December Final Mitigation Committee Report

Governor's Council on Wildfire Response

December 11, 2019

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OVERVIEW AND CONTEXT

The magnitude of Oregon's wildfire mitigation problem is beyond the scope of any individual sector and requires the collective power of public-private-partnership. Local, state and federal governments must align with the private sector, academics, non-profits, tribes and others to collectively implement a multi-billion-dollar, multi-decade program. While wildfire and wildfire mitigation have been and will remain a permanent fixture in the West, the Committee believes a specific "program" is warranted, at least until the massive backlog of hazardous fuels is reduced to a more sustainable level.

The Wildfire Mitigation Committee has been charged with evaluating potential actions that will reduce and mitigate risk associated with future wildfire events in the context of 10 objectives adopted by the Governor's Council on Wildfire Response, and that will do so at a meaningfully improved pace and scale. All the Council's 10-adopted objectives are relevant to and to some degree addressed by the Mitigation Committee's work.

Because the Committee believes wildfire and smoke will remain a reality of life in the Pacific Northwest, the Committee's work is premised on how to meaningfully prioritize and take actions that reduce the negative impacts fire and smoke can pose to important societal values rather than a binary or zero-sum-game approach that continues to pit wildfire and suppression against one another. In other words, the question is not whether to try and prevent all wildfire on the one hand or eliminate suppression on the other, or whether wildfire will or should exist, but rather how might we shape the type, location, and amount of fire and smoke so as to better realize both benefits and reduced risks to our society, economy, and environment associated with both wildfire and wildfire mitigation work.

The state must ensure its mitigation strategy does not drift apart from a cohesive overall wildfire strategy, including approaches to suppression and community adaptation. Mitigation, suppression, and adaptation must be continuously integrated — in a world of limited resources — with the ultimate goal of stabilizing and lowering costs once hazardous fuels are brought to more moderate levels. Further, the state's role in the development of an Oregon public-private-partnership is pivotal. The most important role for the state is overall leadership of the program itself, and the public-private-partnership charged with its implementation.

At its November 08, 2019 meeting, the Council took action in advancing report language and recommendations related to this cohesive approach (spanning suppression, community adaptation, and mitigation disciplines as well as committees) and public-private partnerships. Previous Mitigation Committee work products informed that Council work and action, including the Committee's initial September 12, 2019, Committee Report to the Council ("September Report" attached here as Appendix B) as well as the Mitigation Committee Chair's November 07, 2019 Interim Report to the Council ("Interim Report").

Among other components relevant to cohesive strategy and public-private partnership advancement, the September Report provided recommendations related to (a) wildfire risk assessment and mapping (prioritization through use of the Pacific Northwest Qualitative Wildfire Risk Assessment ("QRA")), (b) use of other data layers responsive to Council objectives (relevant to non-QRA prioritization approach), and (c) scoping the size of the challenge with acreage and cost estimates for Oregon's high fire risk areas. At the September 16 Council Meeting, the Mitigation Committee presented preliminary analysis that identified a need to treat an estimated 5.6 million acres of high-risk acres (40 percent of the top 4 risk classes under the QRA) at an estimated cost of $4.1 billion.

The November Interim Report was additive to the September Report. In particular, it focused on short-term recommendations that the State could undertake, including specific funding requests for the 2020 legislative session and near-term policy recommendations. The Interim Report also included appendices covering jurisdictional considerations and complexities facing wildfire risk mitigation in Oregon as well as mid- to longer-term recommendations that were still under Committee deliberation.

The Interim Report noted upfront that Committee members had not reached a point of readiness at that time to vote on the Interim Report's recommendation language and that the Committee Chair would seek a consensus updated report by the end of the Mitigation Committee's scheduled meetings in December 2019. This Final Mitigation Committee Report represents that effort.

INTRODUCTION

Wildfire risk reduction, restoration, and adaptation across the state of Oregon is an enormous challenge: there are numerous institutional, jurisdictional, and economic challenges that are not easily resolved (see "Other Tradeoffs and Opportunities" section of this report as well as Appendix A—jurisdictional challenges). The gross cost of critical wildfire mitigation and adaptation work will require significant policy reforms, fiscal investment, collaborative capacity support, lawmaking, and political fortitude. However, the Mitigation Committee supports increased responsible forest, rangeland, and fire management that reduces wildfire risk and improves ecosystem, community, and economic health as articulated in this report because relative to the status quo, the avoided costs, improved relationship between fire suppression and fire use or acceptance, and benefits to public health, safety, and other values more than justify the investment.

The State of Oregon has an important leadership role to play in coordinating future efforts to improve wildfire risk mitigation treatments among the many land ownership types that transcend forest and rangelands statewide. Increased mitigation activities are needed to reduce

wildfire risk on both public (68% of the highest at-risk[1] acres) and private lands (32% of highest at-risk acres). Mitigation projects on federal lands must be authorized under various laws including the National Environmental Policy Act (NEPA) and are constrained by policy and limited human and funding resources. Projects on private lands require a willing landowner, which can be challenging when the costs to complete fuel reduction treatments aren't covered by related revenue and landowners must meet their own set of regulatory requirements (e.g., smoke regulations and potential liability associated with treatments). Currently, 2 million acres of National Forests in Oregon are approved for fuel reduction and opportunities exist for the State to begin addressing this restoration backlog. Oregon's rangelands have experienced an increasing number of megafires in re-cent years, resulting in major impacts to the state's livestock industry and a dwindling population of sage grouse. Long-term investments to reduce invasive annual grasses and re-establish healthy perennial bunchgrass communities are needed to create more fire-resilient rangelands.

This report's recommendations are made in the context of the National Cohesive Wildfire Strategy's framework and objectives as well as a new public-private partnership as articulated by the Council in its report. In the case of mitigation actions on federal forest lands, recommendations are proposed to be implemented with the cooperation and funding of the State's federal partners under the recently signed Shared Stewardship Agreement (SSA) between the State of Oregon and the US Department of Agriculture (USDA) Forest Service. The SSA also provides opportunities for private land implementation under the USDA Natural Resources Conservation Service (and the Joint-Chiefs / USDA effort). While existing mechanisms exist to advance work, and while the Cohesive Strategy and SSA provide a framework, the Committee also wishes to underscore that additional coordination, governance and partnership structures will be necessary to effectively address the wildfire mitigation needs across land ownerships, action types, and time.

In considering the arc of a 20-year strategy for wildfire risk mitigation, this Final Report is broken into several recommendation areas and timeframes that build off the Council's final November 8th report, in particular, the "Goal 2: Restore and Maintain Resilient Landscapes." This Final Report contains short, mid, and longer-term recommendations and jurisdictional considerations based on those contained in the Chair's Interim Report.

The short-term recommendations in this report include specific funding and policy recommendations for the 2020 Oregon legislative session. To be clear, these short-term recommendations alone will not meet Oregon's wildfire risk mitigation needs. They represent actions that the Committee believes should be taken in the coming year for Oregon to initiate a meaningful substantive response to wildfire risk mitigation though project advancement and building the capacity, systems, and partnerships needed to ramp up meaningful efforts moving forward.

[1] Highest at risk is defined as Risk Classes 1-4 in the Quantitative Wildfire Risk Assessment. See the Mitigation Committee's September 2019 report for more detail.

For long-term success to occur, Oregon must also overcome significant jurisdictional challenges across a range of ownership types, including federal lands, as well as systemic issues including management efficiencies, policy obstacles, agency and workforce capacity, and business models. The Committee's mid and longer-term recommendations in this report are aimed at addressing these issues. These mid and longer-range recommendations will require action as part of future (i.e., beyond 2020) Oregon legislative sessions as well as congressional action (budget or policy) advanced by the State in working with the Oregon congressional delegation. The Committee's inclusion of the reference summary of Oregon's jurisdictional considerations and land ownership types (see Appendix A to this report) underscores the challenges at hand.

CAVEAT RELATED TO BUDGET REQUESTS

Based on biennial state fiscal year planning limitations, the budget recommendations in this document assume a two-year implementation timeline, through June 30, 2022. If longer-term investments are possible, or if a shorter timeframe is necessary given the status of the current fiscal year, the investments and targets are scalable. Committee members recognize that some of the recommendations in this report (e.g., Recommendation Area III(b)4-5) do not currently include the costs and funding that would be required for their implementation. Additional work will be necessary to enumerate and address these costs, which would be added to the cost figures associated with budget recommendations in this report as well as the overall estimated cost of addressing wildfire risk mitigation in the highest risk QRA geographic areas over a 20-year timeframe.

Committee members feel state accountability in the use of public dollars to advance mitigation work is a critical priority, as are metrics and performance measures that ensure the effective and transparent use of these funds. At a basic level, accountability and transparency are necessary to determine whether funds appropriated for a certain purpose have been spent on that purpose (verification), and how well funds are advancing that intended purpose (effectiveness). The Committee appreciates the current Governor's attention to ODF-related concerns.

Until or unless a different governance structure exists, the Committee believes that at least in the forest context, ODF is likely the relevant lead state agency with respect to the issue of wildfire risk mitigation across Oregon's diverse landscape and land ownerships. That said, Committee members are aware that any recommendations in this report to advance funding through ODF may be adjusted based on current legislative and Governor's task force oversight and accountability work. And, for the relevant recommendations in this report, the Committee recommends that (through budget language or other mechanisms) accountability mechanisms be attached to state funds to track whether targets and deliverables are being met and what has been achieved. Indeed, the development of relevant metrics and performance measures is part of this Committee's short-to-mid range recommendations.

RECOMMENDATIONS

I. Recommendation Area: Risk Assessment, mapping, and geographic prioritization

As introduced in the "Overview and Context" section of this report, the Committee's September 2019 report to the Council stated that the QRA provides the best over-all available information capturing wildfire-related values at risk across Oregon. The QRA depicts 6 of the 10 objectives defined by the Council. The Committee used additional resources to generically map the remaining four objectives/values defined by the Council. The QRA map, the additional maps, and other relevant details are located in the Committee Report to the Council dated September 12, 2019.

The QRA and the additional mapping sources that inform the Council and Committee objectives that are not reflected by the QRA are intended to provide a high-level, geographic representation of priority risks across the State of Oregon and across ownership boundaries.[2] The intent of the QRA and supplemental maps for the purpose of the Mitigation Committee is to educate land managers and the public about where overlapping priorities and values at risk exist on the landscape. Guided by the belief that maps do not and should not in and of themselves make decisions (people do), the Mitigation Committee envisions that the mapping tool and products will provide critical information and context from which strategic planning and decisions can be made. It is important to note that on-the-ground decisions must still comply with all relevant, legal management plans.

Recommendation 1: The QRA / PNRA is the best available current model to use for depicting a statewide assessment of wildfire risk. Use the QRA to frame wildfire risk prioritization efforts in the short term, doing so at the 10th field HUC scale. The QRA should remain an iterative product. When revising the QRA in 2020 (and every 3 years thereafter), expand the inclusion of partners in informing the refinement effort and incorporate values (and related data layers), to the extent practicable, that reflect the full slate of Council objectives.

Recommendation 2: When allocating increased wildfire risk mitigation investments, use areas identified by the QRA plus data and products tied to the additional four (4) Council objectives to prioritize investments. Wildfire mitigation needs exist statewide, and where overlap between the QRA and additional layers (four non-QRA Council objectives) is weak or unclear, a significant portion / no less than 30% of funds should be dedicated to areas with demonstrated wildfire risk mitigation treatment needs, at-risk forest products infrastructure concerns, public health concerns, or social justice concerns that are identified in products related to the additional four Council objectives.

[2] See Appendix B for maps and detail explaining them.

Recommendation 3: When prioritizing project funding and designing projects at the local level, refine the QRA information with locally-derived and adapted information and considerations.

Recommendation 4: Increased wildfire risk mitigation funding should not come at the expense of or be used to undermine existing investments in forest health programs at the community level (e.g., CFLRP). Funding should leverage existing capacity, mutually-supportive priorities or existing investments with new or increased wildfire risk mitigation funding wherever possible.

II. Recommendation Area: Landscape Delineation and Strategic Placement of Treatments

The QRA will help the state to prioritize large areas for wildfire planning activities. However, spatial planning and prioritization work based on the initial QRA mapping efforts and other restoration needs assessments will be needed at more local levels in order to strategically integrate mitigation treatments with suppression, response and community preparedness efforts relative to land ownership. Specifically, there appears to be an opportunity to integrate spatial wildfire planning with mitigation or restoration treatments so that the strategic placement of hazardous fuels treatments generally is aligned and implemented in support of and consistent with objectives of PODs (Potential Operational Delineations) and/or other local planning efforts. Spatial planning includes the use of commercial thinning, pre-commercial thinning, mechanical hazardous fuel treatments, and both prescribed and wildfire.

A. Short-term Recommendations

Recommendation 1: The State should adopt general categories of landscape delineations to help further organize and prioritize future mitigation investments. For example, the State could develop definitions that broadly stratify the landscape into three categories: Wildland Urban interface (including infrastructure), Actively Managed Wildlands, and Reserved Wildlands.

Wildfire risk mitigation treatments and investment would be more effective if action-types could be classified on a landscape-basis, regardless of the particular ownership type. Moreover, the best available science indicates that wildfire risk reduction strategies should be tailored to the management goals of such geographic areas. While the QRA and associated restoration needs assessments would serve as the backbone of initial wildfire risk prioritization, geographically-based definitions of landscape categories would help foster scaling of effective wildfire risk mitigation priority-setting and planning. Further planning, honing and implementation of these delineations could occur at the more local levels to appropriately address ownership types and high-value resources.

This structure would also serve the purpose of assisting a Strategic Financial Plan analysis relevant to investment in action-types addressing wildfire risk. Assuming different specified action-types would be more appropriate in a given delineation (e.g., action types for WUI

would be different than Near-Country managed lands, and in turn Backcountry), landscape delineations would help categorize and quantify the amount of a given action type and thus financial investment that would be needed for planning purposes at the coarse-scale.

The following "Wildfire-related Land Delineations" are proposed:

1. Wildland-Urban Interface (WUI)
    - Residential Unincorporated
    - Inhabited Land Use
    - Small Forest & Farm
    - Infrastructure Facilities (includes access roads, utilities, valuable sites, and a circle/buffer of influence)
2. Actively Managed Wildlands
    - Private wildlands, those not identified in WUI Focus Zone described above
    - Managed public wildlands (federal/state/local)
    - Federal-Private Interface (important delineation/stratum where federally reserved lands adjoin neighboring private wildlands)
3. Reserved Wildlands
    - Wilderness (federal)
    - Inventoried Roadless Areas (Forest Service)
    - Other federal lands reserved by statute or regulation
    - Other state lands reserved by statute or regulation
    - Other local public lands reserved by statute or regulation

Recommendation 2: The state should promulgate a common definition and/or improved criterion for defining locally-determined WUI delineations that would foster effective local wildfire risk mitigation planning and implementation.

For the purpose of furthering the wildfire risk mitigation among the many land ownership types, the Mitigation Committee suggests a reformed definition of wildland-urban interface (WUI). Although private ownership types manage the epicenter and much of an inner circle of the so-called WUI, often public wildlands adjoin and overlap the practical circle of influence surrounding both an inner and outer WUI domain. Jurisdictional issues are complicated as WUI delineation commonly transcends many landowners, as well as several ownership types. Different WUI definitions have been crafted by various federal, state and local jurisdictions over the years. Many communities currently define the WUI at a very broad scale in order to optimize the prioritization of the use of public funding. This definition of WUI, however, is generally much broader than how state fire operators (e.g., State Fire Marshall, ODF, etc.) define the term. A common definition is needed in order to ensure that fire risk reduction treatments, suppression operations, and defensible space efforts are effectively prioritized, and efficiently and effectively placed in order to mitigate

interface risk to human safety/health, high values of property, resources, and rural life infrastructure.

The Mitigation Committee supports consistency with the language and process being proposed by the Adaptation Committee, and as outlined in HB 2222 (2019) to reform and update SB 360, which established the Oregon Forestland-Urban Interface Fire Protection Act of 1997.

III. Recommendation Area: Fire and smoke tolerance.[3]

While wildfire presents a risk to many of the values and objectives adopted by the Council, it would be false to assume fire can or should be prevented as the singular solution to risks. While wildfire suppression will remain relevant, especially in the context of protection of human health and safety, homes, property, and infrastructure, continued reliance on broad-scale suppression alone would only deepen rather than address the underlying forest vegetation conditions that underlie wildfire concerns today and that would be exacerbated by continuing the status quo and climate change. Addressing the underlying concerns that roll up into today's wildfire risk mitigation challenge will involve, in addition to mechanical treatment and defensible space strategies, the increased use of fire as a management tool. This, in turn, requires that social and management decision space exists to expand the tool-set of mitigation treatment options to include greater use of prescribed fire or flexibility in response to natural ignitions where fire can achieve desirable forest health and wildfire risk reduction outcomes.

A. Short Term Recommendations

Recommendation 1: Invest $500,000 in state funding in the Community Resiliency and Smoke Impact Mitigation Grant Program.

In 2019, the Oregon Legislature provided $250,000 to the Department of Environmental Quality to assist targeted communities in developing local community response plans to achieve compliance with newly promulgated Smoke Management Rules. Local plans must identify a suite of balanced strategies to accomplish prescribed burning of forest fuels for forest management purposes while minimizing the impacts to communities and vulnerable populations from resulting smoke intrusions. As an example, 18 communities were identified as Smoke Sensitive Receptor Areas (SSRA), geographies designated for the highest level of protection under the Smoke Management Plan. Most of these communities

[3] The Mitigation Committee did not include in this report recommendations addressed by the Suppression Commit-tee, although the Mitigation Committee did recognize that some of these recommendations would be helpful for mitigation efforts, such as increased funding for Rangeland Fire Protection Associations. Wildfire, managed fire, and smoke will be part of Oregon's foreseeable future, but we do have some control over how we experience and re-duce future fire and smoke potential. The Mitigation Committee's recommendations therefore incorporate the eco-logical need to increase the use of fire as a tool to achieve ecological objectives, which can also have a socioeco-nomic benefit.

will need to accomplish increased prescribed burning to achieve improved forest health and community safety and resiliency from future wildfires, but the SSRA designation presents more complex technical and administrative barriers to authorize increased prescribed burning. Correspondingly, grant funds will be provided to these SSRA communities for technical assistance, plan drafting, and implementation of community response plans, as well as for permissible exemptions to the Smoke Management Rules when additional protections for communities and vulnerable populations have been established. Additional funding for the Community Resiliency and Smoke Impact Mitigation Grant Program will support the completion and approval of response plans for priority SSRA communities and achieve increased authorization for prescribed burning on adjacent forestlands.

Recommendation 2: Remove disincentives to prescribed burning and identify other federal, state and local policy barriers to using unplanned ignitions to accomplish mitigation objectives.

In 2019, the state amended its Smoke Management Plan to increase the opportunity to complete more prescribed burning on both public and private lands; note however Oregon's Smoke Management rules are still more restrictive than those required by EPA's and its enforcement of the Federal Clean Air Act. Prescribed burning, combined with strategic active management, is one of the most effective treatments in terms of wildfire risk mitigation and fuel reduction. More prescribed fire across our landscapes is critical to achieving meaningful risk reduction at scale. Additional policy changes are needed to amplify this objective:

(A) The legislature shall review the existing Standard of Care regulations for prescribed fire in Oregon and consider moving Oregon's prescribed fire Standard of Care from Simple Negligence to Gross Negligence.

"Standard of Care" means the reasonable steps prescribed burners need to take to ensure a controlled fire is safe. There are three standards for a standard of care:

1. Strict liability, puts the burden of proof on the burner that they were not negligent in planning and implementing a controlled burn;
2. Simple negligence, requires the plaintiff to show negligence. This is the current standard of care for Oregon and;
3. Gross negligence, which requires the plaintiff to show a reckless disregard for duty of care. This is paired with policies that define what duty of care is for conducting a prescribed fire.

In Oregon, liability for property damage and liability for suppression costs are treated separately. The Committee recommends changing the standard of

care for liability for damage to "gross negligence." Currently, state law places a cap on costs for suppression costs. A cap could be established in a similar fashion for damage costs. Florida, Georgia, Michigan, Colorado, Montana, and Nevada all have gross negligence as the standard of care for prescribed fire conducted by burners that have training and education that meet state standards. Oregon should consider adopting this same standard.

(B) The legislature shall instruct ODF to work with relevant agencies, natural resource specialists, and third parties to establish and provide an operating framework for a voluntary statewide Prescribed Burn Manager Certification standard and program.

The use of prescribed burning as a wildfire management tool faces a number of policy challenges including the absence of a statewide Prescribed Burn Manager Certification. A statewide Prescribed Burn Manager Certification would create a system for setting training standards and a tool for tracking the credentials of burn professionals across the state. With a certification program in place, the state can be assured that burn managers are aware of the steps they need to take, and the factors they need to consider, for a fire to be carried out safely. Defining these standards, and making them publicly available, will bring clarity to burn managers, landowners, neighbors, and others about what the duty of care means for prescribed burning. This certification program would be a voluntary program that would allow burn managers the opportunity to build professional credibility and motivate them to enhance their skills and expertise in prescribed burning. Oregon already has many components in place to effectively implement a certification program. The legal framework for a Prescribed Burn Manager Program exists in ORS 526.360, which empowers the State Board of Forestry to establish a certification program.

(C) The State shall—in partnership with local fire districts, stakeholders, local county governments, the Oregon Department of Forestry, USDA Forest Service, Bureau of Land Management and OSU Extension fire agents—establish and endorse a shared platform to advance the development, adoption and utilization of spatial wildfire management strategies such as the development of Potential Operational Delineations (PODS) starting with the highest-risk QRA locations.

The platform should effectively integrate wildfire mitigation/hazardous fuel reduction activities, response to unplanned ignitions, and fire suppression preparedness to improve fire-fighter safety, reduce wildfire suppression costs, and advance strategic placement of treatments to reduce risk and increase landscape resiliency. Spatial wildfire management strategies would be updated over time based on conditions within these geographic units (from

treatments, burns or otherwise) and adjacent areas, which in turn would inform where treatments occur, the type of treatments, and the type and degree of flexibility in response to unplanned ignitions.

(D) In association with the above recommendation (C), the State—working through the Governor's Office—should convene a state-federal Task Force or other venue to review policies and approaches to unplanned fire response and smoke movement from unplanned and prescribed fire, including public communication and outreach effort.

This effort would include public health, local government, impacted landowners, and other interests and should be integrated with Adaptation Committee efforts. The end result should address potential opportunities to reduce differences between federal and state wild-fire response as well as prescribed fire/smoke management policies were beneficial to improving (or reducing barriers to) fire's role in achieving wildfire resilience and mitigation treatments across the landscape. This effort should also result in a coordinated public education and communication plan (including proposed shared investments in future fiscal years) that improves public understanding and acceptance of not only the risks and challenges related to current fuel conditions but also the role of unplanned and prescribed fire in achieving healthier forest landscapes and reduced mitigation risk over time. In addition, this effort should highlight the areas where, for various reasons, federal and state policy should remain distinct.

B. Mid- to Long-Term Recommendations

Recommendation 1: Increase prescribed burning by setting forth 5, 10, 15 and 20-year targets and priority locations. Resolve federal, state, and local policy barriers limiting the ability to achieve these targets due to limitations on the use of prescribed fire and smoke. Support Prescribed Fire Training Exchanges (TREX)[4] and other training programs to build additional capacity to conduct prescribed burning.

Recommendation 2: In the case of rangelands, increase the use of strategic fuel breaks, PODs, and other treatments consistent with the best available science and applicable laws. It is expected that fire suppression activity would be emphasized in these areas and persist over time.

[4] See https://www.conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/Documents/FactSheet_TREX.pdf

Recommendation 3: Fully align Oregon and federal regulating agencies on smoke management rules and restrictions, and improve compliance surrounding prescribed burn smoke as an advantageous approach preferable to preventing large wildfire incidents.

Recommendation 4: Expand public education related to the use of prescribed fire and the role of fire overall in the achievement of wildfire risk reduction, maintenance of forest resilience to fire, and ability to address social and public health considerations. Consider and work with the Adaptation Committee's outreach and education efforts to support preparedness.

Recommendation 5: In conjunction and in support of the above recommendations on setting prescribed burn targets, public education and expansion of social support for the use of fire, public land managers should conduct an analysis (and mapping exercise) that depicts prevailing patterns of smoke dispersal during (a) wildfire season and (b) periods of prescribed fire use in order to inform likely impacts to communities and human health from either wildfire or prescribed fire.

Recommendation 6: The State should convene federal public land managers, ODF, and relevant affected interests in an evaluation of their programs, legal requirements, and flexibility in responding to unplanned wildfire ignitions. In coordination with recommendations and planning tied to the PODs approach, this evaluation would consider situations where use of fire on the landscape can promote land-scape resilience and health over time, reduce costs tied to suppression without endangering public health and safety, infrastructure or private property risks, and serve as a tool in mitigating risk over time.

IV. Recommendation Area: Cross-ownership work.

The state should foster collaboration and partnership building among and across ownership types. Functional and robust partnerships among ownership types are essential to the effective implementation of successful wildfire risk mitigation strategies that benefit multiple values at a scale that matters.

A. Short-term Recommendations

Recommendation 1: Coordinate and leverage existing capacity to develop fuel mitigation projects on both public and private lands.

In the 2019 Legislative Session, Oregon State University Extension Fire Program Initiative was funded to hire six "Fire Agents" statewide. This new capacity should be well-positioned to help integrate ongoing efforts to increase community preparedness and implement high priority restoration/fuel reduction projects by state and federal agencies with local private landowners. At least one position should be specifically focused on rangelands. The

geographic placement of these positions should be coordinated with Federal Forest Restoration Program Coordinators and landscape scale investments such as the Collaborative Forest Landscape Restoration projects, OWEB's Dry Type Forest Habitat Focused Investment Partnership, and forest collaborative partners to ensure alignment of program delivery and leverage funding to implement cross-boundary treatments at a landscape scale.

Recommendation 2: Develop an agreement with the US Department of Interior to foster more effective cooperation between the State and the BLM in funding and implementing wildfire mitigation strategies on Oregon's rangelands.

This agreement should be modeled after the existing Shared Stewardship Agreement that the state recently signed with the US Department of Agriculture, as well as the related GNA in place between the State and USDA. Partnership between state and federal agencies is essential to addressing rangeland fuels at a landscape scale across public and private ownership boundaries.[5]

B. Mid- to Long-term Recommendations

Recommendation 1: The state should expand its engagement with the National Resource Conservation Service (NRCS) in fire planning and action plans with private landowners in Oregon.

Recommendation 2: The state should coordinate and align project-related investments and planning horizons across large landscapes and related federal, state, and private programs.

For example, the state could coordinate state investments with federal lands treatments with targeted outreach and investments through ODF and small landowner assistance on adjacent properties.

Recommendation 3: The state should coordinate investments and activities with County Governments consistent with Community Wildfire Protection Plans. This effort will be improved by a re-visited definition of Wildland-Urban Interface as proposed elsewhere in these recommendations.

[5] In discussing this recommendation, committee members acknowledged the need to identify the appropriate state partner. The Committee recognizes the lack of one single clearly designated state agency whose jurisdiction and mission are centered on rangeland health and wildfire resilience, and also recognize GNA provides opportunities for engagement with counties and tribes.

Recommendation 4: The state should approach tribal governments and inquire about their interest in promoting coordination including cross-boundary projects, workforce development and other areas of interest to the Tribes, including how the State can support the development of the Tribal Forest Protection Act Projects with tribes in Oregon.

Recommendation 5: For rangelands, the state should prioritize wildfire risk mitigation investments (e.g., invasive annual grass inventory, treatment/spraying, and habitat restoration) in sage-grouse core and low-density habitat areas with higher burn probability and lower resistance and resilience, ideally before fire but also post-fire.

Successful restoration actions on rangelands (herbicide treatment or post-fire treatment followed by re-seeding / re-planting) will make lands more resistant to invasion by annual grasses that fuel large wildfires and more resilient in their recovery post-fire. Strategic targeting of restoration efforts can reduce risks to important sage grouse habitat and support recovery strategies for this highly vulnerable species while also supporting the local workforce, livestock economy, and other objectives.

V. Recommendation Area: Management efficiency and capacity

In order to meet the wildfire mitigation needs outlined in this report, state and federal agencies must significantly improve management efficiency and increase capacity. Committee members recognize that depletion over time of federal agency capacity in key program and field-level areas related to wildfire risk and ecosystem health presents a current impediment to addressing today's wildfire risk mitigation pace and scale needs. The state should actively participate in efforts at all levels – federal, regional, state, and local – to improve efficiencies, cost savings, and program/project delivery of land management agencies and align and grow staff capacity, resources, and expertise to match the scale of the wildfire and forest health crises. The ability to reduce wildfire risk mitigation costs is in many ways directly linked to opportunities related to management efficiencies and capacity, as is the ability to increase the pace, scale, and quality of work. The following recommendations are focused on management efficiencies and growing capacity.

A. Short-term Recommendations

Recommendation 1: Advocate for increased federal appropriations for funding and capacity to mitigate fuel risk in Oregon's forests and rangelands.

(A) The state (through the Governor, and in coordination with the legislature) should make a formal congressional appropriations request to the Oregon Congressional Delegation and key House and Senate Appropriations Committee Members to increase federal funding to the US Forest Service,

Bureau of Land Management, and Natural Resources Conservation Service commensurate to the wildfire risk mitigation need and to ensure that the federal "fire-borrowing / "wildfire funding fix" dollars are converted to wildfire risk reduction and mitigation action funding.

(This should include ensuring the federal Wildfire Funding Fix dollars are converted to wildfire risk reduction and mitigation.) The Governor should work with the Western Governors Association to prioritize funding requests for wildfire mitigation work.

In 2018, the United States Congress passed a Wildfire Funding Fix that will effectively eliminate future fire borrowing for large wildfires. This fix should result in additional capacity and resources to accelerate the pace and scale of forest management and restoration. As an example, the Forest Service has completed environmental review for fuel work on approximately 2 million acres of federal land in Oregon with an estimated cost of implementation of more than $400 million. However, there remains a risk of fire borrowing and/or not actually appropriating the budget savings from the Wildfire Funding Fix for fire risk mitigation work.

(B) The state should communicate its wildfire risk mitigation recommendations to the federal delegation and federal administration and seek increased federal funding to match state investment in wildfire risk mitigation work in Oregon consistent with the recommendations of the Governor's Wildfire Council to restore and maintain resilient landscapes.

Under Shared Stewardship, state funds invested to mitigate fuel conditions on federal forests or rangeland should be matched with additional federal funds through the US Forest Service or Bureau of Land Management.

B. Mid- to Long-term Recommendations

Recommendation 1: The state should continue to engage ongoing national federal agency reform efforts and submit comments when appropriate to increase efficiency and modernization of the U.S. Forest Service and BLM delivery of effective forest management services to the public. These efforts include modernization of forest products programs, analysis procedures and decision-making.

Recommendation 2: In order to increase the pace, scale, and cost-efficiency of planning, the state should work with the Forest Service and BLM to engage a contractor to perform a joint review of lessons learned and potential advantages to be gained from improved project planning and implementation processes that would enhance efficiency and effectiveness. These lessons should be shared across the state.

For example, this review could cover case study or other efforts to address creative or new approaches to NEPA planning, lessons learned from stewardship contracting, long-term stewardship contracts, or other large-scale or long-duration implementation efforts, and contracting, procurement, or other business model efficiencies in engaging the private sector or others in on-the-ground work.

Recommendation 3: In rangelands, the state should support the development of local capacity, economic and restoration infrastructure opportunities through increased investments in promising seed technology and other research and development (including decision support tools) and increased supplies of locally-adapted native seed and plants and related storage facilities.

Current restoration efforts are hampered by high failure rates (>90 percent) in reestablishing native bunchgrasses on drier low-elevation sites and limited and costly supplies of appropriate seed. Support for development of local native seed/plant supplies, storage and growing facilities is also an economic opportunity in rural rangeland communities.

Recommendation 4: The state should participate in cooperation with the private forest sector to support the forest sector careers and occupations necessary to address the state's mitigation needs. State agencies also could cooperate with forest partners to redouble student education efforts aimed to encourage trades and technical and life skills at high schools, community colleges, and tech schools. In addition, the state should support the next generation of forest and rangeland workforce in partnership with the state's educators and workforce development agencies.

Recommendation 5: ODF should develop a grant program focused on engaging private forest and rangeland owners (a) to increase their awareness of mitigation opportunities, advantages, and access to plan, and (b) to implement wildfire hazard mitigation treatments.

Furthermore, a grant program for these owners could incentivize and assist implementation efforts related to small or uninformed landowners who lack the means or initiative to engage in mitigation actions--that if implemented--would enhance the landscape condition in priority areas.

VI. Recommendation Area: 20-year Strategic Financial Planning

Mitigating wildfire risk includes addressing the forest and rangeland conditions that fuel a level of wildfire behavior and risk that is historically high and unnecessarily threatening to environmental, social, and economic values. Management history—including a long history of effective forest fire suppression, under-implementation of fuel management, and invasive annual grass intrusion into rangelands—and the onset of climate change combine to increase risk factors including the location, rate of spread, and intensity of wildfire today. The scale of the task is immense, and the Committee has endeavored to provide estimates of acre-age and related costs that would meaningfully address wildfire risk mitigation if applied strategically. The Committee has used the QRA to capture—in broad brush strokes—acres at risk, ownership, and costs to implement treatments under the status quo (existing budgets, laws, regulations, and existing tools). The Mitigation Committee's initial analysis reveals that the challenge facing Oregon involves 5.6 million acres and $4.1 billion in work costs to address areas currently at risk to negative wildfire impacts (i.e., these acres are within the top 4 of the 8 QRA risk classes) across public and private land ownerships (forest and rangelands).

As part of its methodology for arriving at cost and acreage estimates, the Committee looked at scenarios including costs associated with wildfire risk mitigation treatments addressing 100% and 40% of this high-risk acreage (top 4 QRA risk classes). Unit cost and related estimates underlying the Committee's analysis approach are based on figures associated with current practices / the status quo across eastern and western Oregon (and recognizing distinctions between federal and private costs) and a series of assumptions. While a number of caveats exist, Committee members felt comfortable with this as an initial approach to estimating the scale of the cost associated with the QRA-based acreage.

The Committee has landed on the 40% rather than the 100% treatment scenario for a variety of reasons including:

- Current science indicates that, in order to have a meaningful effect on wildfire behavior at a landscape scale, not all of the landscape needs to be treated. If done strategically, wildfire behavior can begin to be meaningfully changed with active management (fuel reduction through tree removal, thinning, prescribed fire) applied at around the 30% acreage treatment level. It should be noted that this assumption related to the resulting landscape-scale effect on fire behavior is based on natural or managed fire being allowed to treat acres beyond those treated through active management.

- For reasons of legal compliance and/or administrative planning overlays—as well as practical considerations related to physical geography or otherwise—treating 100% of the acres is unrealistic.

- As acreage treated moves towards the 100% level, there is a positive correlation to increasing costs. For example, machinery and labor costs grow significantly when certain acreage is brought into the treatment picture (i.e., helicopter logging to address steep slopes). There is a balance between costs relative to commensurate benefit from treatment.

Relative to the current scale of investment and on-the-ground work and using the higher risk acres in the QRA map as a frame (risk classes 1-4), the Committee recommends a multi-fold increase in fuel management over the status quo in the context of the development of a 20-year strategic plan. The following recommendations relate to the short as well as mid- and longer-term arc of such a 20-year plan.

A. Short-term Recommendations

Recommendation 1: Invest $16.5 million of state funds to expedite fuel reduction activities, using the Quantified Risk Assessment Risk Classes 1-4 to guide geographic prioritization. Under the auspices of the Shared Stewardship Agreement, propose at least a match from the Forest Service for projects implemented on federal land.

To effectively reduce wildfire risk, treatments are needed on both public and private lands, including in both forests and rangeland. The purpose of these treatments is to reduce the severity and impacts of wildfire to values at risk and to give fire managers options when considering operational tactics. It is important to understand that these mitigation actions will not fireproof the landscape, nor is that the goal. Mitigation treatments when fully implemented – including post-harvest treatment of slash and prescribed burning – are intended to modify fire behavior and reduce risk to life, property, critical infrastructure, and environmental values.

(A) $10 million to implement fuel treatments on federal and nonfederal forests.

This funding would implement fuel reduction activities based on current opportunities and capacity; it would not fund FTE or agency capacity (that is addressed elsewhere). Implementation would occur through ODF engaging the private sector workforce in contracts (i.e., not ODF seasonal doing this work), which in turn relates to local job and economic activity. This dollar figure has been shaped based on the state's current capacity to get contracts out the door and is constrained by both the existing contract / private sector workforce's ability to take on the work and ODF's contract administration constraints. Scaling up over time beyond this dollar figure will require efforts to expand workforce capacity in relevant geographies as well as agency capacity.

Nonfederal lands

Thirty percent of the highest priority acres for treatment are on private land. ODF staff will work with partners and property owners to identify willing landowners to implement fuel reduction activities. These potential partners include Oregon State University Extension, USDA Natural Resource Conservation Service (NRCS), Oregon Watershed Enhancement Board's (OWEB) Focused Investment Partnership, the American Forest Foundation, The Nature Conservancy, Pacific Forest Trust, private contractors such as Lomakatsi, and local community-based organizations and their related ongoing efforts and programs. ODF will establish a cost-share program analogous to current programs that use federal funds to conduct similar work. Additional state investments will leverage existing federal grant programs and partnership opportunities

Federal lands

Projects on federal lands must be authorized by a federal land manager using a process prescribed through NEPA and other laws. While fuel reduction and forest restoration projects often yield commercially valuable timber, logging activity needs to be followed with finer fuels reduction activities (e.g., noncommercial thinning, prescribed burns) if treatment is to effectively reduce fire risk and improve resilience, which increases project costs. In Oregon, an estimated 2 million acres are NEPA-approved and ready for job-producing fuel reduction work if funding and contract workers are available.[6] However, it is important to note that for most of these acres, commercial timber has largely either already been removed or the pre-treatment stand does not include trees of commercial size and value. In the short-term, additional state investment will prioritize completing noncommercial thinning, piling and prescribed burning on these acres.

Costs per acre vary significantly based on prescription needs and geography, ranging from $200-500 per acre. In addition, for federal timber sales where economic feasibility is significantly challenged by project costs (e.g., road construction/maintenance), state funds would be used to improve project economics through contract and administrative efficiencies, such as ODF utilization of Good Neighbor Authority (GNA). Priority for treatment would be given to acres already NEPA-approved and identified within QRA Risk Categories 1-4. Thirty percent of total funds would be used to prioritize projects of local importance and that intersects with other Council objectives. For state funds invested on federal land, the state should seek at least a match of additional investment by federal land management agencies.

- Target: 25,000 – 35,000 completed acres by June 30, 2022

[6] See Appendix C map depicting these areas.

- Delivery Mechanisms:
    - State contracts for projects on federal lands
    - Grants awarded for cost reimbursement to private landowners

(B) $3.5 million to contract environmental planning and analysis to advance additional future projects on federal land.

State contracts would be issued to complete required environmental planning and analysis needs associated with NEPA compliance. This approach would be in coordination with the USFS and partners, with the intent of state funding supplementing already-existing USFS project pipeline and improving efficiency. Costs per project vary based on ecological complexity, $150-$250K per project. Work would be tied to QRA high-risk categories and action types that mitigate fire risk and improve forest resilience, or fall within the 30% of investment set aside for projects of local importance and that intersect with other Council objectives. On-the-ground work would occur in future years, but building and ensuring project shelf-stock of relevant actions in relevant geographies is the goal of this funding.

To date, ODF has tested this model of using state funding to advance federal land environmental planning through NEPA categorical exclusions (CE's). CE's are relatively inexpensive planning approaches that come with a relatively high degree of stakeholder controversy and are very limited in the project size that can be advanced. ODF understands that, in order to effectively address wildfire risk mitigation needs, projects are needed on a much larger scale. In this regard, this funding is not focused squarely on CE's but intends to advance planning at a larger scale. To date, private contractor response to state requests for proposals to advance environmental planning and analysis has been relatively limited, so this funding will again test and potentially result in market capacity challenges. Projects would be selected based on a survey of national forest system units to identify locations within QRA high-risk categories where wildfire risk mitigation project opportunities still need environmental analysis work.

- Target: at least 15,000 acres NEPA-approved for treatment by June 30, 2022, with additional acreage under consideration;
- Delivery Mechanism:
    - State contracts

(C) $500,000 to conduct unit layout for federal forest restoration projects.

Since its inception in 2013, Oregon Department of Forestry's (ODF) Federal Forest Restoration Program (FFR) has used state funds to conduct unit layout

(inclusive of commercial and non-commercial activities) on upcoming projects to be administered by the USFS on national forestlands. The intent of this investment is to expedite getting projects under contract.

- Target: 15,000 acres, including both commercial timber harvest and noncommercial acres
- Delivery Mechanism:
    - ODF seasonal employees on the shoulder of fire seasons
    - Implementation activities (i.e., timber sales, noncommercial thinning) administered by US Forest Service

(D) $1 million to reduce invasive annual grass-driven fire risk on rangelands.

Rangelands, which cover approximately one-third of Oregon, have been hit with an increasing number of "megafires" in recent years. In 2012 alone, three large fires burned more than 1 million acres of southeast Oregon rangeland, with major impacts on local communities, the livestock industry, and the state's dwindling population of sage grouse, a species that narrowly avoided listing under the federal Endangered Species Act in 2015. The severe fire weather conditions (high winds, low humidity, high temperatures) that typically drive large fires occur almost every year in rangeland settings. Due to the widespread invasion of cheatgrass and other non-native annual grasses into rangelands, highly flammable and continuous fuel is now present throughout much of the landscape and can burn rapidly and severely under the right conditions. Long-term investments in treatments to reduce invasive annual grasses and re-establish perennial bunchgrasses are needed to create more fire-resistant and resilient rangelands. Initial estimates of rangeland treatment needs in QRA high-risk priority watersheds total 1.9 million acres and just over $1 billion. Improved seeding technologies, local capacity, and outcome-based grazing strategies may lower costs in the future, but implementation will require the development of a new programmatic framework for investment at the state level to support effective and efficient action through community-based partnerships.

The state should provide an initial $1 million in 2020 for a grant program focused on reducing fuel loads associated with invasive annual grasses across Oregon's rangelands. This is intended as a long-term grant program. While a $1 million / biennium investment is well short of what it will take to address invasive annual grass priorities at a relevant scale, the program would be piloted at this initial level and adapted over time based on its ability to advance effective outcomes in priority areas and leverage other dollars and partners. Grants would be provided to eligible nonprofit entities,

implementation entities (e.g., Soil and Water Conservation Districts), Tribes, or local governments for:

- Strategic planning,
- Local capacity building,
- Implementation of treatments, and
- Related investments to mitigate the risks and impacts of large wildfires

Delivery Mechanism: This grants program would be administered by the Oregon Watershed Enhancement Board (OWEB), who would design the program in consultation with the Oregon Department of Agriculture, Oregon Department of Forestry, Oregon State University Extension, Oregon Invasive Species Council and State Weed Board, the Bureau of Land Management, USDA's Agricultural Research Service, and other members of the state's SageCon Partnership.

(E) $1.5 million state funds for additional forest collaborative capacity funding, including technical assistance with restoration science, outreach, funding, implementation or environmental analysis.

The Oregon Department of Forestry administers the Federal Forest Restoration Program (FFR) to increase the pace, scale, and quality of restoration on Oregon's federal forests. As part of the program, ODF partners with the Oregon Watershed Enhancement Board to administer Collaborative Capacity Grants intended to increase restoration efforts on federal forests statewide by enhancing and strengthening the effectiveness of local collaboratives. The primary goal of these grants is to increase the number, acreage, and complexity of collaboratively planned restoration projects on federal lands in Oregon. Grants are prioritized for the development, expansion, and/or advancement of collaborative Zones of Agreement for restoration that include vegetation management on either USFS- or BLM-managed lands. A secondary goal is to improve the capacity of collaborative groups to achieve this outcome.

ODF also administers funds (Technical Assistance and Science Support) to qualified contractors to provide applied science and technical support to collaborative groups to achieve their desired objectives. Examples of services include the provision of original research, science synthesis, monitoring plans, communication support, trainings, and facilitation needs.

These components are essential to fostering social agreement and legal support for increased on-the-ground management, and demand consistently exceeds available resources. Achieving the substantial landscape-scale

planning and restoration needs identified in the QRA and through other methods will require a commensurate increase in funding for collaborative capacity, coordination, and technical assistance related to the expansion of future project pipeline.

The recommended proposed funding should be allocated to advance the above foundational program purposes and to enhance program effectiveness. Particular enhancements should include (through a budget note or other mechanisms) direction to:

- Address capacity, technical assistance, and science support needs associated with collaborative work and statewide needs that cross land ownership boundaries (i.e, working with OSU Extension and other partners); and
- Ensure performance and accountability measures exist to track and incentivize collaborative on-the-ground project development work in QRA-priority as well as other geographies (tied to Committee's recommendation for 30% non-QRA prescribed funding) and at a pace and scale commensurate with Oregon's wildfire risk mitigation needs.

Address and increase collaborative capacity, technical capacity, and science support needs and opportunities associated with collaborative agreements for priority project actions in Oregon's public and private rangelands.

In addition to increasing collaborative capacity in forests, state investment is imperative in rangelands. State investments can be administered by ODF or OWEB to:

- Increase collaborative capacity and provide technical capacity, and science support needs to increase understanding, design, and agreement for landscape-scale treatments in rangelands.

Recommendation 2: Authorize expenditures of a total of $6.5 million - including $1.5 million of state funds – to increase programmatic capacity to advance wildfire risk mitigation projects.

Recommendations 2(A) and (B) below are inter-related with budget Recommendation 1 item above. But whereas Recommendation 1 is about advancing on-the-ground project funding and contracted or granted funds to generally private sector entities, Recommendation 2 is focused specifically on agency capacity and staff to advance work.

(A) $5 million of additional federal/other fund spending authorization to increase ODF capacity to implement the Good Neighbor Authority.

In recent years, the State of Oregon has experimented with a new authority called "Good Neighbor Authority" (GNA), which allows states to implement

restoration projects on federal lands using federal dollars, while also allowing the state to retain the funds generated by commercially-valuable timber harvest as "program revenue." Concerns have been raised about the use of program revenue and the efficacy of the authority to increase restoration capacity.[7] Therefore, accountability and transparency measures should be created and implemented commensurate with the expansion of this program in Oregon. Specifically, the State should: 1) require a percentage of program income to be reinvested in noncommercial restoration treatments (e.g., prescribed burning, culvert replacement, noxious weed treatments, fencing) on federal lands (and nonfederal lands as appropriate); and 2) work with stakeholders to develop outcome-based performance metrics and biennial reporting requirements.

In response to a growing portfolio of projects under the Good Neighbor Authority (GNA), ODF has identified the need for an additional 20 FTE in the field to implement projects. Currently, ODF has over $9 million of agreements to utilize federal funds through GNA to conduct this work. ODF requires additional capacity to contract and oversee this work on federal land. This additional program capacity is primarily NRS2 "GNA Forester" positions that would be based in southern and eastern Oregon and situated to address wildfire risk mitigation needs in priority geographies.

(B) $1.5 million state funds to seed program capacity at ODF for procurement and contract administration.

Additional state investment will require additional program and administrative capacity within ODF and additional forestry contractors to complete work at a much greater scale. Without additional capacity, the expected execution of near-term state investment would be limited. In addition, a one-time investment of $500,000 of state funds would be used to frontload the GNA Forester positions and transition funding to 100% federal by the end of the 2021-2023 biennium.

Position Details:

- FTE, including:
    - 1 NRS4 Federal Forest Restoration Planner
    - 3 FTEs for project administration, including
        - 1 PA2 All-Lands Grant Manager
        - 1 PCS2 Procurement and Contract Specialist

[7] See, Rural Voices for Conservation Coalition, Understanding Good Neighbor Authority: Case Studies from Across the West (Sept. 2018) available at https://static1.squarespace.com/static/562e839ee4b0332955e8143d/t/-5bb64dde7817f799e3355fed/1538674144568/RVC+GNA+2018_web_.pdf.

- 1 FA2 Fiscal Analyst

B. Mid- to Long-term Recommendations

Recommendation 1: In developing its 20-year financial plan, the state should identify current revenue trends from management of public and private lands, current shortfalls for meeting the Mitigation Committee's recommendation to treat 5.5 million acres in 20 years, and options for securing additional revenue from diverse funding sources, more economical program procedures, and non-traditional and non-public financing options.

Recommendation 2: The State should evaluate economic opportunities and feasibilities for public energy policy changes that could incentivize private business sector investment in woody biomass power plant, or biofuels, commercial production.

Current state renewable power portfolio and other pending carbon proposals discriminate against forest biomass investment. Added new biomass power production capacity would benefit future wildfire mitigation fuel treatments by consuming currently non-merchantable forest fiber. Addressing the above recommendation would likely require policy changes and lawmaking regarding several aspects of production and sales.

Recommendation 3: State and federal land managers, together with the forest sector and other wildland stakeholders, should continue to pursue reforms to federal and state forest contracting tools to increase value-volume availability.

Possibilities include new and improved contracting methods, federal appraisal process, calculation of the federal government estimate for contracted work, contract types, and contract lengths.

Recommendation 4: The state should identify new revenue sources to fund wildfire risk reduction activities for the benefit of all Oregonians, recognizing that all Oregonians benefit from fire risk mitigation work. Examine SB 357 Task Force report and potential funding options in addressing committee-level recommendations to the Council.

Recommendation 5: The state should conduct an analysis of opportunities and barriers to land management agencies utilizing conservation finance tools. The state should determine if any policy changes or new authorities are necessary to utilize these tools and develop a pilot conservation finance project to fund fuel reduction..

Recommendation 6: The state should evaluate opportunities to increase the quantity and value, and reliable availability of road reconstruction and construction work offered by public lands on a predictable and reliable basis, which would motivate increased private forest sector investment in expanded road-heavy construction infrastructure capacity (construction, forest contracting). Such expanded capacity then would be available to maintain necessary wildland road access that affords wildfire mitigation projects, as well as provides landscape access to improve, maintain, and construct access and protection assets necessary to conduct mitigation and suppression activities.

Recommendation 7: In building a 20-year Financial Plan, the state should recognize the importance and value of a healthy, economically competitive forest products sector (infrastructure and workforce) to achieving the state's mitigation and restoration goals.

Forest product manufacturing, distribution, transportation, construction, and forest contracting infrastructure tied to on-the-ground forest work are necessary to ensure ongoing vegetation management and fuel treatments are accomplished. If increased wildfire mitigation treatments are to be accomplished, then increased forest sector capacity will be required.

Factors important to increasing forest sector capacity include greater certainty, increased economic value of commercial and non-commercial material from the forest, and operational considerations. It is the Mitigation Committee's view that the adoption and implementation of a 20-year Financial Plan will help achieve these objectives.

VII. Recommendation Area: Accountability and Information Management

There is currently no one agency or partner tracking wildfire risk mitigation treatments across all ownerships in Oregon. Oregon's Federal Forest Dashboard, developed in 2017 in partnership with USDA Forest Service Pacific Northwest Region, Oregon Department of Forestry, Oregon Solutions, Oregon Forest Resources Institute, and The Nature Conservancy identified six metrics to evaluate the effectiveness of activities focused on increasing the pace and scale of forest management and restoration across six National Forests in eastern and southwest Oregon. The effort discovered significant challenges in utilizing existing databases, and the question of whether relevant or appropriate metrics are currently being used to evaluate monetary investment and project actions to mitigate fire risk was not addressed.

A. Short-term Recommendations

Recommendation 1: Develop performance measures and metrics relevant to measuring wildfire risk mitigation progress across all ownerships.

The Governor's office should work in coordination with the Oregon Department of Forestry, federal land management agencies, and third parties to develop consistent performance measures and metrics for monitoring and communicating the effectiveness of additional state and federal investments and project actions in mitigating the risk of wildfire. The state and federal land managers should develop and use a condition-based metric for wildfire treatments and related budget line items. The use of simple, linear metrics/outputs (e.g., acres treated, stream miles restored, timber volume) are relevant to broader objectives such as community economic health and should be maintained but should not be used as proxies for wildfire mitigation treatment effectiveness. For the objective of wildfire risk mitigation, new condition-based metrics will inform or evaluate the strategic deployment of management actions to address landscape-scale fire dynamics which may change over the long term. Therefore, more appropriate metrics would be the percent of total landscape and percent of high-risk acres effectively treated, and how those percentages have changed since the last evaluation period. These metrics could be applied at both landscape and project-level scales.

- In forests, an effective treatment project reduces crown fire potential (e.g., ladder fuel reduction), increases vegetation resilience (resistance can be part of resilience in frequent-fire forests), and reduces fire intensity through surface fuel reduction. Metrics would be tied to these types of condition-based values.

- In rangelands, an effective treatment promotes ecosystem resistance/resilience through the promotion of stable bunch grass and sagebrush communities. Conditions for the rangeland environment are well described and evaluated by using an invasive annual grass threat state-and-transition model (Boyd et al. 2014). The model describes certain vegetation states and transitional phases based on the amount of sagebrush cover and the cover ratio between invasive annual grasses and perennial grasses. This not only provides a baseline to evaluate the feedback loop of wildfire to invasive-dominated degraded landscape but also relates to the quality and type of wildlife habitat present. This approach can be used to determine desired management trajectories for local and regional scales, and directly correlates to resistance and resilience (R&R) (Chambers et al. 2014). Using condition-based metrics based on this model promotes management trajectories consistent with the desired ecosystem and habitat conditions within multiple scales. The word trajectory is appropriate here because the focus should be on the maintenance of desired conditions or movement from undesired to desired conditions, as opposed to simply measuring or promoting the specific tools or practices used to realize these trajectories.

- Concurrently, state and federal managers should assess and evaluate changes in consistent-ly assessed quantitative risk metrics such as expected net value change (eNVC), focusing on percent change and trajectories over time.

- Treatment objectives should be explicit and tiered to landscape strategies for reducing wildfire risk, which may reduce exposure to specific resources or support fire suppression such as reinforcing fuel break networks (e.g., POD boundaries), particularly near jurisdictional boundaries.

- In addition to the above-recommended bullet approaches, other potential metrics could be developed and applied to measure the reduction in exposure of specific resources such as communities and structures, timber resources or critical habitat. It is possible to determine reductions in the exposure of these specific resources through additional analyses (e.g., Rogue Basin strategy and other research have demonstrated these use cases).

Further, the State should work with federal land managers to establish performance standards, directives, and policies that prioritize project outcome accomplishment—rather than an emphasis on process. Partnership-building, collaboration, and other forms of shared stewardship in implementing wildfire risk mitigation activities are necessary activities—however, project accomplishment is the most important function for which to measure performance.

B. Mid- to Long-term Recommendations

Recommendation 1: The state should formalize commitments from the Forest Service Regional Office to share data and increase standardization regarding data entry for a selection of primary metrics and secure a similar commitment from the BLM. Ensure the data is usable by partner agencies. Utilize the Shared Stewardship Agreement to increase the state's interest in monitoring outcomes and database design and management. This may include relinquishing some exclusionary management of particular databases.

Recommendation 2: The state and federal land managers should develop benchmarks, processes, and reporting mechanisms that integrate outcomes across ownership boundaries and enables treatments to be tracked across all ownerships in Oregon. The metrics and data sharing should be common between state and federal databases. Convene a technical team to evaluate existing metrics and establishing a methodology/formula to assemble an integrated benchmark that tracks with the Shared Stewardship Agreement objectives and incorporates outcomes on other federal (BLM) and private lands.

The State of Idaho recently convened such an advisory council to implement its Shared Stewardship Memorandum of Understanding with the Forest Service and may provide a model for Oregon, consistent with the differences reflected in each state's SSA.

OTHER OPPORTUNITIES AND TRADEOFFS

The Mitigation Committee raised the following issues that its members believed were important for addressing the state's wildfire mitigation need.

Environmental permitting "streamlining" and "litigation relief"

In response to the complex federal legal framework governing the management of national forests and other federal public lands, some stakeholders have suggested changes to these requirements, including exempting fire risk reduction and restoration from judicial review, making statutory changes to NEPA, the ESA, and other environmental statutes. Other stakeholders have suggested wholesale changes to federal laws explicitly permitting or requiring logging on public lands. Council members should be aware that substantive changes to federal statutes are not only highly controversial but also are highly unlikely in the current political environment in Washington, D.C.

Inconsistent statutory mandates

State and federal land managers have different jurisdictions over land management (and therefore wildfire risk reduction and restoration) that stem from different statutory mandates. For example, federal lands are generally managed for multiple uses that allow for a broad range of options for wildfire management; but the Oregon Forest Practices Act requires the state of Oregon to suppress all fires at an "initial attack" (as soon as a fire is spotted). These inconsistent and conflicting statutory mandates mean that cross-border or all-lands management as recommended by the National Cohesive Wildland Fire Management Strategy can be difficult. However, there are areas where land managers can work together to achieve mutually-acceptable outcomes, and the Mitigation Committee has proposed recommendations to that effect.

Federal agency business model

The Forest Service has undertaken several internal and external analyses of its business practices in an effort to increase the efficiency of its decision-making. Most recently, the Forest Service engaged in its "Environmental Analysis and Decision Making" initiative, which has concluded that the primary barriers to efficient decision-making include a lack of consistent and robust federal funding for land management and other activities, a lack of sufficient training for agency personnel, and a substantial lack of qualified personnel. See generally, National Forest Foundation, Regional EADM Partner Roundtables - National Findings and Leverage Points (May 2018) available at https://www.nationalforests.org/-assets/pdfs/National-EADM-Report.pdf. Peer-reviewed literature and stakeholder experience support this finding.

Changing the Forest Service's business model is outside the direct scope of the State's control, yet it is a significant barrier to efficient project planning and implementation.

Contracting mechanisms

The Forest Service has a number of contracting tools to carry out wildfire risk reduction, restoration, and adaptation activities, including timber sales, service contracts, stewardship contracts (short- and long-term [up to 20 years]), integrated resource service contracts, integrated resource timber contracts, grants and agreements, and good neighbor authority, among others. While contracting tools hold promise, many contracting mechanisms are relatively new and have not been used at their full potential scale. Forest Service personnel have also been reluctant to embrace new contracting tools and to adopt changes to existing contract-ing mechanisms that will improve outcomes for diverse parties. The Mitigation Committee believes this is a barrier that can be overcome and has proposed recommendations to that effect, infra.

Additionally, it is important to note each contracting mechanism has unique financial implications for user groups and public entities. For example, when the Forest Service or BLM uses a "stewardship contract" (mixes commercial value with non-commercial restoration activities) or GNA agreement (utilizes state resources to help execute a federal timber sale) Oregon counties do not receive timber receipts from these sales. Because federal "Secure Rural Schools and Community Self-Determination Act" (SRS) payments have expired, Oregon counties are entitled to 25% of timber receipts on Forest Service lands and 50% of timber receipts from O&C Lands. The type of contract used by Federal land management agencies has a direct impact on how and where timber revenues are reinvested (counties, U.S. Treasury, the forest). Any change to federal contract types – such as the direction to use Stewardship Contracts on all forest work to in-crease dollars available for restoration – have profound and complex implications for numerous user-groups.

Workforce capacity

The need for wildfire risk reduction, restoration, and adaptation across the state of Oregon is immense. However, land management agencies, timber industry, and other service contractors struggle to hire and retain qualified workers for a number of reasons, including the lack of an appropriately aged and skilled workforce, low wages, inconsistent market dynamics, competition with undocumented workers, and drug screening requirements. The Mitigation Committee believes this is a barrier that can be overcome and has proposed recommendations to that effect, infra.

Alter prescriptions to increase harvest levels and/or removal of commercially-valuable wood products.

A common response to the need to reduce wildfire risk – specifically, to the need to pay for risk reduction activities – is to alter timber harvest prescriptions to increase the amount of commercially-valuable products removed from a site. This can be done by reducing the basal area (the area of a timber stand covered by trees), increasing the diameter of trees removed, or other methods. While these approaches can increase the amount of timber/fuel re-moved,

there are tradeoffs from this approach. For example, on the west side of the Cascades, the United States Fish and Wildlife Service generally requires the retention of a higher basal area in order to meet the ecological needs of the northern spotted owl (although there are exceptions for drier forests within the range of the species); and on the east side of the Cascades, eliminating the "21-inch rule" (which requires the retention of live trees 21" in diameter at breast height and is a requirement in forest plans in eastern Oregon) is controversial with the environmental community. Efforts to alter specific prescriptions to increase timber harvest are generally beyond the scope of the Mitigation Committee or Council as these decisions reside with agency personnel consistent with relevant forest plans, laws, regulations, policies, and budgets Social license supporting alteration prescriptions is essential but is time-consuming to obtain.

Incomplete Forest Management Treatments

Prescriptions for projects on federally managed fire-prone forests for fire risk reduction and restoration generally include a series of land management treatments, beginning with "commercial thinning/harvest" often accompanied by pre-commercial thinning, mechanical fuels treatments and concluding with prescribed fire. Following the completion of the NEPA, the commercial thinning/harvest typically occurs within a relatively short time-frame, several months to a year. The other treatments, however, are often delayed for many years (5-10 years). The delay may be attributed at least in part to workforce capacity, burn windows, harvest timing, and lack of funding/resources. Presently there are over 2 million acres of NEPA approved hazardous fuel "shelf-stock" – meaning work that is ready to be implemented but for which there are inadequate workforce and resources/funding. The Forest Service estimates it would cost more than $400 million to treat these two million acres (a combination of prescribed fire and non-commercial thinning). It's also important to note that these un-treated "shelf-stock" acres do not necessarily overlap or align with the "at-risk" acres depicted by the QRA.

Payments to counties

A number of federal laws provide for federal payments to counties in lieu of the ability of the counties or state to tax federal land, including The 1908 Act (also known as "the 25% fund"), Oregon and California Lands Act, Payments in Lieu of Taxes Act (PILT), and the Secure Rural Schools and Community Self-Determination Act (SRS). These and other statutes provide direct payments to states and counties, usually as a percentage of receipts received from extractive activities on federal lands. Traditionally, as timber harvest levels increased, so did payments to counties; and vice versa. Since 2000, Congress has provided consistent payments to states and counties through the Secure Rural Schools Act, rather than continuing reduced receipt payments. However, this law expired and renewal efforts by Congress are highly uncertain. Currently, the state and counties receive payments based on the 25% Fund, O&C Act (50% payments), and PILT (a complicated formula, and congressional appropriation, dictates this payment amount), which are far less than the stable payments provided under the Secure Rural Schools Act.

One way to address this issue is to increase the timber harvest from federal lands, which in turn would increase receipts to counties to support essential services like education, transportation, law enforcement, and mental health services. However, as described elsewhere, efforts to dramatically increase federal timber harvest levels are politically, economically, and socially complex – and are not within the purview of the state. Resolving the need for stable payments to counties is outside the scope of these recommendations, but it is a significant consideration that should be addressed by the Oregon congressional delegation and United States Congress.

Maintenance treatments

The Mitigation Committee prepared an analysis, based on the QWRA map and supporting materials, which indicates that there are 5.6 million acres of land at risk from wildfire and that addressing this need would have an initial cost of approximately $4.1 billion. Importantly, this dollar figure only considers the cost of a single, initial entry to address wildfire risk and restoration. It does not include maintenance treatments, including regular prescribed or managed fire, which the best available science indicates is essential for maintaining risk reduction over time. It will cost billions of additional dollars into the foreseeable future to restore and adapt Oregon's lands to be more resilient to climate change and other stressors and disturbances such as wildfire. It is essential that decision-makers and stakeholders understand the enormity of the task ahead and that we are living in a new normal that will require substantial investment in wildfire mitigation and adaptation.

Carbon, climate change, and Oregon's forestlands

There is no question that Oregon's forests – regardless of ownership – are one of the most carbon-rich forested ecosystems on the planet. However, these forests sequester carbon and provide climate-stabilizing benefits in different measures. Our westside forests (typically Douglas-fir and hemlock) absorb carbon quickly, and sequester it for long periods of time, particularly within older age classes. Our eastside forests (typically ponderosa pine or mixed conifer) sequester carbon at a slower rate generally, and because of their frequent-fire disturbance patterns – carbon here is stored in older trees and below-ground. Forests in southwest Oregon (Douglas-fir, ponderosa and sugar pines, madrone, and other hardwoods) are a mix of west- and east-side carbon dynamics. Addressing the tradeoffs from wildfire risk reduction, restoration, and adaptation activities on carbon sequestration and climate effects is outside the scope of these recommendations, but the Mitigation Committee believes it is important to consider and acknowledge such tradeoffs in management decisions and encourages all land managers to make such decisions in an open, transparent, and inclusive fashion. Further, incentives that relate to carbon sequestration could provide funding for needed wildfire risk reduction treatments.

Other barriers

The Governor's Wildfire Council and its Committees are not the first entities to consider ways to improve the efficiency and effectiveness of federal land management and the role of states and

other partners. In 2018, the Federal Advisory Committee for the Implementation of the Forest Service's 2012 National Forest Management Act Planning Rule delivered numerous formal recommendations to the Forest Service to improve the pace, scale, and quality of land management planning, including recommendations on Shared Stewardship and several of the topics within the scope of the Mitigation Committee and of interest to the Wildfire Council. Available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS-/fseprd575909.pdf. The Mitigation Committee strongly encourages the Wildfire Council and the Governor to explore these recommendations and to work with the Forest Service to implement them as appropriate.

Appendix A

Jurisdictional Considerations and Land Ownership Types

Context for Short Session Recommendations from the Mitigation Committee

It is essential that decision-makers and members of the Governor's Council on Wildfire Response understand that while the State of Oregon has an important and influential leadership role to play in mitigating wildfire risk across the state, it also has a limited role in compelling other landowners to act, including the largest landowner in the state: the Federal Government. The state of Oregon has legal jurisdiction over 29 million acres of land, approximately 46% of a total of 63 million acres. Other landowners, particularly the federal government and Tribes, have the legal authority to directly manage 33 million acres. The goal of this memo is to outline the jurisdictional considerations for different land types so that decision-makers can more easily understand the State's opportunity and limitations when making investments within a specific WUI area or at the policy level.

The Mitigation Committee worked collaboratively to provide critical legal and policy background, the context of acres at risk by ownership, and an overview of regulatory requirements to ensure the Council is adequately informed about the complexity and nuance of forest and rangeland management across multiple ownership boundaries in Oregon. Despite this difficult jurisdictional situation, the State can and should take a leadership role in convening federal, nonfederal, state, tribal and private landowners, local governments, and non-governmental organizations to work together to reduce fire risk across all ownerships. This is especially true in light of the Shared Stewardship Agreement between the United States Forest Service and the State of Oregon which presents an opportunity for collaboration between federal and state governments to implement wildfire risk reduction treatments on the ground. To that end, the following memo de-scribes the diversity of land ownership types and their associated considerations for Oregon's wildfire mitigation approach based on the recommendations of the Mitigation Committee for the Governor's Council on Wildfire Response.[8]

I. Nonfederal Private Lands.

Nonfederal private lands, including Tribal, represent a total of 28.1 million acres statewide. Within this category, there are several types of land ownerships. Based on their proximity to wildlands and fire-prone areas, these different land ownerships may fall into WUI categorization.

1. **Private Residential Properties**

   Private properties within large municipalities and in rural communities for residential purposes require significant investment in municipal infrastructure, including utilities, community buildings, roads, etc. The density of residential communities may impact the availability of resources for wildfire response, though

[8] One Committee member noted that in addition to the risk at the location of a resource or asset that may be damaged by fire, mitigation measures should take into account the source of damaging fires and be prioritized accordingly.

the expectations for safety, human health, and property protection are likely the same. It is worth noting that communities like Bend and Ashland with high densities of private property are located within areas considered WUI, as are smaller communities like Cove and Lakeview- this is because of their geographic location in proximity to wildlands. In addition to residential properties, there are several types of private property that pre-date land use regulations, which include dispersed residential structures and other support structures for managing the land. Small forest or farmland, which may or may not include primary residences is also of high value for private landowners. Small forest and farms represent long term investments and can be managed for a variety of outcomes, but in all cases are high-value assets to the owners and should be considered in wildfire response policies.

2. Infrastructure Facilities

Oregonians residing, visiting, recreating, working, owning, investing, or traveling through wildlands have expectations and needs for safety and health within the rural-wildland interface. Rural infrastructure assets and conditions are necessary to afford the safe and healthy egress, living, and activity in Oregon's wildlands. A large majority of Oregon's rural communities have a direct intersection with wildland forests and rangeland wildfire hazards—as such there are significant rural infrastructure assets and property that warrant consideration for wildfire mitigation actions to address hazards threatening high-value human resources and public safety/health. Furthermore, important public utility and communications assets traverse wildland areas.

"Infrastructure facilities" refers to those often-dispersed improvements located within wildlands, which are commonly not affiliated or located within the Wildland Urban Interface—such dispersed utilities for power or water, irrigation facilities, property access easements, roads, etc. that are critical for urban life, commerce, rural life, public safety, and health. Although these infra-structure facilities cannot easily be assigned to a single land ownership type, their relevance to landscape-scale wildfire mitigation is equally important to acknowledge at the place-based land ownership level.

3. Private Forestlands

Private forestlands include both industrial ownerships and family ownerships. The state differentiates between industrial owners and family owners based on possessing 5,000 acres or more (industrial) or as less than 5,000 acres (family). Industrial ownerships represent approximately 6.6 million acres out of 10.2 million acres of privately-owned forest land. Family forestland com-prises approximately 3.6 million acres. The rest are small forest owners with parcels of less than 80 acres.

In both cases, the land is zoned for forest management and timber harvest. Forestlands are commonly and primarily managed for wood fiber, producing a high level of forest products and affiliated forest resource values. The timber potential on forestlands contributes to its high monetary value. Forestland also provides critical support to wildlife habitats, species diversity, water quality and quantity, forage, wetlands, recreation, and aesthetic values. Forestland management is governed by the Oregon Forest Practices Act.

4. Private Rangeland and Other Wildland

Private landowners manage rangeland and other non-forested wildlands for a wide variety of purposes, which may change over time and may at times include agricultural and or forestland purposes on a portion of the ownership. Forage production, cattle, habitat, wetlands, aesthetics, legacy, residential, or agricultural purposes are common management strategies in this land-ownership type. Although these lands are typically not forested, such land ownership parcels are often owned and/or managed in conjunction with forestland or agricultural purposes within the same ownership parcel. Regardless of whether a landowner has multiple land uses within the same parcel, many private rangeland parcels are located adjacent to forestland ownerships (private, public or federal forestland).

II. Public-Nonfederal Wildlands.

1. Tribal Forestland and Rangeland[9]

Tribal governments in Oregon own and manage 484,000 acres of forestland and 716,000 acres of rangeland within Oregon.[10] Tribal forestland and rangeland are considered together because of their unique sovereign management by each individual tribal government entity. The different tribal ownerships have a variety of objectives, including managing areas for multiple uses, re-source values, parks, and conduct other land management actions.

2. State Forestland

The State of Oregon owns and manages 945,000 acres of forestland across all of its State agencies with a total land estate of 1.8 million acres. Examples of state-owned forestlands include the Tillamook and Elliott State Forests, State Fish & Wildlife Areas, State Parks, State Natural Areas, and state/federal highway corridors. The different State of Oregon ownerships have a variety of objectives, including

[9] There has been some discussion as to whether Tribal forests should be discussed under the private lands or the public lands sections. The committee has not yet resolved this issue.
[10] This totals 1.2 million acres according to OFRI Forest Facts, although the QRA total is 989,000 acres.

managing areas for multiple uses, resource values, parks, and conduct other land management actions. The State of Oregon conducts a full range of active management activities applicable to each particular entity's authority. When the State of Oregon conducts timber harvest on state lands, it must do so under the requirements of the Oregon Forest Practices Act. Typically, the Oregon Department of Forestry oversees the management of State of Oregon lands.

3. Local Government Forestland

Taken together, local governments own and manage 203,000 acres of forestlands. Examples of local government-owned forestlands include county forests and parks, Oregon State University forests, municipal watersheds and parks, Portland Metro parks and nature preserves (outside its Urban Growth Boundary), county road corridors, and so forth. Local government-owned lands are managed in accordance with their respective local jurisdictional regulations, as well as Oregon's forest and land use regulations.

4. State Rangeland and Non-Forestland

The State of Oregon owns and manages some rangeland and non-forested wildland (e.g. Com-mon School Fund, Oregon Department of Fish and Wildlife, Parks, Department of Transportation, Department of State Lands). Examples of state-owned non-forestlands include DSL rangelands and wetlands, State Parks, State Natural Areas, and highway/federal highway corridors. These State ownerships have a variety of multiple-use land objectives applicable to each particular entity's authority.

The current QRA data does not distinguish between how much of the state's land is forested vs. non-forested.

III. Federal Lands.

1. National Forest Lands

The United States Forest Service (in the Department of Agriculture) manages 14.1 million acres of forestland, out of a total of 15.8 million acres. These lands are managed for multiple uses set forth in a number of federal statutes enacted by the United States Congress including the Organic Act, Multiple Use-Sustained Yield Act, National Forest Management Act, and other laws including the Endangered Species Act, National Environmental Policy Act, and Clean Water Act, among others.

There are 12 national forests in Oregon. Each National Forest has a "Land and Resource Management Plan" that function as "zoning plans" for each National

Forest and contains mandatory constraints on land management as well as objectives for management. Land and Resource Management Plans contain "land use allocations" where specific types of land management, including vegetation manipulation, and timber harvest, are encouraged, constrained, or prohibited. Note: Not all lands identified as "high risk" by the QRA are available for all management activities either due to limitations of slope and access or related to management designations.

Since wildfire risk reduction treatments may include timber harvest activities, it is important to understand the context in which those actions are managed. When the Forest Service conducts timber harvest on national forest lands, it must do so consistent with the applicable Land and Resource Management Plan and must undertake an environmental analysis prior to harvest. The Forest Service is also required to seek public comment on its timber harvest proposals. If there are species listed as Threatened or Endangered under the Endangered Species Act within the proposed management area, the Forest Service must also seek and secure the authorization of the United States Fish and Wildlife Service (for listed terrestrial and non-anadromous fish species) and/or the National Marine Fisheries Service (for listed anadromous fish and ocean-dwelling species). The Forest Service must also consult with recognized Native American Tribes regarding how timber harvest plans may affect cultural resources. The average length of time nationally for the Forest Service to complete an Environmental Analysis (EA) for forest management work is 687 days at the cost of $1 million. The average length of time for the Forest Service to complete a Categorical Exclusion (CE), used for common activities, for forest management work is 206 Days at a cost of $283,000[11]. Agency actions can be administratively challenged and/or challenged in Federal court which adds time and cost to figures above.

The Forest Service manages all wildfire on national forest lands in accordance with the 2009 Guidance for Implementation of Federal Wildland Fire Management Policy. This policy defines two kinds of fire: planned fires, such as prescribed burns, and unplanned fires. The current policy states that wildland fire response will carefully consider the long-term benefits of fire outlined in Land and Resource Management Plans in relation to risks both in the short and long term. This translates into a range of response to unplanned fires that weighs risks to lives, property and ecosystem health today against the potential impacts of the next wildfire in that same landscape.

[11] Staff noted that the scale of these analyses varies significantly with CE's limited to 3,000 acres and EA's often covering tens or hundreds of thousands of acres.

The Forest Service also maintains a program of "prescribed fire," where Forest Service personnel intentionally ignite controlled fires to achieve resource objectives. Smoke from prescribed fires is limited by state and federal air quality rules while smoke from unplanned fires is not.

There are 3.4 million acres of "high risk" acres on national forest lands in Oregon, accounting for 23% of all "high risk" acres in the state. Additional analysis would be necessary to determine how much are available for some form of active management (thinning, logging, prescribed burning, etc.). The remaining acres are administratively withdrawn, administratively reserved for non-timber purposes, congressionally designated, or unsuitable for entry. Funding for national forest land in Oregon is appropriated by the United States Congress annually. In Fiscal Year 2019, $223 million was appropriated for all work on national forest lands in Oregon, which resulted in 457 million board feet of timber sold and 208,039 acres treated. (This type of treatment should be expanded upon.)

2. Oregon & California "O&C" Lands

The United States Department of Interior Bureau of Land Management (BLM) manages 2.35 million acres of forested "Oregon and California lands," out of a total of 15.7 million acres under their jurisdiction. O&C lands, which are located in Western Oregon and are heavily checker-boarded (meaning that every other square mile of land alternates with other ownership, usually private industrial forestland or national forestland), are managed pursuant to the Oregon and California Lands Act, which was enacted by the United States Congress in 1937. Under current law, the management of the "O&C lands" must be consistent with other federal laws such as the Federal Land Policy and Management Act, Endangered Species Act, National Environmental Policy Act, and Clean Water Act among others. The dominant use of the O&C lands is "permanent forest production." Historically, these lands have been managed for high levels of timber products.

There are six BLM Districts that manage O&C lands. Each District has a "Resource Manage-ment Plan" that functions as a "zoning plan" for the District and contains mandatory constraints on land management as well as objectives for management. Similar to Forest Service Land and Resource Management Plans, BLM Resource Management Plans contain "land use allocations" where specific types of land management, including vegetation manipulation and timber harvest, are encouraged, constrained, or prohibited. When the BLM conducts timber harvest on O&C lands, it must do so consistent with the applicable Resource Management Plan and must undertake an environmental analysis prior to harvest. The BLM is also required to seek public comment on its timber harvest proposals. If there are species listed as Threatened or Endangered under the Endangered Species Act

within the proposed management area, the BLM must also seek and secure the authorization of the United States Fish and Wildlife Service (for listed terrestrial and non-anadromous fish species) and/or the National Marine Fisheries Service (for listed anadromous fish and ocean-dwelling species). The BLM must also consult with recognized Native American Tribes regarding how timber harvest plans may affect cultural resources.

The average length of time for the BLM to complete an Environmental Analysis (EA) for forest management work 180 days from coping to decision. The average length of time for the BLM to complete an Environmental Impact Statement (EIS), required and used for more complex projects, for forest management work is 1 year from the notice of intent to the record of decision at a cost that is substantially greater than an EA on average. Agency actions on O&C Lands can be challenged through an official protest, appeal to the IBLA, and/or legal challenge in Federal court. Several high-profile legal cases are pending at various levels of Federal court that could have profound impacts on the future management of the O&C Lands.

For the BLM O&C lands, unlike the Forest Service, the Oregon Department of Forestry currently provides fire protection for these BLM's O&C lands in Western Oregon: the BLM does not conduct fire suppression activities on its lands. However, BLM does undertake prescribed fire operations on O&C lands. Smoke from natural ignitions is not limited by state or federal air quality rules. Smoke from prescribed fires is limited by state and federal air quality rules.

In Western Oregon the current shelf stock for fuel treatments by BLM is 4,200 acres. The average yearly accomplishments is 6,500 acres including 279 million board feet. Additional GIS analysis is necessary to determine what percentage of O&C lands managed by the BLM are "high risk" forest, what percentage of these acres are available for some form of active management (thinning, logging, prescribed burning, etc.), and what percentage of the remaining acres are administratively withdrawn, administratively reserved for non-timber purposes, congressionally designated, or unsuitable for entry. Funding for management of the O&C Lands is appropriated by the United States Congress annually. In Fiscal Year 2019, $110 million was appropriated for all work on BLM managed land in Western Oregon.

3. Non-O&C Bureau of Land Management Lands.

The Bureau of Land Management (in the Department of Interior) manages 13.1 million acres of land that are not O&C lands, including 1.0 million acres of forestland and 13.2 million acres of rangeland, out of a total landed estate of 15.7 million acres. Most of this acreage is non-forest, rangeland, or sagebrush-steppe. Management of these lands, which are located in eastern and southeastern Oregon, must be consistent with other federal laws such as the Federal Land Policy and Management Act, Endangered Species Act, National Environmental Policy Act, and

Clean Water Act among others. These lands are multiple-use lands that are managed for a variety of purposes including forage, recreation, and wildlife habitat.

In Eastern Oregon the Fuels and Integrated Program of shelf stock by BLM is 55,000 acres a year with the average year fluctuating between 50,000 to 65,000 of accomplishments over the last five years. There are four Districts that manage non-O&C BLM lands. Each District has a "Resource Management Plan" that function as zoning plans for each District and contains mandatory constraints on land management as well as objectives for management. Similar to Forest Service Land and Resource Management Plans, BLM Resource Management Plans contain "land use allocations" where specific types of land management, including vegetation manipulation and timber harvest, are encouraged, constrained, or prohibited. As when conducting timber harvest on O&C lands, the BLM must manage its non-O&C landholdings consistent with the applicable Resource Management Plan and must undertake an environmental analysis prior to management. The BLM is also required to seek public comment on its land management activities. If there are species listed as Threatened or Endangered under the Endangered Species Act within the proposed management area, the BLM must also seek and secure the authorization of the United States Fish and Wildlife Service (for listed terrestrial and non-anadromous fish species) and/or the National Marine Fisheries Service (for listed anadromous fish and ocean-dwelling species). The BLM must also consult with recognized Native American Tribes regarding how land management actions may affect cultural resources.

The BLM has primary suppression responsibility on all BLM lands outside of the Western Oregon Operating Plan. The BLM manages all wildfire in accordance with the 2009 Guidance for Implementation of Federal Wildland Fire Management Policy. This policy defines two kinds of fire: planned fires, such as prescribed burns, and unplanned fires. The current policy states that wildland fire response will carefully consider the long-term benefits of fire outlined in Resource Management Plans in relation to risks both in the short and long term. This translates into a range of response to unplanned fires that weighs risks to lives, property and ecosystem health today against the potential impacts of the next wildfire in that same landscape.

4. Other Federal Lands.

The federal government owns and manages an additional 1.0 million acres of land, including 194,000 of forestland. Lands managed by the Department of Defense (which manages the Boardman Naval Bombing Range), National Park Service (which manages national monuments and national parks such as the Oregon Caves National Monument and Crater Lake National Park), and Fish and Wildlife Service

(which manages national wildlife refuges such as the Hart Mountain National Wildlife Refuge) – as well as additional protected areas managed by the BLM and Forest Service – are managed for specific purposes such as national defense or environ-mental preservation, depending on the federal Department or agency and the federal authorizing legislation that created each specific unit of federal land. These lands are scattered across Ore-gon, and management of them must be consistent with federal laws and land management plans created for each specific parcel.

In general, active forest and land management is limited on these other federal lands. Because these lands are not generally managed for multiple uses including forest health, the Committee does not provide specific recommendations for these lands.

On other federal lands, there are 110,000 acres/% of "high risk" forest and rangelands, account-ing for 1% of the acres at "high risk" statewide.

IV. Summary

There are a variety of landownership types and jurisdictions across the State of Oregon. The land ownership types described in detail throughout this memo are those most often found within geographies characterized as wildland-urban interface. Table 1 below may be a useful reference when discussing policies and investments based on the Quantitative Wildfire Risk Assessment.

[See Below]

Table 1: Summary of land ownership

Land Ownership Jurisdiction	Land Ownership Type	Total Acres	Regulations
Private, Non-Federal	Residential/Municipal		County and city ordinances, building codes, Firewise Community Agreements, Community Wildfire Protection Plans
	Infrastructure Facilities		
	Forestland (industrial and family)	10.2 million	Oregon Forest Practices Act (OFPA)
	Rangeland	XXXX	
Public, Non-Federal	Tribal Forest and Rangeland	1.0 million	
	State Forestland	945 thousand	State-adopted Forest Management Plans
	Local Government Forestland	414 thousand	Local jurisdictional regulations, OFPA, land use regulations.
	State Rangeland and Non-Forestland	XXXX	There are a variety of multiple-use land objectives applicable to each entity's authority. Managing state agencies include the Oregon Department of State Lands, ODFW, ODPR, and ODOT.
Federal	National Forestland	14.1 million	National forest lands are governed by applicable land and resource management plans and federal laws including the Organic Act, Multiple Use-Sustained Yield Act, National Forest Management Act, and other laws including the Endangered Species Act, National Environmental Policy Act, and Clean Water Act.
	Oregon & California "O&C" Lands	2.6 million	O&C lands are governed by applicable resource management plans and federal laws including the Oregon & California Lands Act, Federal Land Policy and Management Act, and other laws including the Endangered Species Act, National Environmental Policy Act, and Clean Water Act.
	Non-O&C Bureau of Land Management Lands.	13.1 million	Other lands managed by the BLM are governed by applicable resource management plans and federal laws including the Federal Land Policy and Management Act, the Endangered Species Act, National Environmental Policy Act, and Clean Water Act, among others.
	Other Federal Lands	1 million	Depending on federal jurisdiction, these lands are managed in accordance with applicable land and resource management plans, resource management plans, comprehensive management plans, monument management plans, and other federal laws such as the National Forest Management Act, Federal Land Policy and Management Act, the Endangered Species Act, National Environmental Policy Act, and Clean Water Act, among others.

Appendix B

September 2019 Mitigation Committee Report

[See Next Page]

Wildfire Mitigation Committee

Committee Report – September 12, 2019

Overview and Context:

The magnitude of Oregon's wildfire mitigation problem is beyond the scope of any individual sector, and requires the collective power of public-private-partnership. Local, state and federal governments must align with the private sector, academics, non-profits, tribes and others to collectively implement a multi-billion-dollar, multi-decade program. While wildfire and wildfire mitigation have been and will remain a permanent fixture in the West, the Committee believes a specific "program" is warranted, at least until the massive backlog of hazardous fuels is reduced to a more sustainable level.

The Wildfire Mitigation Committee has been charged with evaluating potential actions that will reduce and mitigate risk associated with future wildfire events in the context of 10 objectives adopted by the Council, and that will do so at a meaningfully improved pace and scale. All of the Council's 10-adopted objectives are relevant to and to some degree addressed by the Mitigation Committee's work.

Because the Committee believes wildfire and smoke will remain a reality of life in the Pacific Northwest, the Committee's work is premised on how to meaningfully prioritize and take actions that reduce the negative impacts fire and smoke can pose to important societal values rather than a binary or zero-sum-game approach that continues to pit wildfire and suppression against one another. In other words, the question is not whether to try and prevent all wildfire on the one hand or eliminate suppression on the other, or whether wildfire will or should exist, but rather how might we shape the type, location, and amount of fire and smoke so as to, in turn, better realize both benefits and reduced risks to our society, economy, and environment associated with both wildfire and wildfire mitigation work.

The state must ensure its mitigation strategy does not drift apart from a cohesive overall wildfire strategy, including approaches to suppression and community adaptation. Mitigation, suppression and adaptation must be continuously integrated — in a world of limited resources — with the ultimate goal of stabilizing and lowering costs once hazardous fuels are brought to more moderate levels.

The state's role in the development of an Oregon public-private-partnership is pivotal. The most important role for the state is overall leadership of the program itself, and the public-private-partnership charged with its implementation. The following outline of Key Elements of a Wildfire Risk Mitigation strategy provides the overall framework for public-private partnership content.

Key Elements of a Wildfire Risk Mitigation Strategy

Element 1: Catalyze Program

A. State Capital Infusion
B. Commensurate Federal Dollars
C. State Personnel Investment and Integration

Element 2: Lead a New Oregon Public-Private Partnership

A. State Objectives & Priorities
B. Statewide Risk Assessment and Prioritization
C. Scale and Time Horizons
D. All Lands: treatments tailored to geography and condition
E. Action Linkage—wildfire, suppression, hazardous fuel reduction
F. Metrics, Accountability, and Governance
G. Match Wildfire Mitigation Funding to all Oregon Beneficiaries
H. Strategic Financial Plan (mitigation as one component within integrated plan)
I. Western Coalition for Federal Advocacy

Element 3: Expand Private Sector Role

A. Scaling Forest Sector to Mitigation Need
B. Value Chain Support
C. Workforce Development
D. Markets for Wood and Agricultural Waste (e.g., Bio-energy)
E. Agricultural Economy, Non-Timber Markets Including Conservation Finance.

Element 4: Enhance Agency Business Model

A. Contracting, Hiring, Administration, Performance Measures and Incentives
B. Capacity, Implementation Coordination and Integration
C. Management Efficiences
D. Partnership Communications, Outreach, Information Management

**Recommendations provided in this report.

The Mitigation Committee's work to date has focused on defining the geographic nature of the wildfire risk concern across Oregon, how to prioritize across this geography, and the scope and scale of the challenge at hand. This work and related recommendations to the Council generally relate to Element 2(a)-(c) of the Key Elements outline and are expanded upon below. The remaining elements should be considered in the development of a comprehensive strategic-financial plan.

<u>Element 2:</u> Lead a New Oregon Public-Private Partnership

A. State Objectives & Priorities

The public-private-partnership and related state investments and policies must be directed by clear state objectives. The Governor's Council's work builds on the National Cohesive Wildland Fire Management Strategy as well as the recently signed state-federal Shared Stewardship Agreement. The Shared Stewardship Agreement established four broad outcomes (healthy terrestrial ecosystems, healthy aquatic ecosystems, vibrant communities, quality outdoor experiences). The National Cohesive Strategy includes three primary goals: 1) Resilient Landscapes, 2) Fire Adapted Communities, and 3) Safe and Effective Wildfire Response. These goals were developed in response to four primary issues: managing vegetation and fuels; protecting homes, communities, and other values at risk; managing human-caused ignitions; and effectively and efficiently responding to wildfire. In support of these goals and outcomes, and with the intent of directing committee-level work, the Wildfire Council established 10 Strategic Objectives organized around social, environmental and ecological values. Together, these outcomes and objectives constitute a "North Star" guiding strategic and tactical decisions.

1. *Human Safety: Public and firefighters*
2. *Human Health: Smoke and water*
3. *Social Justice: Most vulnerable communities protected and equitable funding*
4. *Critical Infrastructure Security: Housing, power, water, transportation*
5. *Vibrant, Stable Communities: Quality outdoor experiences, honoring customs and traditions*
6. *Healthy & Resilient Ecosystems : Forest, aquatic, rangelands*
7. *Climate Change Benefits: Adaptation and mitigation*
8. *Protection of Existing Business: Commercial timber, mill infrastructure, rural business, tourism, agriculture*
9. *Growth & Diversification of Economy: Non-timber forest business (carbon, water, recreation, ecosystem services) and new business (forests as quality-of-life magnet)*
10. *Revenues for public services (e.g., County payments)*

B. Statewide Risk Assessment and Prioritization:

Problem Statement: Recent scientific studies (sources needed) focused on wildfire risk have identified several challenges facing Oregon, particularly in the fire-adapted, more frequent fire return interval forests of southwest, central, northeast and eastern parts of the State. In particular, this research speaks to:

- Warming climate resulting in more intense weather events (e.g. more lightning ignitions, strong winds), increased risk of drought stress, and longer and drier fire seasons.
- Past management practices, including overstory removal and more than a century of active fire suppression, has resulted in at least a 10-fold increase in the number of small-diameter trees on the landscape, a shift in species composition towards more shade tolerant species, and much denser and more homogenous forest conditions.
- Increase in the number and likelihood of human caused ignitions.
- Expanding wildland urban interface (WUI) development and inadequate investments in fuel reduction and defensible space work being conducted around homes and structures.
- A lack of coordinated land management activities across ownership boundaries that effectively meet wildfire risk reduction and forest health goals at a landscape scale.
- Insufficient funding and declining agency capacity to conduct work at the pace and scale required to address the challenge on public lands.

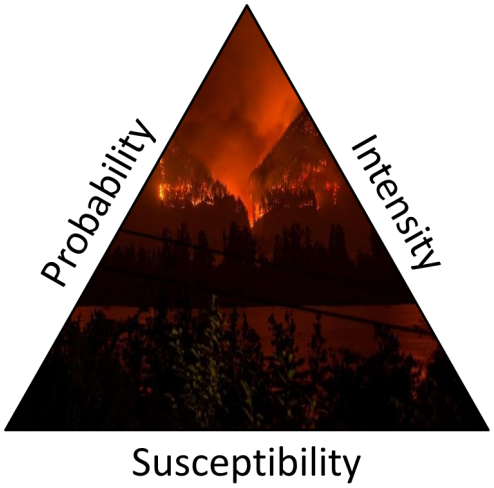
Given the significance of the challenges and the vastness of Oregon's forested landscape and rangelands, it is important to not lose focus and instead determine how to best prioritize investment in limited resources in geographies and action types that will make a difference. The Committee's initial work therefore started here.

Background: Risk Assessment and Priority Mapping
The Committee grounded its work related to the following assessment and mapping products in the following purpose and guiding principles.

> **Purpose:** Identify and prioritize geographic areas for wildfire risk mitigation activities and investments based on current wildfire risk and ecological, social, and economic values.
>
> **Guiding principles:**
> - Incorporate and meaningfully address the ten (10) objectives identified and adopted by the Governor's Council for Wildfire Response.

- Effectively represent statewide interests by conducting the process across all-lands and all regions of the state.
- Utilize best available science and data.

Wildfire risk is a function of the probability of wildfire, intensity of the wildfire, and susceptibility of the resource to wildfire. While the likelihood of a fire starting in a given area (probability) and the way trees or other resources will burn (intensity / hazard) are part of the equation, identifying specific values and quantifying their susceptibility to fire is another key part (i.e., risk to what?). Independently, these elements are distinct, and it is the combination of these elements that results in an assessment of risk.



Work Product: The QRA Backbone—Addressing 6 of 10 Council Objectives.
The Committee chose to evaluate the 2018 Pacific Northwest Quantitative Wildfire Risk Assessment (QRA or PNRA) as the foundation of its approach to risk assessment and priority mapping. The QRA was collaboratively developed with participants from state and federal land management agencies, resource specialists, and fire fighters.

> *"The purpose of the USFS Pacific Northwest Region Wildfire Risk Assessment (PNRA) is to provide foundational information about wildfire hazard and risk to highly valued resources and assets across Oregon and Washington. A wildfire risk assessment is a quantitative analysis of the assets and resources across a specific landscape and how they are potentially impacted by wildfire."*

There are 28 individual data sets that underlie and inform the PNRA/QRA. While these data sets and corresponding resource values exist independently, the QRA assessed and aggregated these data into one integrated product. This product depicts the relative importance of valued resources to one another as well as the response functions of

those resources to wildfire using flame length values corresponding to fire intensity levels. As depicted below, the QRA did not weight all highly valued resources equally. Among these valued resources, "infrastructure" includes a host of data sources for electrical transmission lines (high and low voltage), railroads, interstate and state highways, seed orchards, ski areas, historic buildings, recreation sites, communication sites and cell towers, and sawmills. "Wildlife" is primarily focused on threatened and endangered species listed under the federal Endangered Species Act. For a complete list see Table 4 in the PNRA publication.

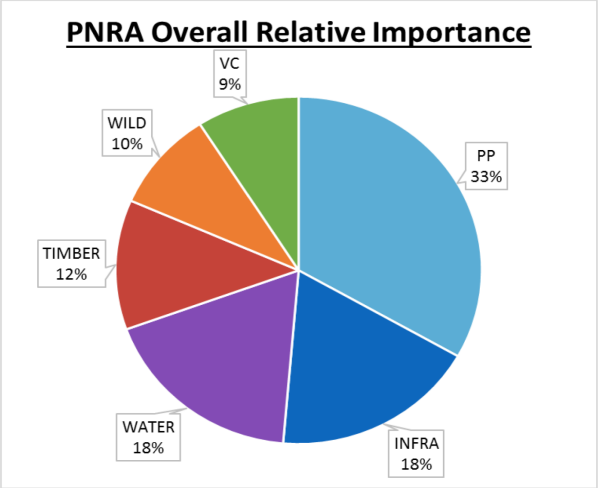
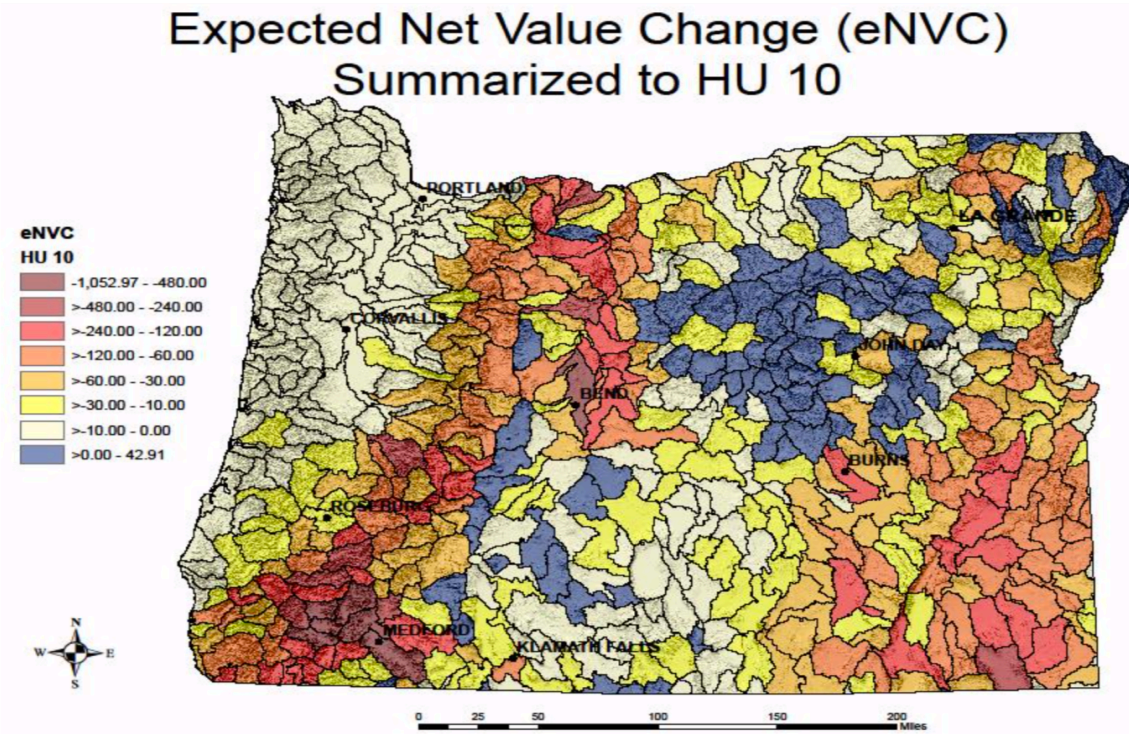


Figure 8. Overall HVRA Relative Importance for the primary HVRAs included in PNRA

Overall, in the QRA's identification and assessment of highly valued resources, the Committee found this product corresponds to six (6) of the Council's ten (10) objectives. As such, it is the backbone of the Committee's statewide risk assessment and prioritization mapping effort, as depicted in the map below. The expected net value change depicted by the QRA map below reflects the probably of a wildfire event occurring in a given area (scaled to the 10th field hydrologic unit / HU 10) and the anticipated impacts on highly valued resources associated with that event. The darker red colors reflect a highly negative result, and the blue reflects a positive or neutral impact from wildfire.

<u>Figure 1.</u>—QRA-based wildfire risk prioritization map.



Three portions of the state are highlighted as especially high wildfire risk based on existing conditions: Southwest Oregon, North Central Oregon, and Southeast Oregon.

The QRA is set to be revised every three (3) years. Committee members found this fact important primarily because (a) the QRA is based on a snapshot in time and conditions change due to management, wildfire, or other factors; and (b) it is not a perfect product and refinement to address other considerations can improve the product over time (see recommendations below).

Also, the QRA map is scaled to the 10th field hydrologic unit (HUC 10 watershed scale), which range from approximately 40,000 to 250,000 acres in size. Given the large swaths of land within this unit, it is important to note that areas highlighted in blue – "low risk" will still maintain areas of high risk within them, which can be revealed by further downscaling the map. For example, the overall watershed may have lower risk based on existing conditions, but a corridor near the electrical lines or the forest immediately surrounding a community may still pose a high risk in that watershed.

For this and other reasons, the Committee is considering the use of additional spatial wildfire risk assessment tools—namely the Potential Operational Delineations (PODs)

methodology[1]—to further refine wildfire risk assessment work and address the integration of strategies including hazardous fuel reduction and suppression within discrete geographic units. PODS are polygons with boundaries drawn according to features relevant to fire control operations (e.g., roads, ridgetops, and water bodies). PODs are created with the engagement of fire experts with the help of analytical tools that build on the QRA and integrate fire control-related information. They can be useful for summarizing wildfire risk and planning strategic response to unplanned ignitions in a discrete area based on information relevant to the likely effectiveness of various strategies. PODs can be used to guide and communicate choices of related to strategic fuels planning and operational response, thereby potentially aligning active management strategies (e.g., hazardous fuels reduction / forest restoration; prescribed fire; timber programs, managed fire and suppression).

The Committee is particularly interested in further exploration of PODs work because PODs require cross boundary planning and coordination among key partners including state, federal, private and local communities, and this approach can potentially integrate across "fire response" and "mitigation" efforts though the strategic placement of treatments to achieve lessened risk to communities, infrastructure, public health and safety (including firefighter safety) while addressing ecosystem health and creating more fire resilient landscapes. Committee members are interested in further evaluation and potential advancement of the PODs approach, and all PODs data should be available for Oregon by December 2019.

Work Product: Non-QRA Risk Assessment—Addressing the Remaining 4 Council Objectives.

As stated, the QRA is based on data that corresponds to six (6) of the ten (10) Council objectives. The four Council objectives not addressed by the QRA are: 1) social justice, 2) human health, 3) protecting existing businesses, and 4) diversifying the economy. Therefore, in order to be consistent with the principle of meaningfully addressing all ten of the Council objectives, the Committee endeavored to do so using a different / non-QRA approach for the above four.

In addition, the QRA is focused on wildfire risk and represents a snap shot in time based on existing conditions and data availability related to fire. The QRA does not include data to evaluate the risk to resources based on non-wildfire-based forest health factors such as the related issues of drought stress (relevant to climate change considerations) and insect and disease outbreaks. Committee members felt the design of programs and investments should not only focus on mitigating current wildfire risk (snapshot in time), but planning and preparing for the likely effects of climate change, drought, insects and disease.

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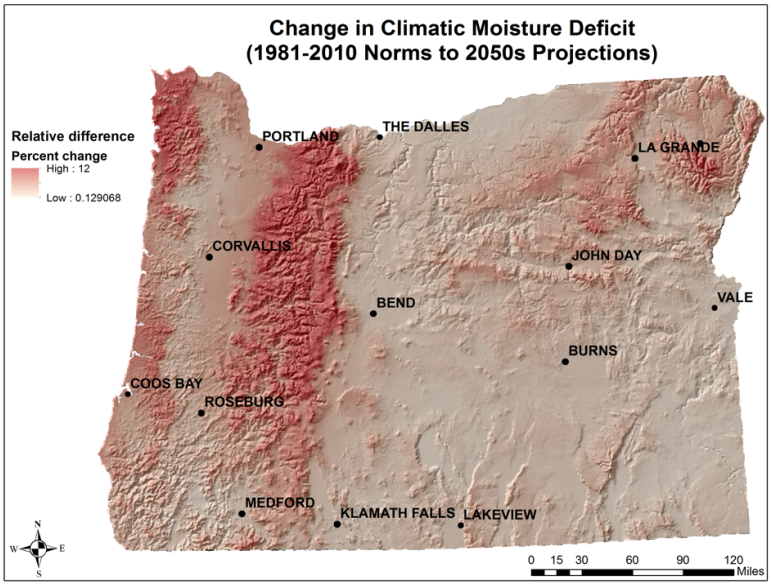
[1] https://www.youtube.com/watch?v=NMbzXNY9RU8&index=4&t=0s&list=PLNsZX2SBTlVn1ce0l9-0C6CCbI-DOj2kwn

The following maps highlight the additional data sets produced based on Committee input tied to the four additional Council objectives (the non-QRA objectives) as well as the climate, drought, and insect and disease considerations. When combined with the QRA data and map, the Committee has spoken to and addressed all ten (10) Council objectives.

Climate Change / Drought

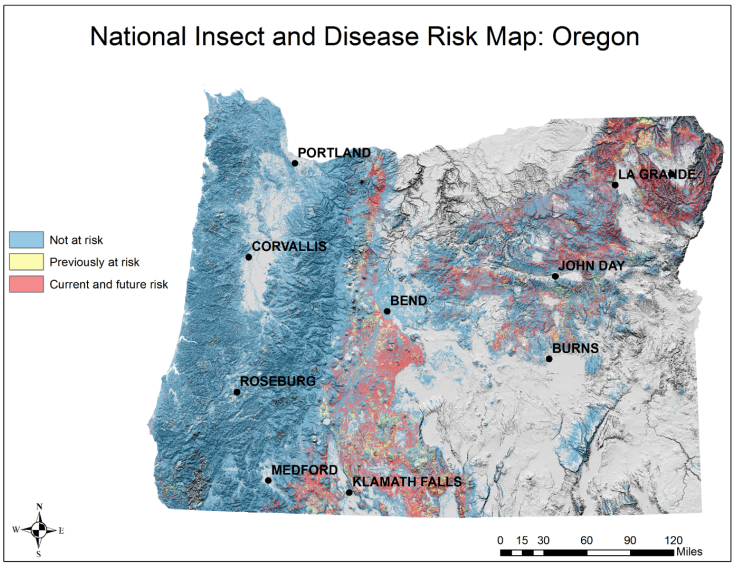
Drought is likely to have the most adverse consequences to forests on the north and central coast, Cascade Range, and the Blue Mountains of north east Oregon.



Insect and Disease Risk[2]

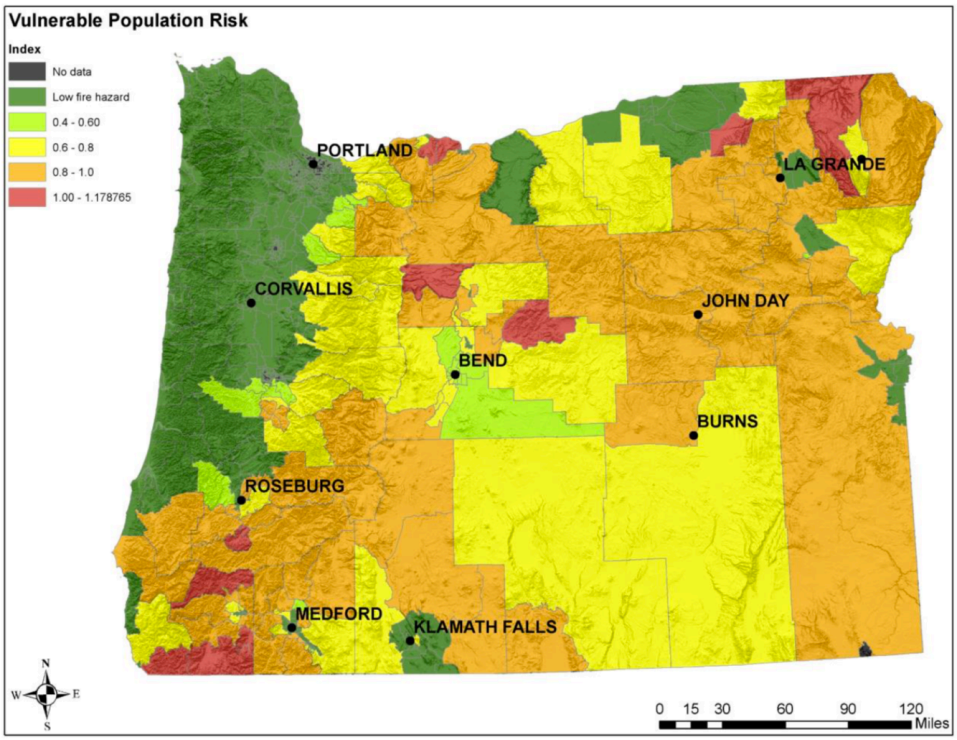
The map below shows areas at risk of losing 25% or more canopy cover as a result of a future insect or disease outbreak. Large portions of south-central and northeast Oregon are highlighted for this forest health risk.

[2] USDA Forest Service partners with the State of Oregon to map current insect and disease outbreaks and evaluate risk of potential future outbreaks. Data is based on cooperative aerial surveys conducted by Forest Health staffs of the Oregon Department of Forestry, Washington Department of Natural Resources, and the USDA Forest Service Pacific Northwest Region. Data collected from 1947 to present and includes projections of insect and disease risk for the period ending in 2027.



Social Justice

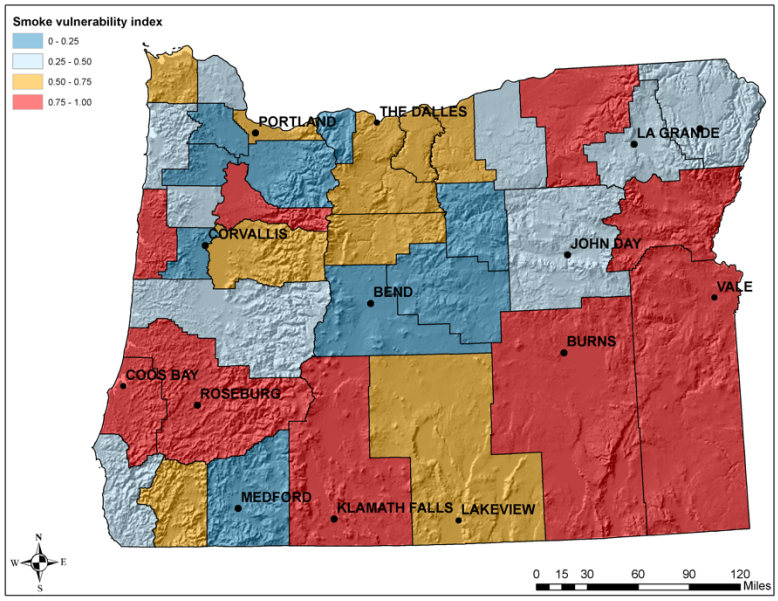
Wildfires in the U.S. often have outsized impacts on vulnerable communities. The map below is based on a social-ecological approach for characterizing fire vulnerability, as applied to >70,000 census tracts across the United States. The approach incorporates both the wildfire potential of a landscape and socioeconomic attributes of overlying communities. The map highlights census tracts identified as being vulnerable combined with the expected net value change (eNVC) from the QRA map above.



Human Health[3]

Rappold et al. 2017 developed the "Community vulnerability index (CHVI) to the health effects from smoke exposure." The map below is based on factors known to increase the risks of health effects from air pollution and wildfire smoke exposures, and as the CHVI author's note, "Identifying communities vulnerable to adverse health effects from exposure to wildfire smoke may help prepare responses, increase the resilience to smoke and improve public health outcomes during smoke days." Map data can help identify or prioritize areas of the state for additional investment to protect vulnerable populations from the health impacts associated with smoke, which has particular relevance to the Adaptation Committee but is linked to the Mitigation Committee because prescribed fire is a principal tool in reducing risk over time.

[3] The CHVI is based on factors including "county prevalence rates for asthma in children and adults, chronic obstructive pulmonary disease, hypertension, diabetes, obesity, percent of population 65 years of age and older, and indicators of socioeconomic status including poverty, education, income and unemployment. Using air quality simulated for the period between 2008 and 2012 over the continental U.S. we also characterized the population size at risk with respect to the level and duration of exposure to fire-originated fine particulate matter (fire-PM2.5) and CHVI."

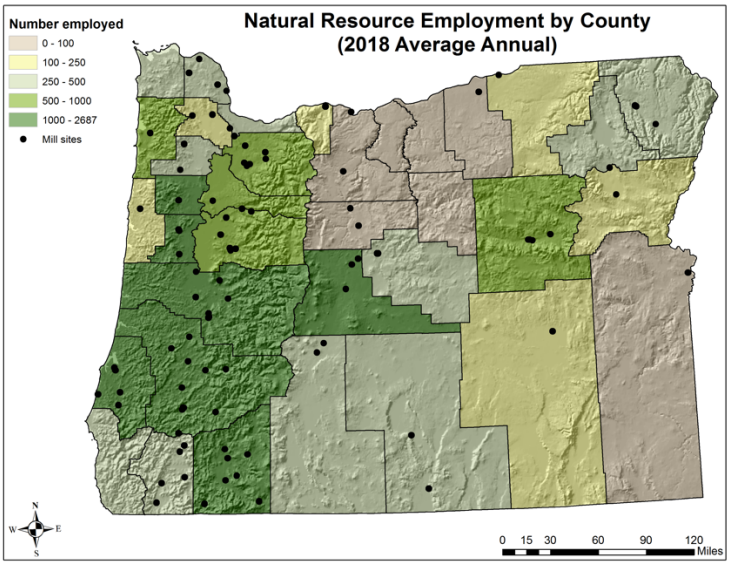


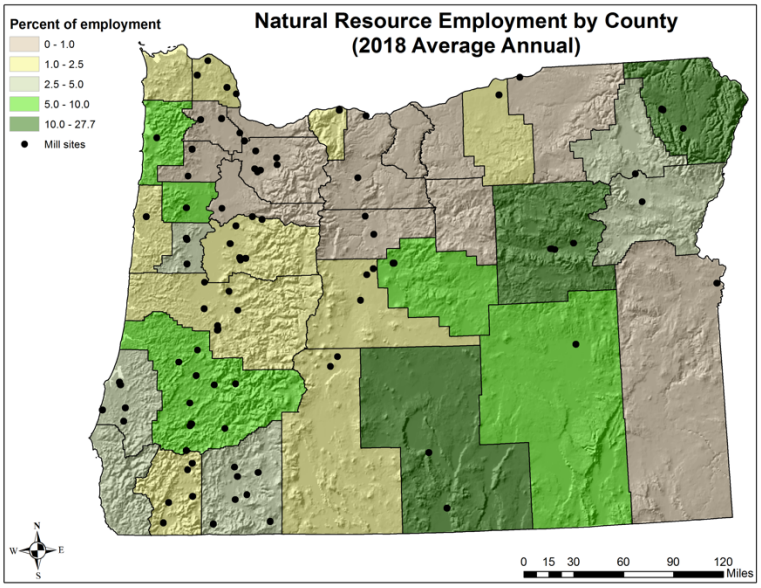
Economic Indicators – Protecting Existing Business and Diversifying the Economy
Readily available data or analyses that speak directly to the Council objectives of protecting existing business and diversifying the economy do not exist. Scientific / technical advisors to the Mitigation Committee identified a number of existing data and an approach to measuring employment in fields most relevant to wildfire risk: forestry, agriculture, and tourism. Maps for each of those are depicted below.
** Additional data and analysis on economic impacts associated with public lands management work has been conducted by Headwaters Economics. Specifically, existing products associated with reforming Secure Rural Schools (SRS) and Payment In Lieu of Taxes (PILT) may be relevant to the interests of the Council. The Committee proposes to consider how this work could refine the economic data and maps below.

Forestry Related Employment[4]
The first map below shows the raw number of people employed in the forest / natural resource sector by county as well as existing mill sites in Oregon. Areas in green have a higher level of existing workforce capacity related to wildfire risk mitigation work. Other counties may need investments in workforce development to be able to conduct wildfire risk reduction activities.

[4] Data from Bureau of Labor Statistics and Oregon Dept. of Forestry. Includes forestry, logging, forestry support, fishing, hunting, and trapping. Does not include data on mining or agriculture.

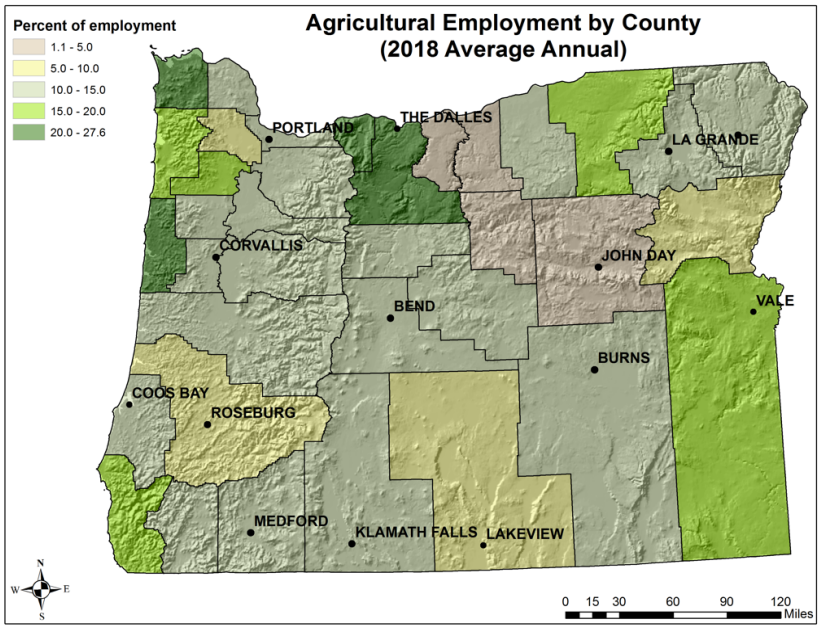
The next map below shows percent of employment in the forest / natural resource sector by county. Percent of total employment - as contrasted with raw job numbers (first map) - provides a better sense of the relative importance of forest / natural resource jobs to a given county. Green colored counties have a strong economic connection to natural resource management, with at least 10 percent of employment in forestry related fields. Grant County is an outlier with more than 27% of employed people residing in the county working in forestry or a related job. Wallowa County and Lake County are also highly natural resource dependent.





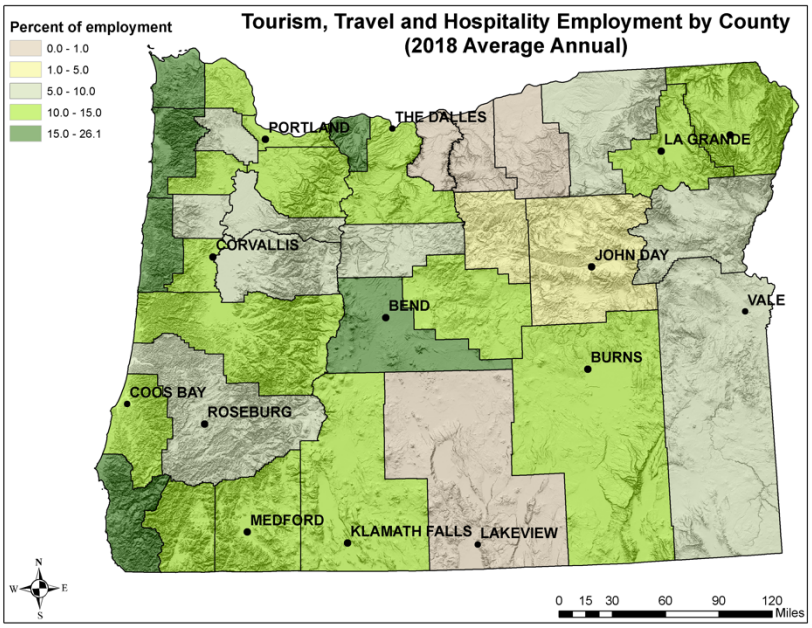
Agricultural Employment

The map below depicts the percent of employment in the agriculture / natural resource sector by county. This is especially relevant in the context of rangeland wildfire and related mitigation work. Note that adjacent counties of Harney and Malheur show strong relative importance in the forest and agricultural sectors respectively.



Data: Bureau of Labor Statistics

Travel, Tourism, and Hospitality



Data: Bureau of Labor Statistics

Recommendations—Statewide Risk Assessment and Prioritization:

The Mitigation Committee believes the QRA provides the best available information capturing values at risk across Oregon. As explained and presented in further detail above, the QRA depicts 6 of the 10 objectives defined by the Council. The Committee used additional resources to generically map the remaining four objectives/values defined by the Council.

The QRA and additional mapping sources are intended to provide a high level, geographic representation of priority risks across the State of Oregon and across ownership boundaries. The intent of the QRA and supplemental maps for the purpose of the Mitigation Committee is to educate land managers and the public about where overlapping priorities and values at risk exist on the landscape. Guided by the belief that maps don't and shouldn't in and of themselves make decisions (people do), the Mitigation Committee envisions the mapping tool and products will provide critical information and context from which strategic planning and decisions can be made. It is important to note, on-the-ground decisions must still comply with all relevant, legal management plans.

> **Recommendation (a):** The QRA / PNRA is the best available current model to use for depicting a statewide assessment of wildfire risk. Use the QRA to frame wildfire risk prioritization efforts in the short term, doing so at the 10th field HUC

scale. The QRA should remain an iterative product.[5] When revising the QRA in 2020 (and every 3 years thereafter), expand the inclusion of partners in informing the refinement effort and incorporate values (and related data layers), to the extent practicable, that reflects the full slate of Council objectives.

Recommendation (b): When allocating increased wildfire risk mitigation investments, use areas identified by the QRA plus data and products tied to the additional four (4) Council objectives to prioritize investments. Needs exist statewide, and where overlap between the QRA is and additional layers (four non-QRA Council objectives) is weak or unclear, a ***significant portion / no less than 30%*** of funds should be dedicated to areas with demonstrated wildfire risk mitigation treatment needs, at-risk forest products infrastructure, public health, or social justice concerns that are identified in products related to the additional four Council objectives.[6]

Recommendation (c): When prioritizing project funding and designing projects at the local level, refine the QRA information with locally-derived and adapted information and considerations, so long as not inconsistent with QRA.

Recommendation (d): Increased wildfire risk mitigation funding should not come at the expense of or be used to undermine existing investments in forest health programs at the community level (e.g., CFLRP). Funding should leverage existing capacity, mutually-supportive priorities or existing investments with new or increased wildfire risk mitigation funding wherever possible.

Additional Consideration on Refining Risk Mapping / Funding Over Time:
Once an area has been treated to reduce hazardous fuels (e.g., thinning and prescribed fire complete), it may transition to "low risk" on the QRA map. That said, this condition will not be permanent as the area will continue to accumulate vegetation and fuels over time, and will likely transition away from low risk if maintenance does not occur. The Committee is interested in ensuring increased wildfire risk mitigation funding is available for maintenance work and is also discussing the appropriate role of managed fire as a maintenance action. As noted earlier, the Committee is still discussing and considering the use of the PODs methodology to further evaluate and refine wildfire risk and address the integration over time of strategies including hazardous fuel reduction, suppression and potential managed fire within discrete geographic units.

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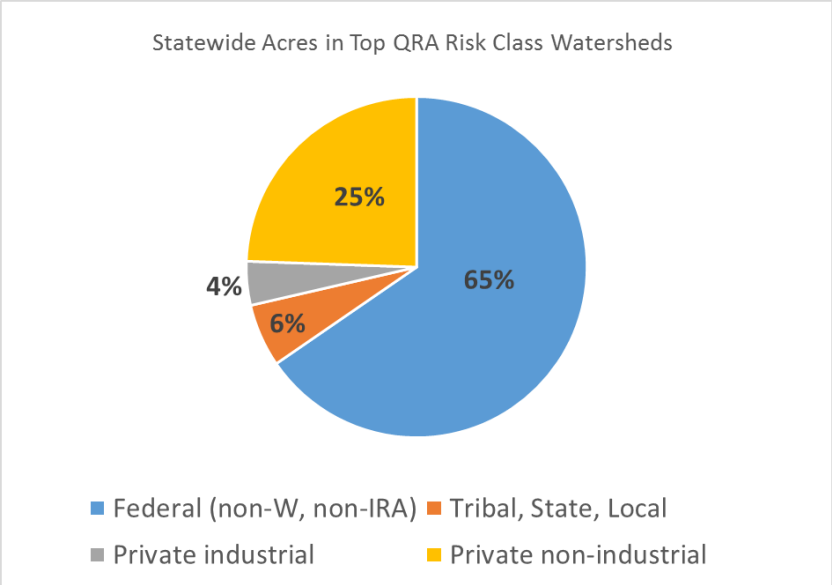
[5] The Mitigation Committee did not take a position or change the evaluations/weightings that underpin the QRA. As stated here, future iterations of the QRA, expected 2020, should include additional data layers in coordination with key stakeholder and partners.

[6] At its September 6, 2019 meeting, Committee members reached consensus in the use of either the "significant portion" or "no less than 30%" language highlighted here, with the exception of two members who respectively felt much stronger in opposite directions to one another. With the introductory framing language in this Recommendations subsection, Committee members have agreement on the "significant portion" language.

C. Scale and Time Horizons

Mitigating wildfire risk includes addressing the forest and rangeland conditions that fuel a level of wildfire behavior and risk that is historically high and unnecessarily threatening to environmental, social, and economic values. Management history—including a long history of effective forest fire suppression, under-implementation of fuels management, and invasive annual grass intrusion into rangelands—and the onset of climate change combine to increase risk factors including the location, rate of spread, and intensity of wildfire today, bringing urgency to this task. The scale of the task is immense, and the Committee has endeavored to provide estimates of acreage and related costs that would meaningfully address wildfire risk mitigation if applied strategically.

The Committee has used the QRA to capture—in broad strokes—acres at risk, ownership, and costs to implement treatments under the status quo (existing budgets, laws, regulations, and existing tools). The Mitigation Committee's initial analysis reveals that the challenge facing Oregon involves multiple millions of acres and multiple $ billions in work costs to address areas currently at risk to negative wildfire impacts (i.e., this acres are within the top 4 of the 8 QRA risk classes) across public and private land ownerships (forest and rangelands). The graph below depicts the proportion of QRA acres by ownership in these risk classes. The Committee is currently refining this initial analysis in order to produce specific acreage and dollar figures representing the proposition at hand.



As part of its methodology for arriving at cost and acreage estimates, the Committee looked at scenarios including costs associated with wildfire risk mitigation treatments

addressing 100% and 40% of this high risk acreage (top 4 QRA risk classes). Unit cost and related estimates underlying the Committee's analysis approach are based on figures associated with current practices / the status quo across eastern and western Oregon (and recognizing distinctions between federal and private costs) and a series of assumptions set forth below. While a number of caveats exist, Committee members felt comfortable with this as an initial approach to estimating the scale of the cost associated with the QRA-based acreage.

The Committee has landed on the 40% rather than the 100% treatment scenario for a variety of reasons including:

- Current science indicates that, in order to have a meaningful effect on wildfire behavior at a landscape scale, not all of the landscape needs to be treated. If done strategically, wildfire behavior can begin to be meaningfully changed with active management (fuels reduction through tree removal, thinning, prescribed fire) applied at around the 30% acreage treatment level. It should be noted that this assumption related to the resulting landscape scale effect on fire behavior is based on natural or managed fire being allowed to treat acres beyond those treated through active management.
- For reasons of legal compliance and/or administrative planning overlays—as well as practical considerations related to physical geography or otherwise—treating 100% of the acres is unrealistic.
- As acreage treated moves towards the 100% level, there is a positive correlation to increasing costs. For example, machinery and labor costs grow significantly when certain acreage is brought into the treatment picture (i.e., helicopter logging to address steep slopes). There is a balance between costs relative to commensurate benefit from treatment.

Currently, as applied to just the US Forest Service's portion of the high-risk acres identified in the QRA map (top 4 classes), the agency's fuels budget is approximately $40 million / year in Oregon and Washington, which results in treatment of approximately 254,000 acres per year. Oregon comprises approximately 2/3 of this dollar figure and acreage. Relative to this existing scale of investment, and using the higher risk acres in the QRA map as a frame (risk classes 1-4), the Committee is therefore recommending a multi-fold increase in fuels management over the status quo.

Recommendations—Scale and Time Horizons:

Recommendation (a): Oregon, in partnership with the federal government, private sector, and other partners, should detail a 20-year strategic plan for addressing the millions of million QRA high risk acres and billions in costs derived from the 40% treatment level. More precise acreage and cost estimates are forthcoming related to this planning effort.

Recommendation (b): The plan should establish and be monitored according to 5-year increments for treatment and initially take advantage of current shelf stock (i.e., NEPA ready) that corresponds to the high-risk QRA-based federal acres.

Recommendation (c): The plan should incorporate Committee work (ongoing) related to alignment of action types and geography with mitigation need. The action types taken, condition and location of acres chosen for work (e.g., WUI, non-WUI, forest, rangeland), and approaches to advancing the work in different land types are all critical to strategic deployment, overall effectiveness, and costs considerations for this strategy. Maintenance actions (and costs) are another significant item that the QRA (snapshot in time) and costs presented in this report section do not address. The role of managed fire, continual thinning or prescribed fire in the maintenance and cost context is under further Committee discussion.

Recommendation (d): The plan should also incorporate the outcome of ongoing Committee work (and related efforts) tied to business model changes, management efficiencies, workforce and private sector alignment / support, and partnership.

Caveats on Cost Assumptions: The estimated costs associated with treatment of high-risk QRA acres is and will remain an estimate. When refined, downscaled, or applied to real projects, certain assumptions are likely to vary. In addition it should be noted that not all costs would require appropriations or dollars to support them, and costs could be reduced in other ways. The role of monetizing timber removed as a byproduct of fuels reduction, the further development of small diameter or other markets, as well as business model changes and management efficiencies can all play a role in defraying or reducing costs. These considerations are part of ongoing Committee discussion. That said, the reality of fuel conditions today as well as nature of the work needed address wildfire risk in the context of forest resilience, community protection, and rangeland health requires a significant investment of funding in work that entails costs beyond what commercially viable timber bi-products can cover alone.

Cost Assumptions:

- Statewide costs estimate is intended as cost needed to treat acres over a 20 year time period. Thus the cost estimate should be divided by 20 to arrive at a per year investment.
- Scenario Treatment of 100% of acres in QRA Risk Classes 1-4 on all ownerships
    - Federal treatments DO NOT include Wilderness or Inventoried Roadless Areas (IRAs)
        - Note: Wilderness and IRA tally <11.2% of all federal acres (1.1M of 9.9M total federal acres)
    - All nonfederal ownerships (tribal, state, industrial, nonindustrial) are assumed to be forest or range and 100% of acres are treated

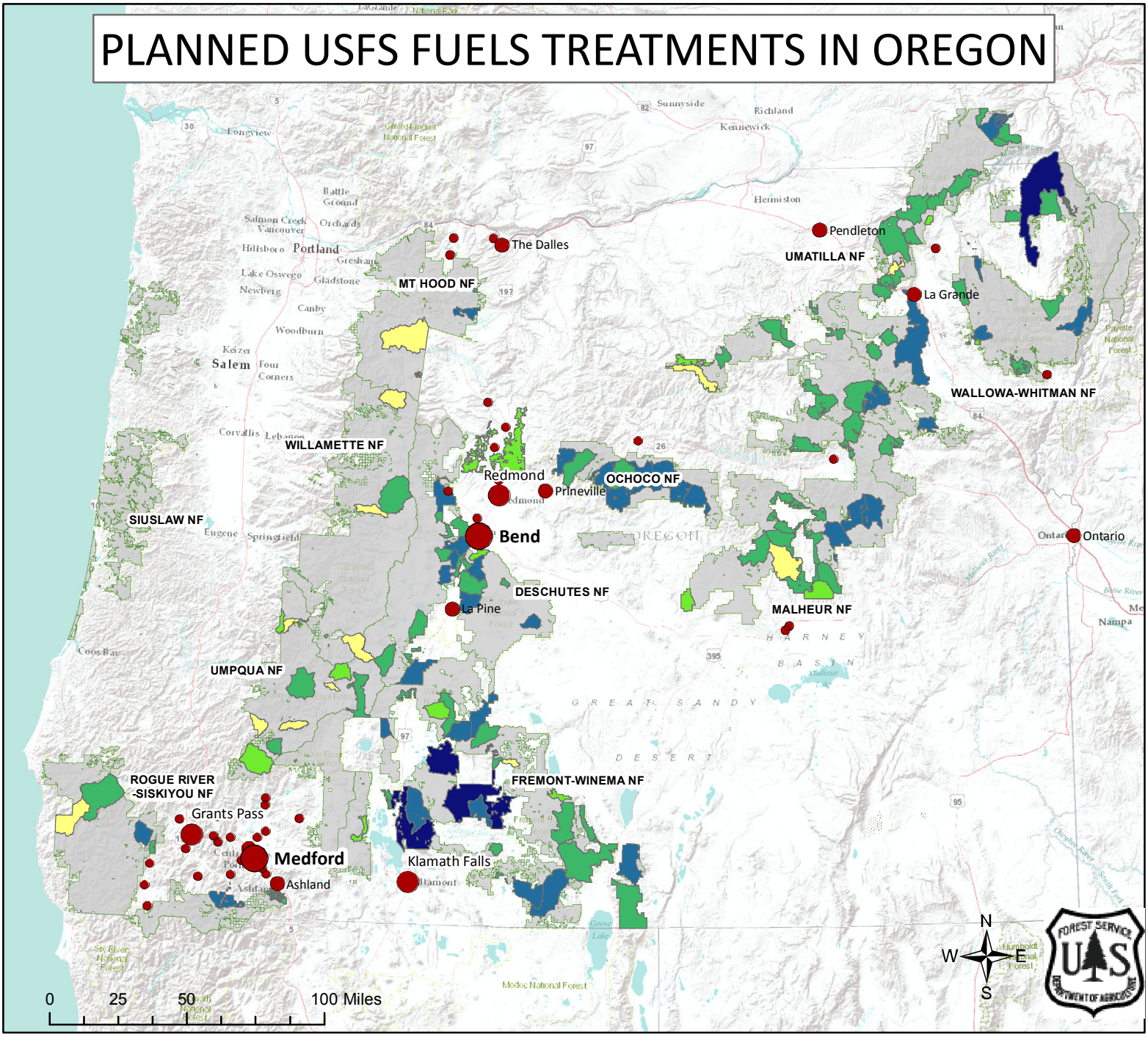
    - Range treatments are not distinguished from forest treatments, such that both use cost assumptions below
- Cost assumptions:
    - Assume status quo policy and business model in planning and implementing projects on federal land.
    - Do not account for potential to offset overall costs with timber revenue. Do not account for maintenance of treatments necessary to maintain reduced fire risk.
    - Do not account for stand specific differences such that some acres are less expensive to implement than other acres for the same prescription.
- For <u>federal treatments</u>, prescriptions as follow (with cost – including NEPA).
    - 25% of acres – commercial harvest, noncommercial thin, pile & burn
        - Cost: EOR $1,120/ac, WOR $1,898/ac
    - 50% of acres – commercial harvest, broadcast underburn
        - Cost: EOR $439/ac, WOR $1,043/ac
    - 25% of acres – noncommercial thin, broadcast burn
        - Cost: EOR $622/ac, WOR $1,443/ac
- For <u>nonfederal treatments</u>, one treatment Rx/cost assumption: EOR $459/ac, WOR $544/ac
    - *Note: treatment costs include layout for commercial or noncommercial actions and pile & burn (reduced by 1/3rd from Fed)*
    - *Note: 25% of statewide priority acres in nonindustrial ownership, accounting for 68% of all nonfederal land*

Appendix C

USFS Map of Planned USFS Fuels Treatments in Oregon

[See Next Page]

PLANNED USFS FUELS TREATMENTS IN OREGON



Legend

OR Top 50 Communities At Risk

of Exposed Housing Units

- >0 - 5,000
- 5,000 - 10,000
- 10,000 - 25,000
- 25,000 - 50,000
- National Forests in Oregon

US Forest Service Planned Fuels Projects

Acres of Shelf Stock

- <500
- 500-1,000
- 1,000-10,000
- 10,000-50,000
- 50,000-135,000

National Forest	Planned Prescribed Fire	Planned Mechanical Fuels Reduction	Total Shelf Stock
Deschutes	121,738	141,448	263,186
Fremont-Winema	535,349	113,201	648,550
Malheur	154,700	175,172	329,872
Mt. Hood	4,800	14,000	18,800
Ochoco	176,086	166,955	343,041
Rogue River - Siskiyou	68,465	38,447	106,912
Siuslaw		12,368	12,368
Umatilla	156,063	26,632	182,695
Umpqua	2,000	5,500	7,500
Wallowa-Whitman	157,000	72,000	229,000
Willamette	4,997	13,443	18,440
Columbia River Gorge NSA	14,000	12,000	26,000
TOTAL	**1,395,198**	**791,166**	**2,186,364**

*Reference for Top 50 Communities at Risk: Scott, Joe H.; Gilbertson-Day, Julie; Stratton, Richard D. 2018. Exposure of human communities to wildfire in the Pacific Northwest. Briefing paper. 10 p. Available at: http://pyrologix.com/ftp/Public/Reports/RiskToCommunities_OR-WA_BriefingPaper.pdf

**The term shelf stock is used to denote planned fuels reduction work that has been cleared for implementation through the NEPA process but has not yet been accomplished.

***Map captures most major project areas, but not all shelf stock is displayed.

11/4/2019

Appendix D

Crosswalk Table of Final Mitigation Committee Report and Governor's Wildfire Response Council Final Report

As stated by the Governor's Wildfire Council in the wildfire mitigation-relevant recommendations section of its November 2019 report:

> *"Recommendations Framework: The primary information sources for these recommendations are the September 12, 2019 Mitigation Committee report; the September 16, 2019 Mitigation Committee presentation to the Wildfire Council; and the November 7, 2019 Mitigation Committee Chair's November Interim Report (this last report was completed to inform the Council's work but did not have time to undergo customary Committee approval procedures)."*[12]

At the Mitigation Committee's final meeting on Dec. 11, 2019, committee members reviewed, discussed and adopted through a consensus process the content of the December 2019 Mitigation Committee Report and Recommendations. Thus, the Mitigation Committee Report and Recommendations are intended to deepen, supplement, and provide detail to the Council's report and recommendations. This cross-walk table below is intended to facilitate clarification of where Mitigation Committee recommendations integrate with Council recommendations.

Council Recommendation* *(and bulleted recommendation content)*	**Page #**	**Mitigation Committee Recommendation****	**Page #**
*Location: Gov's Council on Wildfire Response November 2019 Report— "Goal 2: Restore and Maintain Resilient Landscapes." (pp. 61-74): https://www.oregon.gov/gov/policy/Documents/FullWFCReport_2019.pdf		**Location: Governor's Council on Wildfire Response Mitigation Committee's Dec. 2019 Report—	
Rec. 13: Leadership & Governance • Governance Structure • Accountability • Performance Metrics • Monitoring	66	**IV.** *Rec. Area:* **Cross-ownership work**—Mid- to Long-term Rec's 1-4 (coordination) **V.** *Rec. Area:* **Management efficiency and capacity**—Mid- to Long-term Rec's 1, 3 (governance / partner considerations) **VII.** *Rec. Area:* **Accountability and Information Management—**Short-term Rec. 1; Rec's 1-3 (performance measures, metrics, data sharing)	**14** **16** **27**

[12] *See* p.64 of the Council Report: *https://www.oregon.gov/gov/policy/Documents/FullWFCReport_2019.pdf*

Rec. 14: Near-Term Capital Infusion • Long-Term Sustainable Funding Model • Multiple Funding Sources and Leverage • Catalyst Investment in short-term • Strategic Financial Plan • Long-Term Funding Structure	67	**III**. *Rec. Area:* **Fire and smoke tolerance—**Short-Term Rec. 1 ($500K smoke-related grant program) **V.** *Rec. Area:* **Management efficiency and capacity**—Short-term Rec. 1 (federal appropriations and funding) **VI.** *Rec. Area:* **20-Year Strategic Financial Planning—**Short-term Rec. 1(D) ($1 mil. Invasive annual grass fire risk)**;** Mid- to Long-term Rec's 1 (revenue trends and options), 4 (new revenue), 5 (conservation finance)	**9** **15** **19**
Rec. 15: Prioritization • Quantitative Wildfire Risk Assessment (QRA) • Treatment Goal tied to High Priority Forest and Rangeland QRA Acreage • QRA Revision	68	**I.** *Rec. Area:* **Risk Assessment, mapping, and geographic prioritization—**Rec's 1-4 **II.** *Rec. Area:* ***Landscape Delineation and Strategic Placement of Treatments*—**Rec's 1-2 **III.** *Rec. Area:* **Fire and Smoke tolerance—**Mid- to Long-term Rec. 2(C) (spatial wildfire management strategies / incl. PODS) **IV.** *Rec. Area:* **Cross-ownership work—**Mid- to Long-term Rec. 5 (Rangeland invasives)	**6** **7** **12** **15**
Rec. 16: Near-Term Restoration Treatments • Immediate Implementation: High-Risk QRA and Other Acres • Public Funding to Offset Treatment Costs (non-commercial) • Federal Land NEPA-approved • Private Willing Landowners • Field Work, Good Neighbor Authority staffing, Procurement and Contracting	69	**IV.** *Rec. Area:* **Cross-ownership work—**Short-term Rec. 1 (leverage existing capacity and OSU Extension, private landowners) **VI.** *Rec. Area:* **20-Year Strategic Financial Planning—**Short-term Rec's 1(A) ($10-mil fuels treatments), 2(A) ($5 mil. Good Neighbor Authority), 2(B) ($1.5 procurement and contracting)	**13** **19**
Rec. 17: Building Project Pipeline • Cross-Landownership and Partnership Work • Environmental Planning and Analysis • Federal Land Unit Layout	70	**IV.** *Rec. Area:* **Cross-ownership work—**Mid- to Long-term Rec's 1-5 **VI.** *Rec. Area:* **20-Year Strategic Financial Planning—**Short-term Rec's 1(B) ($3.5 mil. environmental planning), 1(C) ($500K unit layout), 1(D) ($1 mil. invasive annual grass fire risk grants)	**15** **19**
Rec. 18: Capacity Building • State Capacity—incl. ODF and OSU Extension • Federal Capacity • Private Sector and Workforce Capacity • Collaborative Capacity	71	**IV.** *Rec. Area:* **Cross-Ownership work—**Short-term Rec. 1; Mid- to Long-term Rec's 1-5 **V.** *Rec. Area:* **Management efficiency and capacity—**Short-term Rec. 1 (federal funding); Mid- to Long-term Rec's 1-5	**13** **15**

		VI. *Rec. Area:* **20-Year Strategic Financial Planning—** Short-term Rec. 2 ($6.5 GNA, contracting and procurement capacity), 1(E) ($1.5 mil. collaborative capacity, technical and science); Mid- to Long-term Rec's 2, 3, 6	**24**
Rec. 19: Program Expansion • Prescribed Fire and Smoke • Rangeland Invasive Annual Grasses • Timber monetization role in offsetting restoration costs	72	**III**. *Rec. Area:* **Fire and smoke tolerance—**Short-Term Rec. 1 ($500K smoke-related grant program), 2(A)-(D); Mid- to Long-Term Rec's 1-6 **VI.** *Rec. Area:* **20-Year Strategic Financial Planning—** Short-term Rec. 1(D) ($1 mil. Invasive annual grass-driven fire risk) **V.** *Rec. Area:* **Management efficiency and capacity—** Mid- to Long-term Rec. 3 (rangeland capacity, economic infrastructure tied restoration) **VI.** *Rec. Area:* **20-Year Strategic Financial Planning—**Mid- to Long-term Rec's 4, 7 (contracting tools, role and value of forest products sector)	**9** **19** **17** **26**
Rec. 20: Long-Term Barriers • Increased Pace and Scale • Multi-Year Effort to resolving barriers • Shared Stewardship Agreement advancement and regional engagement	74	**III**. *Rec. Area:* **Fire and smoke tolerance—**Mid- to Long-Term Rec's 2(C) (spatial wildfire management strategies / incl. PODS), 4 (public education re. use of fire); Short-Term Rec. 2(D) and Mid- to Long-Term Rec. 6 (policy review re. unplanned fire response, smoke movement) **IV.** *Rec. Area:* **Cross-ownership work**—Short-term Rec. 2 (Agreement development with BLM / Dept. of Interior on rangelands) **V.** *Rec. Area:* **Management efficiency and capacity—** Mid- to Long-term Rec's 1-4 **VI.** *Rec. Area:* **20-Year Strategic Financial Planning**— Mid- to Long-term Rec's 1-7 ** *See also:* **"Other Opportunities and Tradeoffs"** section	**12** **13** **16** **26** **30**