requirement will decrease, but in the next 10-20 years a significant investment will be required.
  - Estimates of \$4bn would indicate a need of \$200m to \$400m per year.
- What attributes for funding?
  - Related to the increased risk of forest fire
  - Connected to those who benefit from mitigation and fire fighting
  - Avoid reducing funds from existing commitments to forest health and (public benefit)
  - As broad-based as possible, given the benefits of forests to all
- What are the range of options / recommendations?
  - The nature of the need reasonably indicates need for diverse funding sources
    - Suppression: Ongoing funds are necessary for suppression and safety of firefighting crews/personnel, and the cost of supporting fire resilient communities.

- Mitigation: Fuels reduction work is expensive and long-term, requiring significant dedicated funding over time.
- Majority of mitigation and suppression need is on Federal land.

### Potential Opportunities

- Two one-time state sources could catalyze investment.
  - 2017-19 Income Tax “Kicker” (\$1.6 billion total funds)
  - 2017-19 ending fund balance (estimated \$200mm post-kicker)
- Two sustainable state sources match nicely with the nature of the need.
  - **Suppression:** State Fire Marshal’s fund program expansion to include a broad-based commitment on the part of Oregon property owners to share a portion of the burden of fighting forest fires, especially for firefighter safety and equipment. Historical research shows strong support on the part of Oregon property owners to contribute to forest fire reduction through an assessed value fee on their insurance as long as the contribution is in the range of \$50 per property per year. The SB357 work indicated a 6.6% assessment would raise \$50mm.  
*Estimated potential contribution: \$50mm/year.*
  - **Mitigation:** Should the legislature pass Cap-and-Invest legislation, Oregon could pursue a similar policy as in California, where a portion of emissions auction funds are used for fuel treatments.  
*Estimated potential contribution: \$40-50 mm/year.*
- Two non-state sources offer opportunities to leverage state funds on a sustainable basis.
  - **Federal:** A policy change that reflects a commitment to leverage state and local contributions would extend the regional capacity significantly. Historically, federal funds for fuel treatments have greatly exceeded state funds (10:1 ratio).  
*Estimated potential contribution of \$150 mm/year (1:1 match); potentially greater*
  - **Timber:** Commercial thinning can generate revenues to be reinvested in fuel treatments. While this is currently done at a small scale, several meaningful barriers exist to generating revenues meaningful to the overall funding need. These include fair compensation to counties, lengthy and costly permitting and approval processes, achieving pace and scale while retaining social license, and profitability of individual fuel treatment projects.  
*Estimated potential contribution: unknown*
- A successful funding strategy would include substantial one-time funds to catalyze investment, coupled with a sustainable funding package combining elements of state, federal and private funding including private property assessments and timber and non-timber resources.

### Next Steps

- A working group should be formed to work with the Governor’s office and the Legislative Fiscal Office to explore wildfire funding strategies within the context of Oregon’s overall public finance strategy.

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## GOAL 1: CREATE FIRE-ADAPTED COMMUNITIES

### National Cohesive Strategy Insights

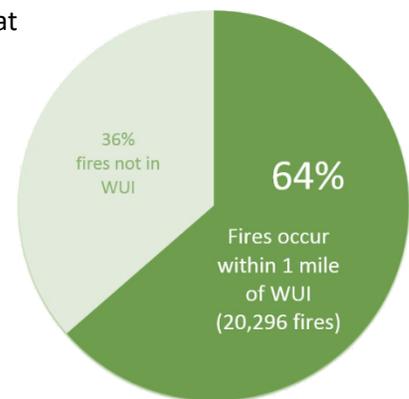
*“California, Oregon and Washington experienced extensive housing growth during the 1990s, particularly in the Wildland Urban Interface (WUI). Of all new housing built in these three states in the 1990s, 61 percent were located in the WUI. These findings portend challenges for fire hazard mitigation, fire protection and resource management.”*

-International Journal of Wildland Fire

The Cohesive Strategy recognizes that fire is a natural part of the landscape, particularly in the West, and that our current trajectory of more frequent, larger, more costly and more destructive wildfires is likely to continue. No area provides greater risk from fire to human life than the wildland urban interface, where combustible homes meet combustible vegetation. Threaded through the Cohesive Strategy are approaches for helping communities adjacent to wildlands adapt to a more complex fire environment, from building codes to growth and planning considerations, from public engagement and education to air quality monitoring and reporting mechanisms for health effects. On a positive note, the strategy recognizes that new construction offers risk-mitigation opportunities that may not be available elsewhere, if communities can adapt their policies and practices.

### Oregon Context

In 2010, the U.S. Endowment for Forestry and Communities estimated that more than one-third of all Oregonians lived in communities and areas at high risk to wildfire—more than 1.2 million people—in more than a half-million homes, 45,000 of those being seasonal homes.<sup>1</sup> Since then, immigration to Oregon, a strong real estate and construction market, and the expansion of developed areas has produced a further increase in the number of homes and people living at risk of wildfire. While there’s no current data quantifying Oregon’s total wildland urban interface values at risk, recent trends and incidence of evacuations, losses and wildfire occurrence clearly indicate the magnitude of the problem in Oregon.



Dozens of communities across the state are working with their citizens and local cooperating public safety agencies to create Community Wildfire Preparedness Plans which help communities prepare for and adapt to fire risks. Some communities have identified specific areas for restricting growth. Other communities have adapted their local land use planning and building codes to increase readiness for fire. As awareness grows about the hazard—and as risks increase—more communities and individuals have been motivated to take local action. All wildland fire agencies, from city and rural fire districts through federal land management agencies, are engaging with homeowners, landowners and citizens. But there is more work to do, greater opportunities for innovation and engagement, and a seemingly unending need to help communities adapt to fire.

<sup>1</sup> US Endowment for Forestry and Communities. 2010.

<https://www.arcgis.com/apps/MapJournal/index.html?appid=82c9a07d6a7147a98b4efbe68428defb>

**Recommendations Provided in This Section**

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**\*Below is a summary of all 12 recommendations listed above, subsequently followed by a detailed analysis section.**

## Recommendation Summaries

### Recommendation 1: Transmission System Wildfire Plan

<b>Description</b>	<ul style="list-style-type: none"><li>• The Oregon legislature passes legislation requiring utilities to prepare wildfire standards and procedures</li><li>• The Oregon Public Utilities Commission (OPUC) uses workshops to develop these standards and procedures.</li><li>• All utilities and transmission system owners participate in these workshops</li></ul>
<b>Policy Type</b>	New legislation/Rulemaking/workshops
<b>Additional Staff</b>	None – authorize existing staff to organize and facilitate the workshop
<b>Non-Staff Funding</b>	none
<b>Priority</b>	<b>HIGHEST</b>

#### Summary

Electrical companies have a duty and an obligation to provide safe, adequate, and reliable services to customers in their respective service territories. Utilities are obliged both by law and by good business practice to protect their assets – and their customers – from the effects of wildfire. However, as the recent and ongoing fires in California demonstrate, current standards for vegetation management, pole material, circuitry and monitoring systems are not designed to anticipate a fire-event. Oregon needs to develop its own standards, and implement them through the authority of the OPUC and other utility regulatory commissions.

## Recommendation 2: Defensible Space

<b>Description</b>	<ul style="list-style-type: none"> <li>• Fund and implement 2017 revision of Oregon Forestland Urban Interface Protection Act.</li> <li>• Support adoption of International Code Council Wildland Urban Interface Code through Oregon State Fire Marshal’s Office and local jurisdiction.</li> <li>• Create a mitigation fund to help underserved populations.</li> <li>• Support mapping and tracking of defensible space status.</li> </ul>
<b>Policy Type</b>	Fund Existing Legislation/Rule-making/Agency Personnel/Agency Action
<b>Additional Staff</b>	8 –OSFM 12-ODF
<b>Non-Staff Funding</b>	Included under Land Use
<b>Priority</b>	<b>HIGHEST</b>

### Summary

Defensible space around buildings and infrastructure is critical to public safety and health, property and infrastructure protection, business resilience, firefighter safety and effectiveness, and system wide cost and loss avoidance. In 2018’s fire season alone, the Office of State Fire Marshal spent \$15 million during large wildfires preparing homes by creating defensible space, work that could have been done prior to the fire. Oregon does not have a coordinated plan that addresses defensible space among varying jurisdictions, nor a tracking system that monitors defensible space status, but elements of a systematic approach exist and can be formed into a coordinated, multi-jurisdictional program.

Together with the Department of Forestry and State Fire Marshal’s Office, the Land Use Committee and Council recommends the State of Oregon take a most active role in defensible space. The most active role includes recommendations to update and re-adopt the 1997 Oregon Forestland-Urban Interface Fire Protection Act ([Senate Bill 360](#)). Further, a recommendation to adopt the International Code Council Wildland Urban Interface Code (ICC WUI code), led by the State Fire Marshal’s Office, would cover non-forested WUI areas and cities containing or adjacent to WUI zones, allowing local enforcement and seamless integration outside ODF’s jurisdiction. Defensible space requirements for new construction are addressed in the Codes section. To most equitably approach this initiative, a proposed state matching fund for low income residents is recommended for residents who could be disproportionately affected.

### Recommendation 3: Codes

<b>Description</b>	<ul style="list-style-type: none"><li>• Establish an interagency workgroup and policy decision making committee to identify code gaps, needed updates, and assist local jurisdictions with updates.</li><li>• DLCDC works with Counties and Cities on rulemaking for land use planning related to reducing wildfire risk.</li><li>• As needed, update wildfire related building and land use codes and establish goals for local adoption with State assistance. State will issue best practices guidance for zoning and code application with process recommendations for local jurisdictions to follow.</li></ul>
<b>Policy Type</b>	Agency Action
<b>Additional Staff</b>	None anticipated at this time
<b>Non-Staff Funding</b>	None known at this time
<b>Priority</b>	<b>HIGHEST</b>

#### Summary

Codes (both building and land use) are a key component to a cohesive wildfire safety program across Oregon. While construction will take place in wildfire prone areas across the state, structures built in wildfire overlay areas should meet best practices to protect future occupants and first responders while reducing the public cost burden for wildfire response and recovery. Following the zoning recommendations, local jurisdictions who already have, or choose to newly define their wildfire risk overlay areas (WUI) can choose the level of land use and building code requirements for construction in their wildfire overlay zone, though will be strongly encouraged to adopt all applicable codes. Many local jurisdictions have already adopted requirements for wildfire zone construction, though requirements may be outdated or not adequate for the current and predicted level of wildfire exposure.

#### Recommendation 4: Land Use

<b>Description</b>	<ul style="list-style-type: none"> <li>• Create a wildfire risk map informed by state information that can be used at the property ownership level.</li> <li>• In coordination with Oregon cities and counties, the Land Conservation and Development Commission (LCDC) undertake rulemaking to adopt minimum standards for local governments to plan for wildfire risk.</li> <li>• State agencies (DLCD, perhaps Oregon Department of Forestry and Oregon State Fire Marshall) provide technical assistance resources to counties/cities to implement wildfire risk planning, zoning, or development mitigation standards.</li> </ul>
<b>Policy Type</b>	Rule Making/Agency Personnel/Agency Action/Other: Local Government Adoption and Implementation
<b>Additional Staff</b>	5- DLCD
<b>Non-Staff Funding</b>	\$12,000,000 in technical assistance grants to assist local governments with adoption and implementation <b>Wildfire Risk Information Development</b> \$75,000/year to maintain and update fire hazard data on Oregon Wildfire Risk Explorer
<b>Priority</b>	<b>VERY HIGH</b>

### Recommendation 5: Property Insurance – Risk Mitigation Incentives

<b>Description</b>	<ul style="list-style-type: none"><li>• Encourage insurance industry to implement uniform underwriting standards and policy changes that would motivate policy holders to meet Oregon Cohesive Wildfire Strategies, to harden structures, provide for and maintain defensible space, access for fire vehicles and evacuation routes.</li><li>• Create a risk map for wildfire risk informed by State information that can be used at the property ownership level.</li></ul>
<b>Policy Type</b>	Other: Voluntary/Partnership with Private Insurance Industry
<b>Additional Staff</b>	None
<b>Non-Staff Funding</b>	None anticipated at this time
<b>Priority</b>	<b>VERY HIGH</b>

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## Recommendation 6: Health – Air Filtration Systems

<b>Description</b>	<ul style="list-style-type: none"> <li>The Oregon legislature creates a new funding program designed to accelerate the installation of air filtration systems for low-income residences</li> </ul>
<b>Policy Type</b>	Fund Current Programs (OAR 411-087-0010)
<b>Additional Staff</b>	Two FTE at \$250,000 per biennium = \$500,000
<b>Non-Staff Funding</b>	\$4,000,000
<b>Priority</b>	<b>HIGHEST</b>

### Summary

While the effect of wildfire cuts across many aspects of human and natural systems health, smoke inhalation may affect the largest number of community members. While smoke contains numerous air pollutants, the direct health effects of inhaling fine particulates 2.5 micrometers in size (PM 2.5), are of special concern for those with underlying heart or lung disease. The associated health risks for these vulnerable members of our community are especially well documented. A recent comprehensive review of the science regarding exposure to fine particular matter found with respect to short-term exposures (defined as “from hours to days”):

- There is a causal relationship between short-term fine particulate exposure and heart disease death and disability.
- There is likely to be a causal relationship between short-term PM 2.5 exposure and respiratory effects.

Others at risk from smoke exposure include children, older adults, pregnant women, and those living in poverty.

	Number of People in Oregon
People with pre-existing conditions*	
1. Asthma (adults)	362,900
Asthma (youth)	50,000
Heart Disease	130,800
COPD	189,600
Children (0-14)**	722,570
Adults 65+**	714,200
Pregnant women***	43,000
People living in poverty**	547,000
*2017 BRFSS	
**Oregon Population Research Center, 2017	
***2018 Oregon vital statistics, number of births in 2017	

To provide more context, consider the following factors. Smoke vulnerable counties such as Malheur, Coos, Douglas, Umatilla, Lincoln, and Marion are also where Oregon has the highest percentages of adults 65 and over, and children under 5 years old. Oregon has 136 nursing facilities, 538 assisted living

and residential care facilities, and 1566 adult foster care homes. Nursing homes are reviewed for licensure every year and assisted living and residential care facilities are reviewed for licensure every two years. The Department of Human Services conducts a comprehensive survey focused on health care services and delivery. The State Fire Marshall surveys each licensed facility for fire and safety issues, with a focus on building codes. Current building codes may not reflect the growing concerns over smoke associated with wildfire or prescribed burns.

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## Recommendation 7: Health – Remove Barriers to Air Filtration Systems Installation

<b>Description</b>	<ul style="list-style-type: none"><li>The Oregon Health Authority facilitates a multi-stakeholder discussion to a) identify and remove barriers to residential air filtration systems; and b) discern the degree to which renters are protected from wildfire impacts</li></ul>
<b>Policy Type</b>	Agency Action
<b>Additional Staff</b>	None, but authorize OHA staff to facilitate this process
<b>Non-Staff Funding</b>	Minimal
<b>Priority</b>	<b>HIGH</b>

### Summary

Protecting community members from smoke is more than just offering public clean air spaces. In every community there are individuals for whom it is difficult for them to leave their home. The ability to take charge of one's health is not only empowering, it is a critical aspect of preparing for any emergency, including a wildfire or smoke event. However, not all people living in Oregon are able to take full charge of the places where they live. This is especially true for the close to 40 percent of Oregonians who rent their home. In rural and smaller communities well over half of the population rents their home.

Families and individuals with fewer resources, older adults, and vulnerable community members, many of whom are renters, benefit from solutions that allow them to take charge of their home environment to protect themselves and family members from smoke.

Addressing affordable housing protections and ensuring cleaner air spaces in people's homes is dependent upon intentional collaboration across government and private sector partners in housing, transportation, health and human services. To date the collaboration focused on increasing clean air spaces in people's home has been limited. Government programs promoting energy efficiency and weatherization for low income homes generally do not include energy efficient air purifiers coupled with the air-cooling units.

### Recommendation 8: Health – Air Quality Monitors

<b>Description</b>	<ul style="list-style-type: none"><li>The Oregon Department of Environmental Quality Installs and Maintains Additional Air Quality Monitoring Systems</li></ul>
<b>Policy Type</b>	Legislation/rulemaking/agency action
<b>Additional Staff</b>	4 FTE at \$250,000 per biennium = \$1MM
<b>Non-Staff Funding</b>	\$275,000
<b>Priority</b>	<b>VERY HIGH</b>

#### Summary

Prescribed fire is used to achieve a wide range of ecological, economic, and social benefits, which vary around the state depending on the type of forest ecosystem. Under the Oregon Smoke Management Plan, to minimize smoke intrusion into populated areas ODF meteorologists regulate the number and size of burns, based on weather and wind conditions. Unlike wildfires, communities can plan for prescribed burning and take actions to protect vulnerable populations, including your children, older adults, and people living with chronic conditions. As the Mitigation Committee recommends increasing the pace and scale of prescribed burning, the Public Health Committee recommends an investment in community and technical assistance supports to mitigate poor health outcomes caused by exposure to smoke. These are intended to be seen as a complementary recommendation with humans at the center of the solution.

### Recommendation 9: Disaster Recovery – Regional Staffing

<b>Description</b>	<ul style="list-style-type: none"><li>• Six Regional positions are added to the Emergency Management System</li></ul>
<b>Policy Type</b>	Legislation/rulemaking/agency action
<b>Additional Staff</b>	6 FTE at \$250,000 per biennium = \$1.5MM
<b>Non-Staff Funding</b>	Minimal; relates to creating office space in existing facilities throughout Oregon
<b>Priority</b>	<b>HIGH</b>

#### Summary

At the state level, the Office of Emergency Management (OEM) has a very limited staff to support community recovery efforts. Much of the current capacity—all Salem-based—is devoted to providing support to communities with declared federal disasters as they seek reimbursement from the Federal Emergency Management Agency (FEMA). At the same time, while each county has an emergency manager, in many rural counties this person has no staff and is responsible for a wide range of planning and response activities. The system as a whole lacks capacity to surge — particularly in the absence of federal disaster declaration. The nature of the wildfire disaster threat described in the foundational statement above is stretching the capacity of the system in new ways that it is not well equipped to handle. Working with Regional Solutions teams, the regional staff would engage in ongoing work to help communities prepare for wildfires and other natural hazards, as well as coordinating economic and community recovery efforts in the aftermath of wildfires and other hazards.

## Recommendation 10: Disaster Recovery – Stafford Act Reform

<b>Description</b>	<ul style="list-style-type: none"><li>Recommend to the Oregon Federal delegation that they explore the feasibility of reforming the Stafford Act</li></ul>
<b>Policy Type</b>	Letter from Governor Brown and Legislative Leadership to the Oregon Delegation
<b>Additional Staff</b>	No additional staff required
<b>Non-Staff Funding</b>	Minimal
<b>Priority</b>	<b>HIGH</b>

### Summary

Recent fire seasons in Oregon—and in neighboring states—have shown we are vulnerable as individuals and communities to the impacts of wildfire, both in terms of physical infrastructure but also in terms of economic disruption. The State has a very limited “toolkit” to support community preparedness, adaptation and recovery. While more federal tools are available for both preparedness and recovery, due to the specific nature of wildfire disasters and limitations in local capacity, significant gaps remain.

**The disaster preparedness** and response system is intended to address all hazards. However, wildfires pose challenges that have revealed several weaknesses and gaps in the system. Wildfires challenge the system in unusual ways:

- **The acute period** of wildfire events can last for months, during which County emergency managers are inevitably focused on response activities. This contrasts with a flood event, for instance, that may last for a few days, after which the emergency response personnel can shift to supporting recovery.
- **The frequency and scale** of wildfire, which are clearly increasing, are stressing the emergency response system as a whole, in a similar way that this changing wildfire environment is pushing against the limits of the ODF’s traditional method of suppression.
- **The increasing frequency and intensity** of wildfire threatens to create a “new normal” that may require more fundamental changes to communities. A clear example is the threat to the visitation economy of Southern Oregon posed by repeated smoky summers.
- **Wildfires rarely trigger a major disaster declaration under the “Stafford Act”** beyond the Fire Management Assistance Grant Program (FMAGP). While wildfires can cause major economic disruptions, they very rarely create the kind of public infrastructure impacts that trigger a Presidential disaster declaration that makes a higher level of federal disaster aid available.

### Recommendation 11: Disaster Recovery – Local Economic Opportunity Fund

<b>Description</b>	<ul style="list-style-type: none"><li>The Oregon Legislature authorizes funds to the Local Economic Opportunity Fund (LEOF) to support local business wildfire preparation efforts</li></ul>
<b>Policy Type</b>	Existing legislation
<b>Additional Staff</b>	1 FTE at \$250,000 per biennium
<b>Non-Staff Funding</b>	\$1,000,000
<b>Priority</b>	HIGH

#### Summary

The Oregon legislature has previously recognized the need for the State to provide critical matching funds for federal hazard mitigation grants and efforts to adapt to regional economic challenges. The legislature previously established funds to provide matching funds for disaster response and pre-disaster mitigation. They have also established a Local Economic Opportunity Fund (LEOF), historically funded with a focus on supporting resilience work. Supporting communities as they mitigate for wildfire will accelerate the evolution

## Recommendation 12: Property Insurance – Access & Affordability

<b>Description</b>	<ul style="list-style-type: none"><li>The Oregon Insurance Commission monitors the property insurance market to ensure continued access to affordable insurance</li></ul>
<b>Policy Type</b>	New legislation/Agency Action/Rulemaking
<b>Additional Staff</b>	1 FTE at \$250,000 per biennium
<b>Non-Staff Funding</b>	\$100,000
<b>Priority</b>	<b>MODERATE</b>

### Summary

At present Oregon’s property insurance markets remain robust and competitive, providing Oregonians access to affordable property insurance. Insurance carriers are paying increased attention to wildfire risk, particularly in light of recent events in California. The Division of Financial Regulation should initiate an ongoing monitoring of insurance markets here in Oregon and across the West to ensure access and affordability remain in place.

### Recommendation 1: Transmission System Wildfire Plan

#### Defining the Issue

##### Problem Statement

- As the frequency, intensity and duration of wildfires has increased in the West, electrical companies must take additional measures to reduce the risk of transmission-related fire events. Powerline fires have the potential to be larger than fires from other causes and the suppression of fires has become less effective during extreme weather conditions. Reducing the risk of transmission-caused wildfire will have a direct and positive benefit to Oregon's effort to reduce human-caused wildfires.

##### Current Situation:

- Independently owned utilities operate under the authority of the Oregon Public Utilities Commission (OPUC). Public utilities report to their respective utility commissions, but the OPUC has some oversight with regard to safety. Bonneville Power Administration operates under the Energy Policy Act of 2005 (16 USC).
- In general, utilities must manage their transmission corridors and performance based on guidelines developed by these regulatory agencies.
- Based on experiences in neighboring states, these regulations do not sufficiently factor the possible role transmission lines can play causing or exacerbating a wildfire event.

##### Recent Trends: California Wildfires

- The [map of transmission lines](#) in Oregon reflects the extensive nature of their presence. [Additional transmission lines](#) are in planning.
- [Recent reports from California](#) demonstrate the challenges associated with implementing acceptable transmission management protocol

##### Business-As-Usual Forecast

- Failure to develop and implement transmission line management protocol would likely exacerbate the risk of transmission-related wildfire events. It would also serve to add to the growing confusion expressed by community residents regarding their safety from transmission-related fires, as well as the costs associated with energy curtailment to reduce the risk of a fire event.

##### Policy Options Available to State

- BAU: Leave guidelines as it and allow utilities the flexibility to achieve fire-adapted status on their own.
- Require utilities to develop and implement management protocol.

## Policy Analysis

### Overview of Policy Under Consideration

- Legislature instructs utilities to develop and implement wildfire standards and protocol. OPUC facilitated standards and protocol development.

### Cohesive Strategy Effects

- Done correctly and overseen by appropriate regulatory commission, transmission standards and protocol adoption could reduce the risk of catastrophic wildfire, reducing risk to human life and property, and reducing suppression costs

### Anticipated Uplift

- Direct Wildfire Benefit
  - Increased public safety in the event of a wildfire
  - Reduced risk of human-caused wildfire
- Primary Council Objectives Achieved
  - Human Safety (reduce high-priority wildfires)
  - Human Health (reduce smoke in proximity to population)
  - Vibrant Communities (health, economy)
  - Public Finance (reduce most costly suppression)
- Uplift Score: HIGHEST
- Uplift Certainty: HIGH

### Anticipated Costs

- Direct cost of implementation (\$/year, duration)
  - State: Task force hosting: 3 in-person meetings @ \$6000 each
  - Counties: Participation in task force: time/travel to participate in in-person meetings \$5000
  - FTE time and energy: six months x 10 people @.25 (40 hours/week x 50 weeks) x .25/six months = 125 hours total time. (Average FTE cost/biennium is approximately \$250,000) = \$60/hour = \$7,500 in FTE time
  - Cost of standards and protocol adoption by utilities uncertain.
- Indirect Costs
  - Uncertain until recommendations are developed and approved
  - Likely to result in increases in cost to customer, as costs associated with the adoption of new few safety protocol and standards results in an increase in energy costs.
- Cost Score: HIGH
- Cost Certainty: MODERATE

### Timeline

- Six months-one year for working group
- One year to implement recommendations; 2-5 years to see impact on behavior
- Benefit duration: once recommendations are internalized, the benefits will be long-lasting
- Maintenance Requirements: Regular review of communications plan is warranted
- Timeline Score: HIGH

## Implementation Certainty

- Overall degree of certainty of task force completion: HIGHEST
- Drivers
  - Political risk
  - Operations risk
  - Dependence on other policies
  - Dependence on other stakeholders
  - Other

## Magnitude of Impact

Additionality relative to overall wildfire risk in Oregon: HIGHEST

## Overall Priority

HIGHEST

## Supporting Resources Required

- Coordination with Public Utilities Commission
- Potential: third-party auditor of mitigation plan implementation

## Key Assumptions

- Resolution of impacts of power outages to communities

## Recommendation 2: Defensible Space

### Defining the Issue

#### Problem Statement

- Defensible space around homes and infrastructure is critical to public safety and health, property and infrastructure protection, firefighter safety and effectiveness, and system wide cost and loss avoidance.
- While other states have mandated defensible space policies, Oregon lacks a consistent definition, standards, enforcement, and mapping of wildfire risk areas where defensible space is needed (see Element 4: Information Resources).
- Primary challenges are gaining public acceptance of the need to accomplish effective defensible space, mandating uniform standards across the state, staffing to educate the public and local jurisdictions, and incentives for low income residents.
- New structures continue to be built in wildfire hazard zones throughout the state without a requirement for defensible space at time of build (see Element 2: Building Codes).
- Human caused fires still constitute the vast majority of fire starts in the state. Defensible space protects homes from wildfires, but also protects wildlands from home fires, buying critical response time before a fire transitions into the wildland from a structure.

#### Current Situation: Defensible Space

- OSFM team deployments during Oregon Conflagration Act wildfires in 2018 spent over half their time and an estimated \$15 million preparing homes with insufficient defensible space. Non-conflagration (small, locally staffed) fires were not accounted for and contribute additionally to this number.
- Oregon does not track defensible space compliance, so fire crews assess this critical factor on every fire, which is costly and time consuming.
- Communities and individual rural homes lacking defensible space are at much higher risk of loss. Without intervention, the State should expect to see increasing losses of property and life as climate change increases community exposure.
- Climate change is predicted to increase fire activity across the state, but more significantly in areas where fires have been rarer in the past, including the Coast Range and Willamette Valley, where awareness of defensible space and preventive action taken is likely lower than already fire-prone areas of the state. <https://www.nap.edu/read/12877/chapter/5#40>
- As numbers of home-based businesses and people working from home grow (Oregon is #2 nationally for people working from home), the risk of economic impact of wildfire increases as home exposure increases. <https://oregoneconomicanalysis.com/2019/01/16/working-from-home/>
- A lack of consistent definition of areas at risk/WUI, makes it difficult to prioritize where the focus needs to be, how large the problem is, and what resources are needed to address it.

#### **Business-As-Usual Forecast**

- Without a coordinated plan to address defensible space, we can expect suppression costs to continue to increase as a result of unprepared homes requiring intervention ahead of fires, when time allows.
- Risks to firefighters and residents will increase as predicted fire size, intensity, and acres burned increases during forecasted warming due to climate change.
- Home and property loss will likely continue to increase without significant preventive intervention that results in significant attainment of defensible space across the state as new construction continues in wildfire risk zones with or without codes requiring defensible space.

#### **Policy Options Available to State**

- The committee's most active policy recommendation (preferred option) highlights:
  - Oregon uses the latest data on western wildfire to define enhanced standards for defensible space and requires them on select landscapes.
  - Oregon provides permanent funding for administration and implementation.
  - Identify low/medium/high risk for all private lands, create a statewide minimum standard, but some measure of defensible space required on all landscapes.
  - Define and require maintenance and monitoring.
  - Equitable approach to funds made available that prioritizes support for populations with greater vulnerability, including communities of color, indigenous communities, limited English proficiency community members and low-income citizens.
  - Defensible space review/implementation included within NEW building/site construction permitting process (see Strategy 2: Codes for details).
- A less active policy recommendation (non-preferred) would entail:
  - Current defensible space statutes and standards exist but there is diversity between communities in local level adoption leading to implementation.
  - There is no state level funding or staff to administer defensible space standards.
  - Tracking progress and compliance with defensible space standards is not possible within current system structure.

- While experts recognize the interrelationship between fire-hardening building codes and defensible space standards, regulatory oversight is separate
- Local monitoring and enforcement of existing statutes and standards imposes a financial burden on local authorities.
- Current enforcement system is complaint driven, further exacerbating uneven adoption.
- There is better implementation where there is greater local fire district capacity, leading to equity and consistency issues.
- As expressed in SB 360, homeowners can be held liable for fire suppression costs due to wildfire, creating disincentive for local adoption of higher standards.
- Current system does not take an equitable approach, that priorities protection and benefits for most vulnerable populations, including communities of color, indigenous communities, limited English proficiency community members and low-income people.
- Low-income homeowners or renters cannot often afford to meet standards.

## Policy Analysis

### Overview of Policy Under Consideration

- Fund updated Defensible Space requirements in ODF protected areas with proactive education and implementation. Fund assistance for disadvantaged populations.
- Pass ICC WUI Code as part of Oregon Fire Code, and State actively assists with local adoption and implementation in WUI areas not protected by ODF.
- Provide support for land use and building codes that require defensible space and hardened construction at the time of development or remodel (detailed proposal in Codes element).

### Cohesive Strategy Effects

- The anticipated effect of increasing the proportion of structures with defensible space would primarily be realized in more effective, safe, and efficient suppression. There would also be an anticipated benefit in avoided costs to local jurisdictions in reduced likelihood of structure loss and associated impacts to citizens and infrastructure, the majority of which are absorbed at the local level.
- Reduced home and infrastructure loss results in lessened economic burdens, emotional stress and health effects, and a quicker recovery time, all elements of a fire adapted community.

### Anticipated Uplift

- Human Safety and Human Health
  - Defensible space has direct positive association with structure survival, leading to decreased chances of citizen and firefighter fatalities.
  - Decreased home loss keeps people in their homes, avoiding costly rebuilding, dislocation, and interruption (particularly for renters).
  - Mental health impacts in wildfire affected communities are understated and long lasting, degrading the quality of life. Though difficult to value, avoiding these impacts has a substantial return on investment in health care.
- Critical Infrastructure
  - Defensible space leading to decreased structure loss prevents impacts to water and electric infrastructure at each building and associated system wide impacts.

- Defensible space principles can be applied to critical infrastructure such as cell towers, substations, and pump stations that provide critical services. Interruptions and associated replacement costs can be avoided.
- Vibrant, Stable Communities
  - Avoiding wildfire impacts in communities is imperative. Studies show a high percent of costs are absorbed at the local level, straining budgets and impacting businesses and economic activity. Reducing structure loss significantly reduces the impact on local jurisdictions in the recovery phase.
- Public Finance (Cost Containment)
  - OSFM estimated \$15 million spent on preparing structures ahead of large wildfires in 2018. Having defensible space created prior to fire season alleviates the financial and workload burden on the State during fire response.
  - There is a public cost of infrastructure damage such as water system contamination experienced in Paradise and Santa Rosa, or more commonly electric service infrastructure loss. Though felt at the local level, these costs can be extensive and end up as a burden on citizens who are likely being impacted by other wildfire related costs.
- Overall prioritization is HIGHEST, due to predictable positive impacts on human health and safety, communities, and public finance. If implemented at full scale funding, the certainty of outcomes is high. Lowered levels of funding and program rollout directly decrease the benefits and anticipated uplift.

### Anticipated Costs

- 12 FTE for ODF to roll out SB360 state-wide.
- 8 FTE for OSFM to support creation of code best practices, provide guidance to local jurisdictions, enforcement support.
- Undetermined cost for technical assistance for code update.
- Local opposition to mandated standards could be anticipated without state wide financial support.

### Timeline

- Begin program staffing and rollout in FY 2021, continue to ramp up to full capacity by end of FY 2022 until targets are met. Ramp down to maintenance levels by end of FY 2026.
- Time of initial impact: 3-5 years.
- Benefit duration: **2017 ORS 477.059** requires no less than 5-year re-certification on defensible space. Initial investment will make re-recertification more efficient, less frequent, and less costly.
- Overall Timeline rating is VERY HIGH. Meaningful benefits realized if completion of first round of five-year certification period completed by end of FY2026.

### Implementation Certainty

- Overall degree of certainty is HIGH. Expect predictable outcomes with reliable, proven results if funding and organizational ramp-up proceed according to need and timeline.
- Drivers of high certainty
  - Political risk is low given this program has largely been previously rolled out across much of the state. Wildfire has only increased as a pressing issue for the public and support should be increasing for government intervention.

- Operations risk is low given prior experience with SB 360 and awareness of the importance of defensible space.
- Dependence on other policies is low.
- Dependence on other stakeholders is moderate. Cooperation from counties, local fire protection districts and departments, and between state agencies will make this effort successful and efficient.
- Full funding and rollout with support from State legislature and State agencies is paramount if successful achievement of overall defensible space goals and anticipated uplift is to be realized.

**Magnitude of Impact**

Additionality relative to overall wildfire risk in Oregon is VERY HIGH.

**Overall Priority**

**HIGHEST**

**Supporting Resources Required**

- Information resources (mapping) to identify the extent of needed defensible space and zones of high risk across the state, especially areas outside of ODF jurisdiction.
- State staffing (ODF and OSFM) to implement SB360 program and support ICC WUI code adoption.
- Mitigation funding for disadvantaged populations.

**Key Assumptions**

- Local jurisdictions not within the ODF SB360 coverage will proactively adopt ICC WUI code requirements for defensible space and assist with implementation using a similar approach as laid out in ORS 477.015 (Definitions) to 477.061 (Short title).
- Property owners will comply on a voluntary basis with SB360 and ICC WUI code standards.
- Funding will be allocated to fully carry out the State’s role in achieving defensible space.

**Recommendation 3: Codes**

**Defining the Issue**

**Problem Statement**

- Oregon, like many states, is experiencing housing expansion into wildfire prone areas. An increasingly uniform application of zoning and codes is desirable to avoid unnecessary exposure and increasing public expenditure for suppression and recovery. Preliminary analysis shows that codes and defensible space are having a positive impact by reducing wildfire loss in California.
- While put forth at the State level, building and land use codes are adopted by local jurisdictions, though the process of zoning and code adoption, how they relate, and what options are available can be confusing and difficult to navigate. This results in patchy adoption, application, and enforcement in areas where WUI fires become State-funded suppression liabilities.

**Current Situation**

- There is a lack of tracking as to which jurisdictions already have wildfire related codes, and to what degree current codes represent best practices and current science in wildfire mitigation and loss prevention. This extends to a lack of guidance as to where codes should and should not apply in communities.
- The patchwork of inconsistent and sometimes absent role of codes allows development in fire prone areas of the state that does not meet best practices for protecting citizens and first responders, setting the stage for future loss and rising expenditures, both private and public.
- The array of codes and policies is not cohesive, easy to follow, or achievable for local jurisdictions.

### **Recent Trends: Codes**

- Development pressure continues to increase in the Oregon WUI. One study indicates that Oregon experienced a 40.7% increase in the number of houses in the WUI from 1990-2010. However, the study did not consider local definitions of wildfire risk, which adds further urgency to mapping Oregon’s community wildfire risk.
- Recent update to Oregon Residential Specialty Code (R327) in January of 2019 is a new tool for local jurisdictions to adopt wildfire safe building practices. As of October 2019, Medford is the first community to have adopted this new element of the building code.

### **Business-As-Usual Forecast**

- Housing shortages are forcing construction to expand further into wildfire hazard areas along with those choosing a rural lifestyle for aesthetics and quality of life.
- Not only are WUI areas subject to wildfire loss, humans are the primary source of fire starts from activities like debris burning, equipment use, accidents, and arson.

### **Policy Options Available to State**

Most Active: Assess wildfire zoning and code tools, update as recommended by committee. Use State agency resources to assist local jurisdictions in wildfire planning, and adoption of wildfire planning measures into their Comprehensive Plans and Zoning Codes. State provides planning resources, best practices, and help assessing where codes should be applied (see Information Resources: Wildfire Risk Mapping). Building codes and defensible space are linked and coordinated. State assists coordination with insurers for incentives. State, in coordination with Cities and Counties, has the option to set adoption goals and timelines, while recognizing limited local capacity and the need for increased education about the positive outcomes of code-based approaches to wildfire safety. Home loss and State-incurred costs for structure protection trend downward over time.

Less Active: Make recommendations to local jurisdictions based on existing code resources, no requirements for code adoption and no assistance from State. No modifications to current policies or codes. Expect increasing home loss and State expense for WUI fire protection continues to increase.

## **Policy Analysis**

### **Overview of Policy Under Consideration**

- Use state agency resources to assist local jurisdictions in wildfire planning and adoption of wildfire planning measures into their Comprehensive Plans and Zoning Codes.
- Counties and cities work toward updates and/or new adoptions as needed, with State technical assistance.

## **Cohesive Strategy Effects**

- Ultimately, codes can guide development that reduces risk of wildfire loss in at-risk areas across the state of Oregon, preventing future liability and loss with associated effects on communities, infrastructure, and human health and safety, the goal of Fire Adapted Communities. Suppression costs and risks to firefighters decrease over time, making suppression more effective and efficient as community susceptibility decreases. Wildfire losses and ignitions decrease due to codes and defensible space efforts, resulting in less impact on communities, wildlands, habitat, and forests.

## **Anticipated Uplift**

- Decreased structure loss, increased life safety
  - Declining State investment in OSFM response and protection costs
  - Fewer homes lost to wildfire results in avoided loss to economic activity, public infrastructure.

## **Primary Council Objectives Achieved**

- Human Safety and Human Health
  - Defensible space has direct positive association with structure survival, leading to decreased chances of citizen and firefighter fatalities.
  - Decreased home loss keeps people in their homes, avoiding costly rebuilding, dislocation, and interruption.
  - Mental health impacts in wildfire affected communities are understated and long lasting, degrading the quality of life. Though difficult to value, avoiding these impacts has a substantial return on investment in health care.
- Critical Infrastructure
  - Defensible space leading to decreased structure loss prevents impacts to water and electric infrastructure at each building and associated system wide impacts.
  - Defensible space principles can be applied to critical infrastructure such as cell towers, substations, and pump stations that provide critical services. Interruptions and associated replacement costs can be avoided.
- Vibrant, Stable Communities
  - Avoiding wildfire impacts in communities is imperative. Studies show a high percent of costs are absorbed at the local level, straining budgets and impacting businesses and economic activity. Reducing structure loss significantly reduces the impact on local jurisdictions in the recovery phase.
- Public Finance (Cost Containment)
  - OSFM estimated \$15 million spent on preparing structures ahead of large wildfires in 2018. Having defensible space created prior to fire season alleviates the financial and workload burden on the State during fire response.
  - There is a public cost of infrastructure damage such as water system contamination experienced in Paradise and Santa Rosa, or more commonly electric service infrastructure loss. Though felt at the local level, these costs can be extensive and end up as a burden on citizens who are likely being impacted by other wildfire related costs.
- Overall Uplift: HIGHEST

## Anticipated Costs

- Direct cost of implementation (5 years initial timeline)
  - State invests in staffing, mapping, outreach
  - Counties/cities assist with existing staffing
- Indirect Costs
  - There is potential for increase in construction costs in wildfire risk areas, though the current evidence is unclear as to if Oregon would see increased or decreased costs. The [primary study](#) on wildfire code construction cost refers to a specific region where typical construction costs may differ from localized examples in Oregon. Any potential for increase in initial cost needs to be weighed against the cost of wildfire losses to citizens, State, and local governments i.e. the [full community cost of wildfire](#).
  - Increased cost for creation and maintenance of defensible space as a key component of wildfire safety during and after construction.
- Overall Cost: MODERATE

## Timeline

- Land Use Committee recommends a five-year timeline that encompasses the major objectives of mapping, policy and code update, and program initiation and progress at the local level.
- Resulting processes, code updates, and safer construction have decades-long impacts on lowering wildfire risk in the state. Process updates should be evaluated every 5 years.
- Once constructed, structures will fall under the Defensible Space maintenance requirements outlined in the previous section.

## Implementation Certainty

- Overall degree of certainty: VERY HIGH
- Drivers
  - Oregon's land use program and experiences offer unique building blocks for this effort. Modifying and streamlining the State's policies and codes requires smaller investment than creating these resources.
  - The increasing effects and cost of wildfire in Oregon provide a motivating factor for all parties.
  - Local jurisdictions with limited capacity may need direct assistance with staffing and/or funding.

## Magnitude of Impact

VERY HIGH

## Overall Priority

HIGHEST

## Supporting Resources Required

- Information resources (e.g., mapping)
- Guidance from DLCD, OSFM, BCD to help local jurisdictions navigate code adoption process.
- State agency staffing and coordination for implementation.
- County and City participation in discussion and development of policies and updates.

## Key Assumptions

- Local jurisdictions are provided the resources need to undertake wildfire risk and mitigation planning through code application.
- Stakeholders (contractors, real estate, insurance, and others) are part of discussions about code adoption. Assume the State will convene stakeholders for collaborative development of new policies and processes related to development in wildfire risk zones at state and local levels.
- Homebuyers see homes built to wildfire codes as an essential component to living in fire prone areas of Oregon, much like energy efficiency measures are now commonplace and sought after.

## Recommendation 4: Land Use

### Defining the Issue

#### Problem Statement

As wildfires increase in frequency and intensity, Oregon communities experience increased vulnerability to the effects of wildfire. Land use planning measures can be employed by cities and counties to (1) utilize information about areas most prone to damage, (2) develop property measures to mitigate the risk in prone areas, and (3) implement those measures for new development. Oregon's land use planning system provides a framework for identifying hazards and reducing risks, however, few communities are currently utilizing land use planning to actively address wildfire hazards. Information resources are needed to effectively use land use planning as a risk management tool. Incorporating wildfire risk information into planning and zoning is an adaptation tool that can reduce the potential for future losses and improve resiliency.

#### Current Situation: Zoning and Urban Growth Boundaries

A hallmark of Oregon's land use planning system is protecting farm and forest areas as working landscapes by limiting development opportunities through zoning measures (commonly referred to as resource zones) and limiting urban sprawl through state policies. Outside of a city, areas zoned for residential or other development-uses are well defined, and generally located in areas with poor farm or forest value. In terms of the risk wildfire poses to structures, an advantage to Oregon's land use approach is development in rural lands is either low in density (on farm and forest lands), or limited to defined areas with predictable development densities (for example, one residence per 5 acres). Urban development is generally limited to the lands within a City's urban growth boundary. A comparison of the effects of Oregon's and Washington's land use planning systems effects on agricultural and timber lands concludes, "In the periods following land use implementation [1984 in Oregon] there is a distinct slowing of the conversion of resource lands especially in Oregon. Following land use implementation the annual rate of wildland forest conversion fell by 66%, range by 23% and intensive agricultural lands by 50%.<sup>2</sup>" Oregon compares well with other states in limiting development on rural lands, where wildland fire is most expected to occur.

Land use planning, including the state standards, is implemented at the local level by city or county government based on adopted standards in state statute, administrative rule, and local code. The foundation of these adopted standards is the Oregon Land Use Planning Goals; Planning Goal 7

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<sup>2</sup> Lettman, G. et al, Land Use Change on Non-Federal Land in Oregon and Washington, 2018 Update

addresses natural hazards. The hazard planning framework for addressing and mitigating risks is in place, but few communities are using land use planning to actively address wildfire risks beyond the standards set in administrative rule discussed in the next paragraph. This is primarily due to a lack of information needed to make risk and mitigation decisions. Capacity constraints at a local government level and lack of adequate funding also contribute to insufficient or out-of-date hazards planning.

When development is allowed in timber zones, existing state administrative rules (OAR 660-006-0029, 0035 and 0040) provide standards for minimizing the risk associated with wildfire and providing firefighting resources, by addressing fire protection, access, fuel breaks, fire retardant roofing materials, slope, and spark arrestors on chimneys. There is no requirement for upkeep of these standards, including defensible space.

Currently, there is no standard methodology for communities to determine an area's wildfire risk, and limited opportunity to provide an accurate assessment of number and type of structures currently developed in wildfire prone areas.

### **Recent Trends: Land Use & Zoning**

Statewide Planning Goals 9 and 10 require cities to plan for a 20-year land supply for expected housing and commercial land needs, and this supply is based on a projection created using community data. Predictably, some cities need to grow to accommodate economic and population changes while others do not. Outside the urban growth boundary, rural lands do not take such a supply and demand analysis into account, so rezoning areas from a low density land use to a higher density land use is challenging and rare.

According to the 2018 U.S. Census Bureau estimates, most of the fastest growing cities in Oregon by population are concentrated in the northern Willamette Valley, Central Oregon, and Southern Oregon.

Without a standard methodology for determining wildfire risk at the property ownership scale, there is limited opportunity to provide an accurate assessment of number and type of structures currently developed in wildfire prone areas. Use of the term "Wildland Urban Interface" (WUI) in Oregon is primarily related to definitions from the U.S. Forest Service or the Oregon Department of Forestry, which do not take into account fuel types other than forests, and has limited usefulness in the context of looking at statewide risk across different landscapes. While information about current development trends in wildfire risk areas is incomplete, there are some data available that help create an understanding of the current situation.

Oregon Wildfire Risk Explorer<sup>3</sup> is "designed to increase wildfire awareness, give a comprehensive view of wildfire risk and local fire history, and educate users about wildfire prevention and mitigation resources." This site makes data available from the Pacific Northwest Quantitative Risk Assessment and the Westwide Wildfire Risk Assessment. There are not any formal plans to keep the site or data up to date. GIS map layers included on the site show wildfire risk, threat and wildfire history. The Overall Wildfire Risk dataset considers the likelihood of >250 acres (likelihood of burning), the susceptibility of

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<sup>3</sup> The Oregon Wildfire Risk Explorer is a partnership among Oregon Department of Forestry, Oregon State University Institute for Natural Resources, OSU Libraries and Press, the US Forest Service, and a wide variety of stakeholders throughout Oregon. The website can be accessed at [www.oregonexplorer.info](http://www.oregonexplorer.info)

resources and assets to wildfire of different intensities. It does not show the wildfire risk for a particular structure.

Limitations in the data will limit usefulness for this context. The existing structural data is incomplete and outdated, and the WUI areas are based on U.S. Forest Service definition. The WUI dataset and the structures dataset need to be up-to-date and comprehensive, especially for structures in the WUI. Additionally, data resources assessing risk will be needed.

Using data from the Westwide Wildfire Risk Assessment, Oregon Department of Forestry estimated over 750,000 homes are located in WUI areas in Oregon.<sup>4</sup>



### Business-As-Usual Forecast

- If current policies are left as-is, development will largely continue along the same patterns that currently exist in cities and counties. While Oregon’s land use planning system does limit development in rural lands, most communities are not actively using land use planning as a tool for reducing wildfire risk. Wildfire risk, or potential mitigation, will only be considered in limited development situations (such as development in timber zones) for most communities. Development will largely be sited and built without defense against fire.

### Policy Options Available to State

- More active
  - The Oregon Legislature provides policy direction, standards and “sidebars” for the Land Conservation and Development Commission, in coordination with Oregon counties and cities, to undertake a rulemaking process to require local planning for wildfire risk.
  - The Oregon Legislature provides direction and resources for mapping and data to fill essential data gaps necessary for local governments to conduct meaningful wildfire planning, including

<sup>4</sup> Information provided by Teresa Zena Alcock, Fire Data & Geospatial Analyst Salem Set of the ODF Fire Environment Working Group, Oregon Department of Forestry

adopting wildfire risk maps. Resources for maintenance and updates to Oregon Wildfire Risk Explorer, including up-to-date risk mapping across all lands, standardized risk designations, and structure locations are important components of this direction.

- Associated 2021-23 budget request for multiple state agencies to fund rule development technical assistance for:
  - Updates to local comprehensive plans and development codes;
  - Community Wildfire Protection Plans (CWPP) and;
  - Natural Hazard Mitigation Plans (NHMP).

Legislative direction should consider options including mitigating/limiting growth and development in wildfire risk areas, mitigation for existing development, and additional protections for areas surrounding watersheds/water sources for communities.

- Less active
  - 2021-23 budget request for state agency (ODF and DLCD) staff to fund technical assistance for CWPPs and NHMPs, with associated additional assistance to update local comprehensive plans and local development codes.
  - Local jurisdictions are the final decision maker on the identification of wildfire risk and development of CWPPs and NHMPs. Counties and cities must update local comprehensive plans to be consistent with CWPPs and NHMPs. Ensure resources are available for local governments to use new wildfire data and inform/update Goal 7 plans.
  - Requirements for adopting local NHMPs into zoning and development code: development under this option may continue to take place in areas currently identified and approved for development, provided there is adequate emergency infrastructure in place (water, firefighting, road access), construction follows approved fire hardening codes, and defensible space standards are required.

## Policy Analysis

### Overview of Policy Under Consideration

The recommended policy is the more active approach.

Zoning is a tool that can be used to trigger actions that can reduce risk, including defensible space, building code options, access, water supply, areas where building is limited, etc. Because zoning is an implementing tool, and the specific policy formula will need to be developed through follow up work, there isn't enough information at this point to provide a full return on investment analysis. However, what is known is provided below.

### Framework to trigger, catch all, run ROI on full policy recommendation with caveats

- State actions
  - The Oregon Legislature provides policy direction, standards and “sidebars” for the Land Conservation and Development Commission, in coordination with Oregon counties and cities, to undertake a rulemaking process to require local planning for wildfire risk. This process includes risk mapping resources and data resources to fill essential data gaps (and maintain the information) necessary for local governments to conduct meaningful wildfire planning.
  - State resources are made available for technical assistance grants for local governments to complete wildfire risk planning.

- Local government actions
  - Coordinate with the Land Conservation and Development Commission on rulemaking.
  - Local governments undertake wildfire risk planning based on mapping, data resources, minimum standards set forth in rulemaking by LCDC, and local information about wildfire. A wildfire risk map, Comprehensive Plan policies, and standards included in local zoning codes are the most likely tools for implementing wildfire risk planning.
  - When applications for new development, rezoning, expansion of a City's Urban Growth Boundary, or similar actions are made, local governments will apply the standards they've adopted addressing wildfire risk, such as defensible space, building codes measures, access, water availability, watershed protection and/or other options.

### **Cohesive Strategy Effects**

- The effects of implementing land use policies at the zoning level will be a conversion to fire resistant development through a number of measures, though the specific measures for each community will be determined through future work. Measures adopted to address wildfire risk will have a positive effect on most of the Cohesive Strategy priorities and challenges: vegetation and fuels (benefits are extremely localized, but adjacent to values at risk); homes, communities, and values at risk; fire response; and fire adapted communities.
- Defensible space implemented through zoning addresses the *vegetation and fuels* directly adjacent to development that contribute to placing a value at risk.
- These measures are an investment protecting *homes, communities, and values at risk*.
- Conversion to fire resistant development will improve the effectiveness and efficiency of structural protection during a wildfire event, decreasing the number of structures lost, improving overall *wildfire response*.
- Reducing losses in turn reduces or avoids negative effects to landowners and residents, including financial costs, emotional stress, health effects, and challenges with displacement. Other avoided costs include the recovery costs absorbed by local jurisdictions and insurance companies. Recovery time from a fire event will be faster. All of the benefits are characteristics of a *fire-adapted community*.
- The uplift to Cohesive Strategy priorities and challenges will only be realized by state and local government information and policy investment. The costs to make improvements on property, including measures such as defensible space and using fire resistant building codes, will be borne primarily by landowners and by the building industry. Coordination and implementation of the varying components and stakeholders of this policy will also require political capital.

### **Anticipated Uplift**

- Direct Wildfire Benefit
  - Conversion to fire resistant development will improve the effectiveness and efficiency of structural protection during a wildfire event, decreasing the number of structures lost, improving overall fire response.
- Primary Council Objectives Achieved
  - Human Safety
  - Vibrant Communities
  - Public Finance
- Total Uplift VERY HIGH
- Uplift Certainty VERY HIGH

## Anticipated Costs

- Direct cost of implementation will be higher initially, then level out after implementation. Since total costs are policy dependent, the estimate provided here is variable.
  - State:
    - The Department of Land Conservation and Development estimates a need for 5 FTE, at an estimated cost of \$125,000 per employee per year, to develop and implement the policy, as well as \$4,000,000 per biennium for technical assistance grants. Both employees and technical assistance grant resources are projected for three biennia. The cost estimate is \$15,750,000.
    - **Cost of developing wildfire risk information**
    - Maintaining Oregon Explorer with wildfire risk data and information resources is estimated to cost approximately \$75,000 per year for the life of the site. This cost is expected to be relatively static.
  - Counties: Staff resources will be required, as well as hard costs related to notices, holding public hearings, materials, etc. Estimated cost will be partially dependent on the standards developed through rulemaking by LCD. Noticing costs alone (required by Measure 56) will be approximately \$1.00 per property owner as listed in the records of the Assessor, per jurisdiction. Staff time investment will be significant.
  - Landowners: Landowners and the building industry will bear the costs of implementing most additional measures, such as building code standards or creating defensible space. More information is needed to understand an 'average range' for the cost of creating defensible space. Landowners will ideally save money on their fire insurance by implementing fire resistant standards, though savings (if any) will vary by policy. See the specific information included for defensible space, building codes and insurance in this section for more information.
- Indirect Costs
  - Resource commitment and litigation potential surrounding creating new standards and regulations
  - Additional regulatory burden for the state, local governments, and landowners; increased litigation potential
  - Loss of private property rights
  - Fire resistant measures can reduce the likelihood of fire spread to other structures and properties
- Cost Score MODERATE
- Cost Certainty LOW

## Timeline

- Time to implement: 5 years
- Time of initial impact: 5 years
- Benefit duration: Through zoning measures alone, conversion to fire resistant properties will be slow and triggered by new development, but the measures implemented can endure for the life of the development if maintained.
- Maintenance Requirements: Periodic updates to risk maps and other information resources will be needed. Mechanisms will need to be created to upkeep specific measures addressing wildfire risk

(examples include maintenance of defensible space standards, standards preventing replacing a roof made of fire resistant materials with one that is not, etc.)

- Timeline Score MODERATE

### **Implementation Certainty**

- Overall degree of certainty VERY HIGH
- Drivers
  - Political risk
  - Dependence on other policies
  - Dependence on other stakeholders

### **Magnitude of Impact**

Additionality relative to overall wildfire risk in Oregon depends on degree of integration with other land use measures (Defensible Space, Building Codes). On a stand-alone basis, the impact is MODERATE. Integrated with other measures the impact is VERY HIGH.

### **Overall Priority**

**VERY HIGH**

### **Supporting Resources Required**

- Data and accurate mapping to determine areas of high/moderate/low risk
- Rulemaking and staff support for local governments through LCDC will require resource allocation for DLCD. DLCD estimates 5 FTE will be needed to support this effort over approximately three biennium, depending on the scope and magnitude of implementation determined in rulemaking; as well as \$\$4,000,000 per biennium for technical assistance grants.
- Technical assistance resources to local governments to update Community Wildfire Protection Plans and Natural Hazard Mitigation Plans.
- ODF and OEM staff costs for updates to CWPPs and NHMPs.
- Technical assistance resources to local governments to incorporate new rulemaking and updated CWPP, NHMP plans into their comprehensive plans and development codes.

### **Key Assumptions**

- Other Cohesive Strategy actions will be implemented, including Defensible Space standards and Building Code standards.
- LCDC will undertake rulemaking to set a minimum standard for addressing wildfire hazard planning in Oregon.
- Information resources will be developed and provided to decision makers concerning accurate risk assessment and mitigation measures.
- Local governments will adopt a wildfire risk map for their jurisdictions.
- Local governments will update their CWPP and NHMPs as needed.
- Local governments will update their comprehensive plans and development codes to account for mitigating the risk of wildfire to development in their jurisdictions.

## Recommendation 5: Property Insurance – Risk Mitigation Incentives

### Defining the Issue

#### Problem Statement

- The current critical wildfire situation in Oregon as described in other sections of this report puts forth a series of fuel loading and suppression issues that directly impact lives, homes, outbuildings and commercial structures and ultimately communities as a whole. This presents a potential significant fiscal impact to the insurance industry and ultimately back to all insured statewide.
- The insurance industry is strategically positioned to support and incentivize the utilization of fire risk reduction tools as identified in the Oregon Cohesive Wildfire Strategy, as it will improve property owners' risk profiles and overall resiliency to wildfire.
- This policy moves the implementation and monitoring from an enforcement stance by public agencies to an incentivized action by the landowner.

#### Current Situation

Insurance coverage for wildfire most frequently comes in the form of homeowner and commercial property policies. The Oregon Insurance Code requires coverage for loss due to wildfire in all fire insurance policies.<sup>5</sup> The Department of Consumer and Business Services Division of Financial Regulation (DFR) monitors the affordability and availability of insurance. According to information available to the Division, there continues to be a robust homeowner insurance market in Oregon, with a variety of options for consumers. At present 149 companies are licensed to write homeowner coverage in the state, and over \$866 million in direct premium was written in 2018. While sharp spikes and dips in premiums can be an indicator of affordability problems, the market in Oregon has remained fairly steady.<sup>6</sup>

Similar to other states, Oregon has an “insurer of last resort”. The Oregon FAIR Plan Association<sup>7</sup> (OFPA) offers basic fire coverage to all homeowners, even those that cannot obtain coverage from traditional insurers. The OFPA is a statutorily created non-profit association run by its member companies.<sup>8</sup> Every insurance company licensed to write property insurance in Oregon is required to be a member of the association and pay assessments to fund its operation. Coverages under OFPA policies are very basic and only cover loss due to fire and certain other risks.<sup>9</sup> OFPA policies are capped at \$400,000 for personal dwellings and \$600,000 for commercial buildings. OFPA is Oregon’s insurer of last resort: an insurance agent must first seek coverage from two standard insurance companies before they can place an OFPA policy. OFPA has not placed a significant number of new policies, indicating that most property owners are able to obtain coverage in the standard market.

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<sup>5</sup> ORS 742.202, 742.206

<sup>6</sup> Direct written homeowner insurance premium has increased between four and seven percent each year between 2015 to 2018.

<sup>7</sup> <https://orfairplan.com/>

<sup>8</sup> ORS 735.005 to 735.145

<sup>9</sup> OFPA dwelling policies cover fire, windstorm, hail, explosion, riot or civil commotion, aircraft, vehicles, smoke and volcanic eruption, and vandalism and malicious mischief. It does not cover many risks typically found in a traditional homeowner policy such as liability, theft, or water damage. See <https://orfairplan.com/agents/insurance-coverages/>.

## Recent Trends

DFR met with representatives from most of the major insurers that write homeowner's policies in June, 2019. Insurers confirmed they generally plan to continue to offer coverage in the entire state although improved data models may lead carriers to increase rates or no longer offer coverage to specific properties.

Data is not currently available to DFR for losses due to wildfires each year, or specific data regarding price and location of homeowner and commercial properties. Additional data could provide a clearer picture of insurance affordability and help identify shifting market trends.

## Business-As-Usual Forecast

The Business as Usual option with increasing severity in the wildfire situation has the strong potential to result in a severe fiscal impact to the insurance industry which, in turn, would be passed on to the insured public in the form of increased premiums and higher deductibles. If patterns of structural loss are established, there is a likely possibility of insurers leaving the state, or declining to offer policies in high risk areas. This is currently occurring in California, although it is important to note the insurance industry and regulatory structures are very different in California than Oregon.

## Policy Options Available to State, and Industry

- More active
  - A policy developed by the State of Oregon in conjunction with the Oregon insurance industry. Insurance industry will be encouraged to implement uniform underwriting standards and policy changes that would motivate policy holders to meet Oregon Cohesive Wildfire Strategies, to harden structures, provide for and maintain defensible space, access for fire vehicles and evacuation routes.
- Less active
  - Continue with current insurance model.

## Policy Analysis

### Overview of Policy under Consideration

The recommendation is to create Oregon Cohesive Wildfire standards that will encourage the insurance industry to incentivize compliance via underwriting, pricing, and approved coverages to reward Oregonians for taking prudent steps to harden properties and create defensible space in areas exposed to wildfires.

Implementation of this policy recommendation is a multiple stakeholder partnership designed to incentivize property owners in High Fire Risk Areas to undertake actions to reduce fire risk.

- State of Oregon actions:
  - Department of Consumer and Business Services Division of Financial Regulation works closely with the insurance industry to identify a uniform set of incentives for property owners to meet the recommended Oregon Cohesive Wildfire standards. DFR can survey insurers to better understand the extent to which consumers may save money by engaging in risk mitigation efforts, such as increasing defensible space, carefully choosing landscaping materials, or using fire resistant building materials. DFR can work with insurers to develop industry-wide standards for risk mitigation and the dollar

amount of insurance discounts in order to make insurance incentives more tangible for property owners.

- The insurance industry helps fund wildfire suppression efforts through the fire marshal assessment under ORS 731.820. Insurers currently pay a 1.15 percent premium tax on policies that cover fire risk. The legislature could reexamine the degree this assessment is commensurate with the fire suppression needs of the state.

- **City/County actions:**

Planning agencies: Provide and maintain mapping information and educational information on High Fire Risk Areas to insurance representatives, applicants, real estate agents, builders and the general public.

- **Local Fire agencies/organization:**

Provide education and courtesy inspections to assist participants with meeting the guidelines.

### **Anticipated Uplift**

- Primary Council Objectives Achieved
  - Human Safety (reduce high-priority wildfires)
  - Human Health (reduce smoke in proximity to population)
  - Vibrant Communities (health, economy)
  - Public Finance (reduce most costly suppression)
- Uplift Score HIGHEST
- Uplift Certainty HIGH

### **Anticipated Costs**

- Direct cost of implementation
  - State- materials and staff time to coordinate with insurance industry, develop standards. Exact cost unknown at this time.
  - Counties- Costs are primarily related to zoning section.
  - Landowners- This will depend on the specific policies adopted, property specific information, and insurance discounts offered. Cost unknown at this time.
- Indirect Costs
  - Changing insurance requirements for policy holders
- Cost Score MODERATE
- Cost Certainty UNKNOWN

### **Timeline**

- Time to implement: 2 years
- Time of initial impact: 3 years
- Benefit duration: If requirements are maintained, the benefits could carry through the life of the insurance policy.
- Maintenance Requirements: Defensible space, periodic inspections/documentation from insurer
- Timeline Score HIGHEST

### **Implementation Certainty**

- Overall degree of certainty: MODERATE

- The implementation of this policy recommendation is totally dependent on an area of the insurance industry not regulated by state government and, while it is defined as excellent risk management by the industry, competition amongst the 149 providers in the state may limit the interest in participation.
- Homeowners may not participate as they determine that the cost benefit ratio is insufficient to invest in the options, or they are ambivalent about the potential for wildfire to damage their property.
- Inability of the state and or local governments to develop maps of High Fire Risk Areas, and provide continued support will hamper the insurance industry from determining homes at risk or their ability to create accurate risk mapping for rates and coverage.

### **Magnitude of Impact**

With full implementation this will result in a significant reduction of wildfire structural risk of insured structures. VERY HIGH

### **Overall Priority**

VERY HIGH

### **Supporting Resources Required**

- High Fire Risk Area mapping
- Defensible space standards
- Hardened structures standards
- Access standards
- Water supply/source requirements

### **Key Assumptions**

- Other Cohesive Strategy actions (e.g., defensible space, building codes)
- Stakeholder actions (Federal, County, Private Sector, Individuals)
- Implementation Considerations
- Other
- Building Codes Division: Structural hardening standards and inspection policies.
- Oregon State Fire Marshal, Oregon Department of Forestry: Develop statewide guidelines for defensible space, access (fire operations, evacuation, etc.), water and water supply for fire operations.
- Oregon Emergency Management: Including mapping of High Fire Risk Areas in Natural Hazards Mitigation Plan requirement. Seek state and federal funding opportunities for structural fire risk mitigation.
- Oregon Explorer: Develop and maintain an accurate map of High Fire Risk Areas.
- Building agencies: Ensure staff is trained on the boundaries of High Fire Risk Areas, hardened structural requirements and availability of options.
- Emergency Management Agencies: Including mapping of High Fire Risk Areas in Natural Hazards Mitigation Plan. Seek state and federal funding opportunities for structural fire risk mitigation.

## Recommendation 6: Health – Air Filtration Systems

### Defining the Issue

#### Problem Statement

- Both wildfire and prescribed burn produce smoke that can exceed public health minimum standards.

#### Current Situation

- Air filtration systems can mitigate the effects of harmful smoke; according to the Oregon Health Authority, costs range from \$500 for a personal use system to \$30,000 or more for a commercial system installed in an adult care facility. To offer a very basic estimate, If we assume that half of the 2240 facilities referenced above lack adequate air cleaning systems, at an average cost of \$5000 that would equal \$5.6 million required to improve these facilities.
- Concentrations of Oregon’s vulnerable populations by age (adults 65+ and children under the age of 5) coincide with Oregon’s most smoke-vulnerable regions.
- We have an emergency response infrastructure for community shelters. However, cleaner air shelters are a newer concept and the identification and establishment of such spaces is limited. Using buildings open to the public, including malls and libraries, is one response for communities. However, smaller communities do not have access to similar public spaces. Schools provide another safe haven, but use during school hours is prohibitive, and use when school is not in session is limited by joint use agreements that have not been established between local governments and school districts specific to emergency response, including wildfire. There is currently no registry of cleaner air spaces in Oregon.

#### Recent Trends

- While the percentage of Oregonians suffering from asthma or cardiovascular disease remains relatively flat, given the increase in population the actual number of people at risk of smoke-related illness is rising.
- We expect the number of wildfires to grow, and the frequency of prescribed burns as a tool for forest management will increase.

#### Business-As-Usual Forecast

- As the number of wildfires and prescribed burns grows, we expect to see a higher percentage of people reporting smoke-related illnesses. This will not only result in an increase health care spending, it will also result in people not able to go to work, to school, or participate in daily activities that help them thrive. While currently there is no calculation of monetary loss, not being able to work or live fully impacts families, incomes, and the overall quality of life.

#### Policy Options Available to State

- More Active: Mandate communities to create cleaner-air facilities; amend building codes to require air filtration systems in high fire-risk areas
- Less active: State provides communities with incentives to help them establish cleaner air spaces.
- NOTE: Cleaner air space is defined to be a public space where air conditioning and other air purification systems are in place.

### Policy Analysis

## Overview of Policy Under Consideration

- State actions: Coordinated Care Organizations use Health-Related Services funds to purchase high-efficiency, HEPA air filtration systems for its members living with chronic heart and lung conditions, children, or older adults. There are 15 CCOs covering Oregon.
- Local jurisdiction (city or county actions): Communities designate and prepare public cleaner air spaces and shelters for refuge during smoke events.
- During smoke events, emergency response teams also use local cleaner air facilities

## Cohesive Strategy Effects

- Community Response Budget (Health, Emergency Response, Disaster Recovery)
- Affected by the availability of incentive funds and willingness and ability of the legislature to mandate the installation of filtration systems

## Anticipated Uplift

- Direct Wildfire Benefit
  - Benefit to communities and its citizens affected by smoke
- Primary Council Objectives Achieved
  - Human Health (reduce smoke in proximity to population)
  - Vibrant Communities (health, economy)

## Anticipated Costs

- Direct cost of implementation (estimate an incentive budget of \$2,000,000/year, for five years. 2 FTE @ \$250,000/biennium x 5 years = \$1.25MM in personnel costs)
- Indirect Costs
  - Regulations: Increase in OHA staff
  - There could be a negative impact on affordable housing,

## Timeline

- Time to implement: One year to put programs in place; five years for full implementation
- Time of initial impact: Immediate; once systems are in place.
- Benefit duration: As long as air filtration systems function
- Maintenance Requirements: regular maintenance of air filtration systems

## Implementation Certainty

- Overall degree of certainty (2) – if programs remain voluntary and building codes do not require systems for new or remodeled structures

## Magnitude of Impact

Additionality relative to overall wildfire risk in Oregon (5): protecting people during smoke events builds community trust and good will. That sense of community translates to a stronger social contract and could help communities understand and support increases in prescribed burning.

## Overall Priority

**Highest** / Very High / High / Moderate

## Supporting Resources Required

- The State should begin to monitor the installation of air filtration systems. It should also document the number and location of people considered vulnerable to the negative effects of smoke inhalation.

## Key Assumptions

- System costs

## Recommendation 7: Health – Remove Barriers to Air Filtration Systems Installation

### Defining the Issue

#### Problem Statement

- During a smoke event, sometimes the best place for a person to remain is in her/his home. But most homes lack effective air filtration systems.
- As air filtration systems cost between \$350 and \$500 per unit for a 21 ft x 23 ft space. The financial barrier is often greater for older adults living on a fixed income, and families and individuals living with fewer resources.
- Landlords may either resist installing systems, or may refuse to allow their tenants to install them.
- Increasing the cost of affordable housing by mandating air filtration systems may negatively impact a community's effort to provide affordable housing for all.

#### Current Situation:

- Forty percent of all Oregonians live in rental units; nearly 50% in rural communities
- Persons occupying rental units often face difficulties installing air filtration systems.
- A basic air filtration system can run between \$350 and \$500.
- The number of wildfires and prescribed burns are expected to increase, thereby increasing exposure to smoke.

#### Recent Trends: Land Use & Zoning

- Population trends continue to climb upward, and while the percentage of vulnerable people remains fairly flat the over number continues to grow

#### Business-As-Usual Forecast

- With increases in wildfire and smoke from prescribed burns expected, we should expect vulnerable populations in smoke prone regions to continue to suffer from a lack of sufficient filtration system in their homes.

#### Policy Options Available to State

- Collaborative process to determine the nature of the challenges making it difficult for some people to install air filtration systems in their homes

### Policy Analysis

#### Overview of Policy Under Consideration

- State hosts the collaborative process – either at the instruction of the Governor, or by legislative action
- County officials participate

### **Cohesive Strategy Effects**

- (Health, Emergency Response, Disaster Recovery)
- The collaborative process must balance tensions between property holders and tenants, and the desire to keep units affordable for low income people with the need to provide all residents with access to cleaner air spaces.

### **Anticipated Uplift**

- Direct Wildfire Benefit
  - Direct benefit to vulnerable populations
- Primary Council Objectives Achieved
  - Social Justice
  - Human Health

### **Anticipated Costs**

- Direct cost of implementation (\$/year, duration)
  - State: collaborative process – six months
  - Staff absorb this project as part of annual work plans
  - Counties:
    - Landowners: property owners may be required to install systems
- Indirect Costs
  - Regulations: increase in FTE associated with program implementation
  - Loss of private property rights: building owners may be required to

### **Timeline**

- Time to implement: six months for the collaborative process to produce its findings
- Time of initial impact: Uncertain; once the process is complete then elected officials must decide on the right course of action
- Benefit duration: Uncertain; see “time of initial impact” above
- Maintenance Requirements: N/A

### **Overall Priority**

Highest / **High** / Moderate / Low

## Recommendation 8: Health – Air Quality Monitors

### Defining the Issue

#### Problem Statement

- As prescribed burning as a tool for mitigation increases, the amount of human exposure to smoke will increase.
- We have an insufficient number of air quality monitoring stations to measure smoke density in populated areas of the state.
- Meteorologists and other state and local staff charged with monitoring air quality need more training to understand the effects of smoke on human health.

#### Current Situation:

- There are approximately 40 air quality monitors located throughout the state, or available for use in wildfire/prescribed fire events.
- [Oregon Air App](#) provides the public with information on air quality, with specific information provided on PM2.5 and Ozone.
- 2017 legislative authorization will expand air quality monitors by 30 additional units.
- These air quality monitors play multiple role (not specific to smoke and wildfire/prescribed burns)

#### Recent Trends:

- Increase use of prescribed burning should be expected
- Experts predict an increase in wildfires, and a migration of those fires west into more populated regions of the state.
- Oregon's population continues to grow.

#### Business-As-Usual Forecast

- As the number of wildfire and use of prescribed burning grows, there will be an increase in public health exposure to smoke.

#### Policy Options Available to State

- Require DEQ to install and maintain more air quality monitoring equipment
- Authorize OHA to train meteorologists and others involved in making decisions about prescribed burning on the health issues related to smoke inhalation.

### Policy Analysis

#### Overview of Policy Under Consideration

- State actions: Increase budgets of DEQ and OHA to pay for more air quality monitoring stations and training

#### Cohesive Strategy Effects

- Community Response Budget (Health, Emergency Response, Disaster Recovery)

#### Anticipated Uplift

- Direct Wildfire Benefit
  - Indirect benefit to public health associated with greater air quality monitoring and training
- Primary Council Objectives Achieved
  - Human Health (reduce smoke in proximity to population)

### Anticipated Costs

- Direct cost of implementation (\$/year, duration): \$1.5MM to purchase equipment and expand staff. Four additional staff @ approximately \$1MM/biennium
- Indirect Costs
  - Could result in fewer prescribed burns when health conditions do not warrant it

### Timeline

- Time to implement: One legislative cycle to authorize funds; One legislative cycle to install new systems and train people (2 years)
- Time of initial impact: Once equipment is installed and people trained; immediate
- Benefit duration: indefinite
- Maintenance Requirements: equipment maintenance; training as knowledge about human health and smoke improves

### Overall Priority

Highest / **Very High** / High / Moderate

### Key Assumptions

- Prescribed burning and air quality monitoring decision makers work in concert with one another

## Recommendation 9: Disaster Recovery – Regional Staffing

### Defining the Issue

#### Problem Statement

- Coordinating assistance from FEMA requires time, energy, and expertise to the detriment of other vital recovery functions
- While each county has an emergency manager, most often they lack staff capacity to both respond to a wildfire event and provide disaster recovery support
- At approximately 44 FTE – all Salem based -- EMS staff lacks the capacity to ‘surge’ in response to wildfires

#### Current Situation

- EMS has a staff of 44 FTE
- Each county has a single emergency manager, but lacks the capacity to respond to the wide range of needs following a wildfire event. EM are often engaged in critical life and safety functions and do not have time to think down the field to recovery.

#### Recent Trends

- We expect the number of wildfires to grow, and the frequency of prescribed burns as a tool for forest management will increase. Economic and community damage will increase.

### **Business-As-Usual Forecast**

- As the number of wildfires and prescribed burns grow, we expect to see greater demand placed on emergency managers and communities.

### **Policy Options Available to State**

- Authorize the expansion of six emergency management staff with a focus on wildfire preparedness and recovery

## **Policy Analysis**

### **Overview of Policy Under Consideration**

- State actions: Expand EMS staff to include six regional members
- County actions: Work with state agencies to define job responsibilities and ensure that each regional staff is filling gaps.

### **Cohesive Strategy Effects**

- Community Response Budget (Health, Emergency Response, Disaster Recovery)

### **Anticipated Uplift**

- Direct Wildfire Benefit
  - Benefit to communities and its citizens affected by wildfire
  - Assist counties as they respond to wildfire disaster events
- Primary Council Objectives Achieved
  - Vibrant Communities (health, economy)
  - Social Justice
  - Vibrant, Stable Communities
  - Protection of Existing Business

### **Anticipated Costs**

- Direct cost of implementation is estimated at \$1.5MM per biennium (6 FTE @ \$250,000/biennium)
- Indirect Costs
  - Increase in EMS staff will likely increase operations budgets
  - Coordinating with county emergency managers could take time, trial/error

### **Timeline**

- Time to implement: One year to put programs in place; 2-3 years for full implementation
- Time of initial impact: Gradual; once systems are in place and a disaster occurs, county and state emergency responders will likely require some time/practice to coordinate efforts
- Benefit duration: indefinite. Future reviews should determine effectiveness of increase in staff

### **Magnitude of Impact**

The magnitude of impact would be high; morale is lifted when people see federal, state, and local government pitch in to support them during a natural disaster.

### Overall Priority

Highest / Very High / **High** / Moderate

## Recommendation 10: Disaster Recovery – Stafford Act Reform

### Defining the Issue

#### Problem Statement

- Wildfires often do not reach the level of public infrastructure destruction to “trigger” a federal disaster declaration.
- Without triggering a Presidential disaster declaration, federal support to assist businesses following a wildfire can be delayed, or not occur.

#### Current Situation

- No state agency is responsible for estimating the economic impact of wildfires. The Oregon Forest Resources Institute organized available information into a [report](#) published in 2017; while it shared available information summarizing school closures, reported job hours missed, highway closures, and reports the economic loss associated with the closure of the Oregon Shakespeare Festival and Cycle Oregon, it is not intended to be a comprehensive assessment of the damage caused by the 2017 wildfire season.
- There is no available information to document the cost to state agencies associated with assisting businesses as they recover from a wildfire.
- In the event of a wildfire, businesses are uncertain as to whether or when FEMA assistance would become available.

#### Business-As-Usual Forecast

- The State of Oregon will continue to shoulder the financial burden associated with economic recovery from wildfires – costs we are presently unable to assess.
- Some businesses will not be able to access resources, such as the Small Business Administration’s Economic Injury Disaster Loans, in the wake of wildfires.

#### Policy Options Available to State

- Working with members of the Oregon delegation to Congress, Governor Brown and Legislative Leadership write the Oregon delegation to request that the United States Government review the Stafford Act and its response to a natural disaster caused by wildfire.

### Policy Analysis

#### Overview of Policy Under Consideration

- Letter from Governor Kate Brown and Legislative Leaders to the members of the Oregon delegation.
- Work with Oregon delegation and others in Congress to consider a review of the Stafford Act.

#### Cohesive Strategy Effects

- Federal financial support for businesses affected by wildfire would have a direct impact on the Community Response Budget. Specific numbers are not available; Oregon does not have a system in place to estimate the full economic costs associated with wildfire events.

### **Anticipated Uplift**

- Direct Wildfire Benefit
  - n/a
- Primary Council Objectives Achieved
  - Vibrant Communities (health, economy)
  - Protection of Existing Business
  - Public Finance (by reducing the burden to state programs that assist businesses in the event of a natural disaster)

### **Anticipated Costs**

- Preparing a letter would have minimal impact on the State's budget
- Indirect Costs
  - A properly drafted letter, one that includes input from members of the federal delegation, would have limited indirect costs. A poorly crafted letter could have a high indirect cost, as it may complicate relations between the federal delegation and the State.
  - Should the state decide to pursue changes to the Stafford Act, it would incur costs associated with representation in Washington. Assuming a full-time government affairs person costs the state \$300,000 per year in annual salary and expenses, at .10 of the total time available the cost of working this policy issue would be \$30,000.

### **Timeline**

- Preparing a letter would not take much time.
- Changing federal policy is a long and difficult process. Changing federal policy to recognize wildfire as a natural disaster eligible for federal assistance took over ten years.
- Once changed, the benefits to the State – and other fire-prone states – would be significant.

### **Implementation Certainty**

#### **Magnitude of Impact**

Small businesses operating in fire-prone areas of the state need to be reassured that both the State and Federal government is there to assist them in the event of a wildfire. As long as businesses are doing their part (fire-hardened buildings, purchasing insurance), businesses need to know that the State and Federal government will help when needed. (5)

#### **Overall Priority**

**Highest / Very High/ High / Moderate**

## Recommendation 11: Disaster Recovery – Local Economic Opportunity Fund

### Defining the Issue

#### Problem Statement

- Local communities often lack the funds necessary to take concrete steps to mitigate the impact of wildfires on business.
- Mitigating against the risk of wildfire is arguably the single best investment to reduce the overall costs of wildfire.

#### Current Situation:

- Additional federal funds for wildfire hazard mitigation are available to be leveraged, but local partners often lack matching funds.

#### Recent Trends:

- All reports indicate an increase in wildfire and a greater threat to urban centers where business concentration is greater
- LEOF has been utilized in Southern Oregon to explore strategies for businesses affected by smoke and in North Central Oregon to enhance resilience networks

#### Business-As-Usual Forecast

- Left as-is, local business will pursue fire-adapted status as they can afford, or otherwise feel compelled to do.

#### Policy Options Available to State

- Incentivize behavior by offering to match 1-1 community and business investments in mitigation

### Policy Analysis

#### Overview of Policy Under Consideration

- Increase by \$1 million LEOF funds and dedicate them to wildfire mitigation

#### Cohesive Strategy Effects

- As communities move towards fire-adapted status, most adaptation budgets would be affected (Suppression Budget, Mitigation Budget, Community Response Budget (Health, Emergency Response, Disaster Recovery))
- As individual businesses take steps to mitigate against wildfire, other businesses will likely follow suit

#### Anticipated Uplift

- Direct Wildfire Benefit
  - Mitigation should lead to a direct reduction in the severity and frequency of wildfires
- Primary Council Objectives Achieved
  - Human Safety (reduce high-priority wildfires)
  - Human Health (reduce smoke in proximity to population)
  - Vibrant Communities (health, economy)

- Public Finance (reduce most costly suppression)
- Social Justice
- Critical infrastructure
- Protection of Existing Business

### Anticipated Costs

- Direct cost of implementation \$1,000,000 per biennium for three-biennium (six years), assessing the usefulness of the program annually; plus \$250,000/biennium in personnel costs = a six-year pilot program equaling \$3.75MM
- Indirect Costs
  - As a voluntary program, there should be few/no indirect costs

### Timeline

- Time to implement: Estimated a year to for agencies to engage in rule-making to introduce and administer the program: we estimate
- Time of initial impact: one year beyond rulemaking, we should expect to see grants issues by the state.
- Benefit duration: For as long as the program lasts
- Maintenance Requirements: n/a

### Overall Priority

Highest / Very High / **High** / Moderate

### Supporting Resources Required

- Information resources (e.g., mapping)

### Key Assumptions

- Other Cohesive Strategy actions (e.g., defensible space, building codes)
- Stakeholder actions (Federal, County, Private Sector, Individuals)

## Recommendation 12: Property Insurance – Access & Affordability

### Defining the Issue

#### Problem Statement

- With increases in the frequency and severity of wildfire expected, will property insurance remain available and affordable?

#### Current Situation

- Currently there are 149 licensed insurance providers in Oregon.
- Unlike California, there does not appear to be a negative reaction to recent wildfire activity.

#### Recent Trends

- Recent wildfire events have not resulted in an increase in customer complaints regarding property insurance rates or product availability in fire-prone regions in Oregon.
- Anecdotal evidence does not indicate an increase in premiums associated with wildfire.
  - There is no evidence that the number of insurance policies in fire prone regions have dropped.
  - Oregon’s FAIR program – designed to make sure that hard-to-insure customers have access to insurance – shows no evidence of an increase in customers based on a lack of insurance offered to cover property in fire-prone regions of Oregon.

### **Business-As-Usual Forecast**

- A healthy market in insurance suggests that Oregonians continue to have access to affordable insurance --- wherever they live.

### **Policy Options Available to State**

- Continue current practice (no ongoing monitoring)
- Initiate periodic monitoring (recommended option)

## **Policy Analysis**

### **Overview of Policy Under Consideration**

- State actions: Provide funding for the Director of Financial Regulation to contract a third-party review of insurance premiums and insurance availability in fire-prone regions in Oregon.

### **Anticipated Uplift**

- Continuation of current access and affordability.

### **Anticipated Costs**

- Third-party contract estimated at \$100,000 per biennium. One FTE @ \$250,000/biennium = \$250,000 in personnel costs

### **Timeline**

- Time to implement: immediate

### **Implementation Certainty**

- Low implementation risks.

### **Overall Priority**

Highest / Very High / High / **Moderate**

### ***National Cohesive Strategy Insights***

*“Response is the last line of defense and action, coming after fires have started and there is little recourse. As with any large, complex endeavor, there are opportunities to increase efficiency. Preparedness does not come cheap; Federal suppression response expenditures alone in 2005 to 2012 exceeded on average \$1.5 billion dollars per year.”*

-National Cohesive Wildland Fire Management Strategy

This area of focus is the highest priority within the National Cohesive Strategy, in part because response is within the direct purview of the cooperating agencies. At the same time, the Cohesive Strategy recognizes that the increasing risk of wildfire due to worsening fuel conditions, climate change and population growth cannot be addressed solely by adding more resources for preparedness, and suppression response.

The Cohesive Strategy emphasizes the importance of preparing for large, costly and long-duration wildfire in those areas most likely to experience them; prioritizing suppression resources toward protecting structures and communities; reducing accidental ignition in high priority landscapes; and empowering and enabling all fire protection jurisdictions to increase their level of coordinated response.

### ***Oregon Context***

The State of Oregon provides fire suppression on 16 million acres of forest and range, including private land, state-owned land and by agreement federal Bureau of Land Management lands in western Oregon. Unlike other western states where general funds provide the lion’s share of financial resources for firefighting, Oregon’s private landowners provide half of the funding for the state’s wildland fire suppression system. Federal land management agencies provide fire suppression—and funding—on the remainder of the federal estate in Oregon.



Multiple wildland fire agencies and private forest landowners make up Oregon’s “complete and coordinated system,” a highly interdependent network of public and private resources that can be called upon to mobilize and work together even across multiple jurisdictions representing different land management objectives. The system is characterized by frequent cross-jurisdictional training and high level of communication among leadership particularly regarding pre-planning, a willingness and interest in adapting emerging technology, and strong working relationships.

Historically, the human resources needed to operate Oregon’s complete and coordinated system have been maintained in agencies and organizations as employees who have primary duties during most of the year that are not related to fire. During fire season, they are available to be called up to assist the

effort. This “militia” approach has been cost effective, and has been bolstered over the years by the addition of seasonal firefighting employees and by the use of private contract crews. An increase in wildfire frequency and complexity in Oregon has strained the militia approach and the existing funding structures that support it.

**Recommendations Provided in This Section**

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1	FINANCING FACILITY	HIGHEST	3	-
2	EXPANSION OF PROTECTED AREAS*	HIGHEST	4	16
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4	SUPPRESSION FUNDING FORMULA	VERY HIGH	7	-
5	O&C CONTRACT WITH BUREAU OF LAND MANAGEMENT	VERY HIGH	8	-
6	ODF ORGANIZATIONAL MODEL TO FLEX WITH WILDFIRE FLUCTUATIONS	HIGH	9	-
7	INSURANCE AGAINST LARGE WILDFIRE SUPPRESSION COST	HIGH	10	-
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**\*Below is a summary of all 12 recommendations listed above, subsequently followed by a detailed analysis section.**

## Recommendation Summaries

### Recommendation 1: Financing Facility

<b>Description</b>	<ul style="list-style-type: none"><li>• ODF should explore and implement structural and systems changes to expedite and standardize processing of financial transactions associated with wildfire. ODF should retain an independent contractor for this purpose.</li><li>• Together with the Department of Administrative Services, the Legislative Fiscal Office and the Treasurer’s Office, ODF should evaluate options for a financial structure for managing seasonal borrowing costs to support wildfire response.</li><li>• On both these projects, ODF should work under the direction of the newly-created Forestry Financial Oversight Team.</li><li>• Project scope should extend to Oregon State Fire Marshal’s Office.</li></ul>
<b>Policy Type</b>	Agency Action
<b>Additional Staff</b>	Pending outcomes of organization and systems review
<b>Non-Staff Funding</b>	Independent Contractor: \$ TBD Revised Systems: \$ TBD
<b>Priority</b>	<b>HIGHEST</b>

#### Summary

As outlined in a letter from Governor Kate Brown dated October 19, 2019:

“The Oregon Department of Forestry carries the responsibility to fight wildfires across most of the state. Longer, more intense, and more expensive wildfire seasons coupled with a decentralized financial and accounting structure at the Department have created cash flow management challenges. ODF believes it has over \$100 million in outstanding accounts receivable, some dating back to the 2013 fire season. Of this amount, over \$46 million has yet to be invoiced. The Department has focused resources on this issue since the close of the 2019 legislative session, and as a result, 2013 and 2014 fire season costs have been reconciled. However, it is imperative that the remaining accounting backlog be cleared expeditiously.”

As further outlined in the Suppression Committee report (Recommendation 3.a, Page 14):

“Currently, between ODF and OSFM, only \$10.25 million is dedicated and budgeted annually for large fire costs (\$10 million from OFLPF and \$0.25 million from the Fire Insurance Premium Tax). In recent years, this dedicated budget has only covered about 10% of large fire costs. This model is not sustainable.”

Prioritization is **HIGHEST**.

Please see Suppression Committee Report for additional information.

## Recommendation 2: Expansion of Protected Areas

<b>Description</b>	<ul style="list-style-type: none"> <li>• State to require all lands to fall within a wildfire response jurisdiction, and for all jurisdictions to meet/exceed a baseline-level of protection.</li> <li>• Baseline definitions to be established through collaboration with state, counties and municipalities.</li> <li>• State to provide needed resources.</li> </ul>
<b>Policy Type</b>	Amend Existing Legislation {ORS 477.315c - Rangeland Statutes}
<b>Additional Staff</b>	1 –OSFM 1-ODF
<b>Non-Staff Funding</b>	\$ TBD
<b>Priority</b>	<b>HIGHEST</b>

### Summary

Under the business-as-usual scenario, over 1 million acres (1.6% of the landscape) of Oregon will remain outside wildfire jurisdictions. These lands are referred to as “under or unprotected lands”. These ownerships lack immediate access to statewide “severity” resources under the Conflagration Act, as well as systems for mutual aid agreements in the event of fire. Predictably, during fire events, the benefits of immediate initial attack are lost, causing the fires to grow far more deadly and costly.

The State does provide protection, reactively, but often under extreme conditions. Worsening matters, a ripple effect ensues, as suppression resources are siphoned from across the state, often during peak wildfire season. As new fires start, firefighters may be in position for initial attack, in time, but lack the needed resources to proceed.

In a lower-wildfire era, such risks under a business-as-usual scenario may have been tolerable but, as evidenced by the 2018 Substation Fire (where a tractor operator was killed trying to protect a neighbor’s property) and other wheat field fires in Oregon, current realities dictate a modernization of the State’s approach to jurisdiction. Fortunately, the Rangeland Fire Protection Associations offer an effective template. Together with counties and cities, ODF and OSFM can define adequate protection levels across the state, and collaborate regarding plans and resources. For a relatively modest commitment of State resources, communities across Oregon can achieve greater safety and protection of resources.

Prioritization is **VERY HIGH**.

Please see Suppression Committee Report for additional information.

### Recommendation 3: State Suppression Capacity

<b>Description</b>	<ul style="list-style-type: none"> <li>• Total incremental funding: <b>\$40 million</b> per biennium</li> <li>• Modernization of ODF and OSFM human resources and equipment</li> <li>• Expansion of protected areas to include currently unprotected and under-protected lands</li> <li>• ODF staffing beyond full-time Fire Protection staff (Private Forests, State Forests, Agency Administration) available for suppression as-needed during fire seasons</li> <li>• <u>Important</u>: figures include financial / administrative personnel needed to process receivables, and were developed prior to establishment of “Forestry Financial Oversight Team”. Figures are therefore subject to change as Oversight Team completes its assessment.</li> </ul>
<b>Policy Type</b>	Fund Existing Legislation, Agency Personnel, Agency Action
<b>Additional Staff</b>	<p>Oregon Department of Forestry</p> <ul style="list-style-type: none"> <li>- 22 FTE Fire Protection</li> <li>- 12 FTE Private Forests</li> <li>- 9 FTE Agency Administration</li> <li>- 10 FTE State Forests</li> <li>- 8 FTE Rangeland and Cropland (expansion of protection area)</li> <li>- <b>61 FTE Total</b></li> </ul> <p>Oregon State Fire Marshal</p> <ul style="list-style-type: none"> <li>- <b>7 FTE Total</b></li> </ul> <p>Total Additional Staff</p> <ul style="list-style-type: none"> <li>- <b>68 FTE ODF and OSFM</b></li> </ul> <p>*See bullet above regarding Forestry Financial Oversight Team</p>
<b>Non-Staff Funding</b>	- <b>Need Detail</b>
<b>Priority</b>	<b>HIGHEST</b>

### Summary

Recommendations from the Suppression Capacity draw from numerous prior analyses:

- Oregon Department of Forestry
  - o “Oregon Department of Forestry: Actions Needed to Address Strain on Workforce and Programs from Wildfires” (<https://sos.oregon.gov/audits/documents/2016-18.pdf>) Secretary of State Audit Report, August 2016
  - o “Oregon Department of Forestry 2019-21 Biennial Budget” (<https://olis.leg.state.or.us/liz/2019R1/Downloads/CommitteeMeetingDocument/162923>)
  - o “2015/16 Fire Program Review Committee: Report to State Forester” (<https://www.oregon.gov/ODF/Board/Documents/FireProgramReview/2016%20Fire%20Program%20Review%20Committee%20Final%20Report.pdf>)
  - o Multiple internal Assessments
- Oregon State Fire Marshal Office
  - o “Living with Fire in the Wildland Urban Interface: A Listening and Understanding Tour of the Oregon Fire Service – August 2019)

[https://www.oregon.gov/osp/Docs/OSFM\\_Listening\\_Understanding\\_Tour\\_Report\\_\(August\\_2019\).pdf](https://www.oregon.gov/osp/Docs/OSFM_Listening_Understanding_Tour_Report_(August_2019).pdf))

In addition, the Suppression Committee held several meetings over the course of 2019 to discuss recent trends, including wildfire in unprotected and under-protected lands (e.g., 2018 Wheatfield Fires, fatality).

Common themes include increased wildfire activity and threats to the Wildland Urban Interface and natural landscapes of Oregon, including unprotected and under-protected regions; flat staffing levels and under-investment in modernization of training, equipment and technology; inability to keep pace with greater accounting activity; strain and firefighter safety concerns resulting from increased overtime workloads; siphoning of staff and resources toward suppression and away from other ODF programs; and challenges meeting the mission to protect Oregonians and high-value assets.

Current staffing and equipment were designed and built for another era of lower wildfire activity. Investments are needed to modernize ODF and OSFM, and to provide adequate protection in regions currently unprotected or under-protected.

Important: as noted in Summary table above, these recommendations were provided before Governor Brown's recent establishment of the "Forestry Financial Oversight Team" which will address systems and staffing needs related to accounting, invoicing and receivables, stemming from increased wildfire activity and associated suppression billing. As such, financial staffing recommendations will likely be adjusted pursuant to the Oversight Team's findings. Until this time, staffing of field personnel may be appropriately prioritized.

Prioritization: **HIGHEST**

#### Recommendation 4: Suppression Funding Formula

<b>Description</b>	<ul style="list-style-type: none"> <li>The Oregon Department of Forestry, Legislative Fiscal Office and Landowner representatives should retain a third-party consultant to gather and verify wildfire protection data; assess public vs private value from wildfire suppression services delivered by the State; benchmark suppression costs to landowners between Oregon and comparable states; and recommend an equitable cost allocation between landowners and the State.</li> </ul>
<b>Policy Type</b>	Agency Action
<b>Additional Staff</b>	Short-term Independent Contractor
<b>Non-Staff Funding</b>	None
<b>Priority</b>	<b>VERY HIGH</b>

#### Summary

Together, private landowners and the general public purchase fire suppression services from State agencies, through landowner assessments and general fund expenditures, respectively. These services are highly-valuable to both landowners and the general public and, fortunately, cost-sharing between the parties lowers costs for everyone. The question arises as to whether cost allocations are equitable and aligned with public and private values generated through fire suppression. Finding a reasonable answer to this question is complicated by many factors:

- Both landowners and the general fund face increasing financial liabilities with forecasts for greater fire activity, suppression costs, and more comprehensive social, ecological and economic costs from wildfire. Given the escalating importance of wildfire funding to both landowners and the State, a third-party should be retained to ensure an objective analysis.
- It has proven difficult for landowners and the State to agree upon cost data. Still more difficult has been benchmarking Oregon data against comparable states, whose own data sets will be even more opaque than Oregon's. Sorting through data complexities, and rendering a single data set, would be one element of the third-party's responsibilities.
- Estimating comprehensive public costs (social, ecological, economic) of wildfire can be subjective, and can produce a wide range of cost estimates. Indeed, the simpler task of calculating financial costs to private landowners is highly complex. Again, a third-party can provide consistent methodologies based on best available practices.
- Land economics are highly variable across the state: forests in the wet, northwestern quarter of the state are more valuable than drier forests and rangelands elsewhere. The greatest ability to pay for fire suppression – on wet forests – occurs where fire activity is the least frequent. Hence, northwest landowners may subsidize other landowners, again raising equity questions.

Given the complexity and high stakes involved in landowner assessments, it is recommended that a transparent process, led by an objective third-party expert, be undertaken.

Prioritization is **VERY HIGH**.

## Recommendation 5: ODF Organizational Model to Flex with Wildfire Fluctuations

<b>Description</b>	<ul style="list-style-type: none"><li>• Continue ODF workforce prioritizing suppression during fire season (“militia model”)</li><li>• New employees undergo training in core areas of responsibility, in addition to suppression responsibilities</li></ul>
<b>Policy Type</b>	Agency Action
<b>Additional Staff</b>	None
<b>Non-Staff Funding</b>	None
<b>Priority</b>	<b>HIGH</b>

### Summary

The Wildfire Council was asked to evaluate systems for sufficiency and sustainability, including ODF’s “militia” approach to wildfire suppression (all staff prioritize suppression during fire season). The core issue is how best to design a sustainable organization, given significant year-to-year variability in wildfire activity. As the graphs in the “Call to Action” section demonstrate, over the past decade alone, wildfire on ODF-protected lands has fallen below 5000 acres in one year (2011) and risen above 105,000 acres just two years later (2013). The existing model allows suppression capacity to flex in response to such fluctuations, and therefore remains appropriate. This creates significant cost savings when compared against full-time staffing for high fire seasons.

Should annual variability dampen, or wildfire seasons significantly extend, and Oregon experience sustained, heightened wildfire activity each year, the militia system would no longer prove effective, as non-suppression work would suffer. This scenario would be very costly to Oregonians, should ODF undertake additional fuel reduction work, as is also recommended by the Council. In such a case, each summer that fuel reduction lags, as resources are siphoned away due to suppression demands, hazardous fuels continue to accumulate, increasing the risks of catastrophic and costly wildfire. It is therefore recommended that ODF leadership continue to monitor the demands of the militia system on all non-suppression personnel, and the impacts to non-suppression agency objectives.

Prioritization is **HIGH**.

Please see Suppression Committee Report for additional information.

## Recommendation 6: Insurance Against Catastrophic Wildfire Suppression Cost

<b>Description</b>	<ul style="list-style-type: none"><li>• ODF should renew its existing policy with Lloyd’s of London</li><li>• ODF should continue to monitor insurance markets and to weigh the benefits and costs of third-party insurance vs self-insurance</li></ul>
<b>Policy Type</b>	Agency Action
<b>Additional Staff</b>	None
<b>Non-Staff Funding</b>	None
<b>Priority</b>	<b>HIGH</b>

### Summary

As stated in the Suppression Committee Report,

“For well over 40 years, ODF and landowners have chosen to purchase insurance through underwriters at Lloyd’s of London to help offset suppression costs related to catastrophic wildfires. This insurance covers costs borne by all ODF jurisdictional fires during severe wildfire years. Over the decades, the insurance premiums and deductible coverage point have increased significantly.”

Under business-as-usual, ODF would continue its longstanding policy. Over the policy lifetime there have been several adjustments to payout limits and deductibles. During 2005-2012, the deductible stabilized at \$25 million. Following severe fire seasons from 2013-2015, the deductible was raised to \$50 million. Between 2013-2014, payouts totaled \$47 million, with no subsequent claims made. With insurance expertise on the main Wildfire Council, as well as ex-officio Council membership, an internal review was conducted that concluded the current policy is fairly priced and should be continued.

Prioritization is **HIGH**.

Please see Suppression Committee Report for additional information.

## Recommendation 7: O&C Contract with Bureau of Land Management

<b>Description</b>	<ul style="list-style-type: none"><li>The State, via the Governor’s office, the federal delegation and the Wildfire Council, should continue to advocate that the Bureau of Land Management continue its agreement with ODF for fire protection and suppression services on all Oregon &amp; California (O&amp;C) lands.</li></ul>
<b>Policy Type</b>	Other Action (Advocacy)
<b>Additional Staff</b>	None
<b>Non-Staff Funding</b>	None
<b>Priority</b>	<b>VERY HIGH</b>

### Summary

As stated in the Suppression Committee Report,

“The BLM and ODF have worked together for decades to protect a patchwork of lands in western Oregon known as the O&C lands. The BLM is proposing cost containment measures that would remove some lands from the current agreement, historically protected by ODF. Removing O&C lands from the protection system would create thousands of miles of additional suppression jurisdictional boundaries, increasing exposure and costs, and adding overall wildfire protection complexity.”

With forecasts for greater wildfire activity, the complexity of suppression and related costs and risks to human safety, are likely to increase as well. The O & C lands consist of approximately 2.2 million acres stretching north to south across much of western Oregon. Withdrawing these lands from ODF jurisdiction would further amplify suppression complexity, and exacerbate challenges already stemming from protecting the fragmented ownership in western Oregon. If a partnership did not already exist between ODF and BLM, one would be desired and pursued. Its loss would be a major setback.

Prioritization is **VERY HIGH**.

Please see Suppression Committee Report for additional information.

## Recommendation 8: Federal Suppression Capacity

<b>Description</b>	<ul style="list-style-type: none"><li>The State, via the State Legislature, should pass a resolution addressed to the Undersecretary of Agriculture, the Chief of the US Forest Service and the Director of the Bureau of Land Management seeking additional severity / preparedness funding dedicated to Oregon.</li></ul>
<b>Policy Type</b>	Other Action (Advocacy)
<b>Additional Staff</b>	None
<b>Non-Staff Funding</b>	None
<b>Priority</b>	<b>HIGH</b>

### Summary

As with state agencies, federal agencies deploy centralized suppression resources on an as-needed basis. In the case of federal agencies, centralized resources cover several states across the fire-prone western US.

From the Suppression Committee Report.

“Increased fire season severity and complexity across the western states results in reduced resource availability in Oregon. Heavy tankers, helicopters, smoke jumpers and crews are in the highest demand and therefore the most limited. Without adequate funding for additional resources, demand will continue to outpace the supply of funding, endangering Oregon communities, firefighters and natural resources.”

With 92-93% of burned acres in Oregon occurring on federal land, the need for effective initial response and dedicated federal resources is paramount to firefighter and public safety, and the protection of ecological, social and economic values. Federal funds can leverage existing State funds to augment initial attack resources during peak fire season.

Prioritization is **HIGH**.

Please see Suppression Committee Report for additional information.

## Recommendation 9: RFPA Suppression Capacity

<b>Description</b>	<ul style="list-style-type: none"><li>• Continue current funding levels for existing Rangeland Fire Protection Associations (RFPAs).</li><li>• Increase ODF funding and capacity to strengthen RFPA program and expand to other lands as appropriate.</li></ul>
<b>Policy Type</b>	TBD
<b>Additional Staff</b>	TBD
<b>Non-Staff Funding</b>	TBD
<b>Priority</b>	HIGH

### Summary

From the Suppression Committee Report:

“The Rangeland Fire Protection Associations (RFPAs) operate as independent associations of landowners that provide their own local wildfire protection. ODF supports the associations...”

“RFPAs have demonstrated enormous success combating and suppressing wildfires across Oregon’s rangelands.”

Of particular importance is the role RFPAs play safeguarding livestock forage, protecting homes and communities in eastern Oregon, and conserving sage grouse habitat. RFPAs have proven a very successful model and investment should continue and grow as needed.

Prioritization is **HIGH**.

Please see Suppression Committee Report for additional information.

## Recommendation 10: State-Federal Interagency Performance

<b>Description</b>	<ul style="list-style-type: none"><li>• ODF and OSFM to jointly develop an “expectations document” to improve State-Federal interagency performance, with particular attention to Incident Management Teams.</li></ul>
<b>Policy Type</b>	Agency Action
<b>Additional Staff</b>	None
<b>Non-Staff Funding</b>	None
<b>Priority</b>	<b>HIGH</b>

### Summary

Unified Command is a term used to describe joint decision-making authority between state and federal agencies. As the Suppression Committee report states,

“Coordination, education and collaboration are especially critical when Unified Command is established. Miscommunication during fire response has the potential to impact operations on the ground, increasing firefighter and public safety risks...”

“OSFM and ODF should continue to explore opportunities with state and federal partners to communicate agency missions, authorities, and priorities. Ensure OSFM and ODF are represented in forums such as the Pacific Northwest Coordinating Group, Geographic Agency Administrator coordination meetings and trainings, and national and area Incident Commander Councils.”

Interagency collaboration is challenged by the different laws and policies governing state and federal agencies. Given the high stakes involved with real-time wildfire decisions, the Council recommends that all steps be taken to continuously improve interagency performance. These include steps outlined in the Suppression Committee Report: the creation of an expectation document to be delivered to all Incident Management Teams operating in Oregon; cross-sharing of agency missions, authorities and priorities; and written reviews of Incident Management Teams’ performances.

Prioritization is **HIGH**.

Please see Suppression Committee Report for additional information.

## Recommendation 11: Suppression Collaborative

<b>Description</b>	<ul style="list-style-type: none"><li>• ODF and OSU Extension to assess the potential to create new, or leverage existing, forest collaboratives whose scope would include wildfire suppression.</li></ul>
<b>Policy Type</b>	Agency Action
<b>Additional Staff</b>	None
<b>Non-Staff Funding</b>	None
<b>Priority</b>	<b>HIGH</b>

### Summary

The Suppression Committee report (pp 18-21) addresses several important topics pertaining to neighboring land ownerships, transfer of risk and community impacts:

- Fuels management
- Access, control points
- Fuel breaks, removing snags, post-suppression rehabilitation
- Restricting managed wildfire to times of low-risk conditions
- Limiting transfer of risk

Additional discussion at the Wildfire Council (Oct 24) expanded upon these topics, and addressed several others:

- Liabilities (fires spreading from private lands onto federal lands trigger liabilities to the private landowner, whereas fires spreading from federal lands to private landowners do not trigger similar liabilities)
- Wildfire as fuel mitigation tool:
  - strategy to lower agency budgets, increase funds for other programs
  - positive ecological impacts (under appropriate conditions)
  - smoke impacts to communities
  - job, public revenue impacts to communities
- Separate missions and management objectives

These are familiar, difficult issues across the West, given intertwined and diverse ownerships with equally diverse management objectives, particularly with regards to wildfire. Council discussions did seem to identify points of agreement (e.g., hazardous fuels reduction, restricting managed wildfire to times of low-risk conditions). On balance, however, rather than recommending a prescriptive approach, the Council wishes to explore the collaborative model as a vehicle for local problem-solving. There are at least two successful precedents: forest collaboratives focused on restoration, and the Harney County Wildfire Collaborative (<https://highdesertpartnership.org/our-initiatives/harney-county-wildfire-collaborative/about-the-wildfire-collaborative.html>) which focuses on mitigation and suppression in rangelands.

The Council also recommends that, to the extent appropriate for local communities, the scope of collaborative work would consider both suppression and mitigation. Depending on the results of initial assessments, ODF/OSU Extension may wish to employ a pilot-project approach.

Prioritization is **HIGH**.

Please see Suppression Committee Report for additional information.

**Recommendation 12: Oregon Fire Service Mutual Aid System, Systems Review**

<b>Description</b>	<ul style="list-style-type: none"> <li>• Governor and legislature direct OSFM to conduct a statewide analysis of the OFSMAS.</li> <li>• OSFM to make recommendations regarding capacity, organizational structure, different approaches across regions, mutual aid agreements, and other topics to modernize the OSFMAS.</li> <li>• Report to the Governor, Legislature, State Fire Marshal, State Forester, Oregon Fire Chiefs Association and other stakeholders.</li> </ul>
<b>Policy Type</b>	<b>Agency Action</b>
<b>Additional Staff</b>	1 FTE (contractor or limited duration employee)
<b>Non-Staff Funding</b>	None
<b>Priority</b>	<b>HIGH</b>

**Summary**

From the Suppression Committee report (pp 21-22):

- “While the previous recommendations of this Committee have had the benefit of work and studies done prior to the establishment of the Council, Oregon’s fire service has not had an extensive analysis.”
- “Without evaluating systems as the risks change, the Oregon fire service will continue to be challenged to provide wildfire protection in all communities and areas of the state.”
- “Oregon’s fire service includes 310 structural fire agencies and 13,000 firefighters, of which 80% are volunteers. All stakeholders must be engaged in the process in order to fully evaluate the Oregon fire service mutual aid system’s capacity, capability and long-term sustainability.”

Given the accelerated timeline of the Wildfire Council, a thorough systems analysis of the OFSMAS was not feasible. With wildfire activity increasing, and given the dispersed and diverse nature of the OFSMAS, it is prudent to evaluate, and perhaps modernize, the OFMAS.

Prioritization is **HIGH**.

Please see Suppression Committee Report for additional information.

## Detailed Analyses

### Recommendation 2: Expansion of Protected Areas

#### Defining the Issue

##### Problem Statement

- Should the State continue or adjust wildfire protection jurisdictions, and baseline protections, in response to increased wildfire in unprotected and under-protected lands?

##### Current Situation: Wildfire Jurisdictions

- Over 1 million acres (1.6%) of Oregon are unprotected and additional lands are under-protected. Suppression capacity and practices are highly variable. Under-protected and unprotected lands lack immediate access to statewide “severity” resources.
- Critical initial attack is often insufficient, allowing fires to expand in size and danger-level before adequate resources arrive. Larger fires require more resources, which must be drawn from around the state during peak fire season.

##### Recent Trends: Wildfire in Unprotected and Under-Protected Lands

- The July 2018 Substation Fire consumed nearly 80,000 acres outside The Dalles. The area was “under-protected” and so air assets and other resources were not immediately available. Tractor operator John Ruby was killed trying to protect a neighbor’s land. Farmers suffered severe crop losses.
- From the Suppression Committee Report: “In recent years, fire on under or unprotected lands have increased in frequency and size. ODF and OSFM respond with wildland and structural fire resources, but these agencies are not currently funded or staffed to meet the increased demands.”
- “Due to topography and other factors, aviation resources are often the most effective means to fight fires on (these) lands; unfortunately aviation resources are limited and not always accessible...”

##### Business-As-Usual Forecast

- Forecasts for hotter, drier and longer fire seasons, with potential for greater lightning, pose particular threats for unprotected and under-protected lands, which are concentrated east of the Cascades.
- A reasonable BAU forecast would predict continued increases in wildfire activity, and ineffective initial attack. The consequences would be further threats to human safety, and economic loss. Overall fire suppression across the state would continue to suffer, as resources are siphoned from elsewhere.

##### Policy Options Available to State

- Business-As-Usual.
- More Active State Role. Direct agency oversight.
- Less Active State Role. Broaden and upgrade RFPA model. (preferred choice)

#### Policy Analysis

##### Overview of Policy Under Consideration

- Amend Legislation (need name)
- 2 additional FTE (1 ODF, 1 OSFM) - \$ budget

- **Severity Resources - \$ budget**

- State agencies to work with counties and municipalities to define baseline standards, and interagency work plans.

### **Anticipated Uplift**

- Direct reduction of undesired wildfire in unprotected and under-protected lands.
- Improved reduction of undesired wildfire across the state.
- Primary Council Objectives Achieved
  - All Council Objectives would be advanced, as undesired wildfire would be reduced across the state.
  - Human Safety (improved training for landowners, local communities)
  - Human Health (reduced smoke)
  - Current Business (agriculture and tourism)
  - Vibrant Communities (health, economy)
  - Public Finance (reduced large fire costs, tax base)
- Uplift Score: HIGHEST
- Uplift Certainty: VERY HIGH

### **Anticipated Costs**

- Direct cost of implementation **\$x million per biennium**
- Potential net cost savings, as improved initial attack would reduce large fire growth and associated costs. Also, large fires in currently unprotected or under-protected land result in statewide resources being diverted away from other regions, causing these regions to be less-protected and therefore at increased risk of large, expensive fires themselves.
- Cost Score: HIGHEST
- Cost Certainty: VERY HIGH

### **Timeline**

- Establishing baseline across the state could be completed by mid-year 2020
- Achieving baseline standards could be done within 12 months (fire season 2021)
- Benefits from severity investments would be realized for the 2020 fire season
- Benefit duration: sustained with ongoing maintenance and capex
- Timeline Score: VERY HIGH

### **Implementation Certainty**

- Overall degree of certainty: VERY HIGH
- Drivers
  - Building upon success of RFP model increases confidence
  - Coordination between state, county and local agencies key to execution

### **Magnitude of Impact**

Additionality relative to overall wildfire risk in Oregon: VERY HIGH

### **Overall Priority**

**HIGHEST**

## Supporting Resources Required

- Public engagement / training
- Resource requests would mostly leverage existing systems and structure.

## Key Assumptions

- Local citizen involvement in RFPA-type model

## Recommendation 3: State Suppression Capacity

### Defining the Issue

#### Problem Statement

- How to safely and effectively respond to increased wildfire activity across Oregon, through modernization and expansion into new geographies?

#### Current Situation and Recent Trends

- From 2016 Secretary of State Audit Report (2016):  
“Three consecutive fire seasons have forced the Oregon Department of Forestry (ODF) to spend more time fighting fires and less time on its other programs. Recent fires have also strained ODF personnel, who often work long hours away from home...ODF needs to take action to reduce these impacts on personnel and programs.”
- Since the Secretary of State Audit Report was written, two of four fire seasons (2017, 2018) have ranked within the top-5 largest and most costly fire seasons in the past 30 years.
- Meanwhile, staffing levels at both ODF and OSFM have remained essentially flat over the past 20 years.

#### Business-As-Usual Forecast

- The trajectory of increased wildfire activity should continue, as the main contributors – fuel loads, climate change, population growth – are trending in the wrong direction.
- Already, staffing and resources are overstretched during high-wildfire seasons, and this trend will worsen over time with increased wildfire activity.
- Threats to firefighter safety, communities, ecological and economic values will swell without adequate modernization and expansion of resources.

#### Policy Options Available to State

- Business-As-Usual.
- More Active State Role. Direct agency oversight.
- Less Active State Role. Broaden and upgrade RFPA model. (preferred choice)

## Policy Analysis

### Overview of Policy Under Consideration

- Additional staffing for ODF and OSFM
- Contracting funding for fire suppression fire contracts
- One contract type 3 helicopter and staff (8 seasonal FTE)
- 4 single engine air tankers
- Two next generation air tankers and lead plan
- Funding for wildfire response training
- Funding for wildfire prevention and co-ops
- Funding for type-2 private contract 20-person initial attack crews
- Funding for pre-positioning of structural resources

### Anticipated Uplift

- Direct reduction of undesired wildfire on State-protected lands.
- Primary Council Objectives Achieved
  - All Council Objectives would be advanced, as undesired wildfire would be reduced across the state.
  - Human Safety (reduced firefighter fatigue)
  - Human Health (reduced smoke from large wildfire)
  - Current Business (agriculture and tourism)
  - Vibrant Communities (health, economy)
  - Public Finance (reduced large fire costs, tax base)
- Uplift Score: HIGHEST
- Uplift Certainty: VERY HIGH

### Anticipated Costs

- \$40 million per biennium (adjusted per findings of Forestry Financial Oversight Team)
- Some cost savings, as resources will improve initial attack and reduce likelihood of high-cost large fires.
- Cost Score: HIGH
- Cost Certainty: VERY HIGH

### Timeline

- Immediate effect for 2020 fire season, further gains in 2021 fire season and beyond
- Timeline Score: VERY HIGH

### Implementation Certainty

- Overall degree of certainty: HIGH
- Drivers
  - Workforce availability

### Magnitude of Impact

Additionality relative to overall wildfire risk in Oregon: VERY HIGH

**Overall Priority**

**HIGHEST**

**Supporting Resources Required**

- Workforce recruitment and training

**Key Assumptions**

- Deeper evaluation of OSFM systems and work design, as described in Recommendation below

DRAFT