Deschutes Collaborative Forest Project (DCFP)

2010 Project Extension Proposal for the Collaborative Forest Landscape Restoration Program (CFLRP)

Deschutes National Forest and the DCFP Collaborative

January 2020

For more information, contact:

Holly Jewkes, Forest Supervisor
Deschutes National Forest
Bend, Oregon
541-383-5512
holly.jewkes@usda.gov

Kristen McBride, Natural Resources Staff Officer
Deschutes National Forest
Bend, Oregon
541-383-5476
kristen.mcbride@usda.gov

Pete Caligiuri, Forest Ecologist
The Nature Conservancy
Bend, Oregon
541-388-3020 ext. 214
pcaligiuri@tnc.org

Vernita Ediger, Program Coordinator
Central Oregon Intergovernmental Council
Bend, Oregon
541-548-9546
vediger@coic.org

Table of Contents

Proposal Overview 1
Proposed Extension Timeline 1
Project Relationship to Broader Shared Restoration and Stewardship 1
Past Project Performance 2
Applying Learning to the Future 4
Economic, Social, and Ecological Context 4
Desired Conditions and Strategy for Proposed Treatments 6
Wildfire Risk Reduction 7
Benefits to Local Communities 8
Utilization of Forest Restoration Byproducts 9
Collaboration 10
Multi-party Monitoring 11
Readiness to Implement Extension 12
Unit Capacity and Project Funding 13
References 15
List of Attachments 17

Proposal Overview

The Deschutes Collaborative Forest Project (DCFP) (formerly Deschutes Skyline) was identified as a highly valued and visible landscape by the Deschutes National Forest (NF) and a broad range of stakeholders. Situated immediately adjacent to Bend, Sisters, and Sunriver, forest restoration treatments have focused on reducing high-severity wildfire risk in the Wildland Urban Interface (WUI), protecting priority watersheds, preserving the scenic quality of high use recreational areas, and providing restoration jobs and wood products for local economic benefit. The original landscape delineated 130,000 acres, with 75% located on National Forest System (NFS) lands. An addendum to revise the landscape was completed in April 2013, following the Pole Creek Fire. Fire effects significantly changed conditions in 2 major planning areas, prompting a reevaluation of project timelines and outputs. The revised landscape was expanded to watershed boundaries to incorporate key drainages and additional dry forest restoration projects, increasing the size to 257,548 acres, with 80% on NFS lands (Attachment A). The privately owned Skyline Forest within the DCFP boundary is a 33,000-acre tree farm recently listed for sale. Community partners and Deschutes Land Trust are committed to conserving this property for multiple values, presenting shared stewardship opportunities for restoration into the future.

Proposed Extension Timeline

We (Deschutes NF and DCFP Collaborative) are seeking an extension of funding for an additional 5 years to complete work within the existing footprint. This is the shortest time practicable to: (1) complete outstanding treatments and accomplish holistic landscape restoration objectives originally committed to in our National Environmental Policy Act (NEPA) documents, (2) uphold and leverage CFLRP funding and federal appropriations invested in the DCFP landscape to date, (3) maintain relationships and trust with the diverse DCFP Collaborative membership that have invested 10 years in the CFLRP effort, and (4) sustain social license with our communities and partners.

Project Relationship to Broader Shared Restoration and Stewardship

The work proposed within the DCFP project strongly aligns with national and regional Forest Service (FS) priorities to restore resilient ecosystems, improve forest conditions, grow partnerships through collaboration, build shared stewardship, and promote volunteerism. Comprehensive direction promoting strategic investments and cross-boundary partnerships such as the National Cohesive Fire Management Strategy and Watershed Condition Framework (WCF), also guide and support goals and outcomes in the proposed extension. The DCFP Collaborative's values align with State priorities for natural resource management as evidenced by the funding they have received under the State of Oregon Federal Forest Restoration Capacity Building grant over the past several years. Sharing stewardship of the DCFP project goals with local governments and land owners is also in direct alignment with municipal and county priorities. The City of Bend Mayor functions as the DCFP Steering Committee Chair and a Deschutes County Commissioner occupies a local government seat. Finally, the Deschutes NF 5-Year Restoration Plan emphasizes forest health and the reintroduction of fire on a larger scale, which has been central to the on-going efforts of DCFP's Prescribed Fire Subcommittee.

Past Project Performance

The efforts of the Deschutes NF and DCFP Collaborative have been highly effective in achieving the original lifetime restoration performance measures and promoting community fluency about healthy forests for multiple benefits. The following key accomplishments (Table 1) were selected to highlight our aim of achieving holistic, ecological restoration through inclusive collaborative processes and increased social license. Many accomplishments exceed 100% of the lifetime goal, as projected outcomes in the 2013 DCFP Project Addendum were conservative and/or significantly underestimated the restoration potential within individual NEPA planning areas in the DCFP landscape.

Table 1. Key accomplishments within the DCFP landscape in FY2010-2019

Key CFLRP Lifetime Goal Performance Measure	Cumulative CFLRP Lifetime Goal Accomplishment	Percent of CFLRP Lifetime Goal Accomplished
Terrestrial habitat improved/ restored	38,641 acres	184%
Road decommissioning	26.9 miles	108%
Hazardous fuels treated in WUI	108,972 acres	145%
Biomass sold	108,950 ccf*	45%
Timber volume sold	301,822 ccf*	216%
Invasive plant species treatments	15,253 acres	156%
Soil or water resources protected, maintained, or improved	8,685 acres	68%
Stream restoration/ enhancement	78.6 miles	246%
System trails maintained	1,443.4 miles	144%

* CCF = hundred cubic feet

There are several large-scale, vegetation management projects left to implement (including ~13,000 treatable acres), which will contribute to expected additional accomplishments outlined in this proposal (Attachment B). NEPA was recently completed for the Lex and Kew projects, representing hard-earned agreements with the DCFP Collaborative around active management in mixed-conifer forest types. However, commercial harvest represents the first step in a series of treatments to fully restore fire-adapted ecosystems. While the Forest has exceeded hazardous fuels reduction goals (primarily through mechanical treatments), there are still thousands of acres that have yet to receive a first entry burn (see the *Applying Learning to the Future* section). Similarly, invasive plant populations often require multiple treatments over several years and the lifetime goals did not accurately reflect the on-the-ground reality and continued treatment needs. The “Soil or Water Resources Protected, Maintained, or Improved” lifetime goal was not met because it is an integrated target and thus a smaller percentage of other accomplishments (i.e., timber volume harvested and fuels reduction). The “Biomass Sold” goal was not met primarily because it is dependent on the species composition in sale areas and relationship to current market conditions.

We have met or exceeded the annual match requirements through a combination of federal appropriations, goods for services, and in-kind contributions. For example, in-kind contributions from trails volunteers over the past 3 years alone has averaged over $650,000 per year.

Other significant ecological, economic and social outcomes to date include:

- **Collaborative Support**: DCFP has developed science-based, collaborative agreements outlining desired conditions and restoration principles for frequent-fire forests (ponderosa pine and dry and wet mixed-conifer).
- **National Recognition**: The Deschutes NF and DCFP Collaborative received the **2017 Forest Service Chief's Award** for the West Bend Project citing "*outstanding accomplishments contributing to Forest Service Strategic Goals.*"
- **Collaboration Model**: The FS International Programs "Seminar of Forest Landscape Restoration" hosts land managers and environmental policy makers from around the world and they choose to visit Bend and Sisters annually, to use the DCFP-Deschutes NF model to illustrate successful collaborative processes and outcomes.
- **Research and Site-Specific Best Available Science**:
    - We partnered with Oregon State University (OSU), Pacific Northwest Research Station (PNW), and The Nature Conservancy (TNC) to study the biophysical factors and disturbance cycles shaping mixed conifer forest ecology on the dry side of the Cascade Range to overcome controversy around proposed management in the Kew and Lex Vegetation Management Projects.
    - We are currently conducting a Spatial Diversity Pilot Project to provide a standardized and objective methodology for analyzing past treatments in ponderosa pine forest systems and their effect on tree spatial pattern. This effort was conducted in response to feedback derived from multi-party monitoring with members of the DCFP Restoration Planning and Monitoring Subcommittees.
- **Community Outreach and Education**: Informed by public opinion polling data, DCFP developed sophisticated community outreach and education platforms using a variety of digital and social media strategies as well as public awareness events (Attachment H).
- **Supply**: The Forest sold 301,822 ccf in timber volume to date, supporting the local forest products industry and only remaining sawmill in central Oregon.
- **New Partnerships**: Developed a prescribed fire, smoke and public health strategy to support at-risk individuals through smoke events (Attachment J).
- **Local Economy**: Mitigated impacts of active restoration on the outdoor tourism economy through a real-time outreach system to alert recreation user networks regarding trail status and forest access.
- **Effectiveness Monitoring:**
    - Conducted multi-party monitoring of pre- and post-treatment conditions to evaluate implementation outcomes, and a range of economic and social goals.
    - Developed an ecological effectiveness monitoring plan to understand project- and landscape-level impacts of restoration treatments on indicators such as fire behavior, watershed health, wildlife habitat, and invasive species.

Applying Learning to the Future

We have met or surpassed nearly all our proposed targets and made significant progress towards desired conditions across broad ecological and socio-economic values. We monitor ecological outcomes using vegetation departure (Vegetation Condition Class) and fire regime restoration (Fire Hazard Rating). Our data indicate that we are making great strides to restore more open forest structure (i.e., a 93% increase since 2009 consistent with the natural range of variability) and reestablish more characteristic fire regimes (i.e., an 18% increase in low fire hazard consistent with frequent, low-intensity regimes). However, we have much work still to do, including an additional 49,540 acres of highly departed forest structure and 21,335 acres of high and extreme fire hazard that need to be addressed through a combination of mechanical and prescribed fire treatments (see Tables 2 and 3 below).

Table 2: Acres in each Vegetation Condition Class (a proxy for forest structure restoration) by fire regime group* and time period for the FS managed portion of the DCFP landscape

Biophysical Setting Fire Regime	Vegetation Condition Class					
	Low Departure		*Moderate Departure*		*High Departure*	
	2009	2019	2009	2019	2009	2019
Fire Regime Group 1	14,396	40,770	6,787	3,413	62,936	39,912
Fire Regime Group 3	18,028	21,817	11,934	13,768	15,260	9,628
Other	15,259	36,004	36,822	13,706	3,091	5,457
All	47,683	98,591	55,958	30,887	81,287	54,997

Table 3: Acres in each Fire Hazard Rating (a proxy for fire regime restoration) by fire regime group* and time period for the FS managed portion of the DCFP landscape

Biophysical Setting Fire Regime	Fire Hazard Rating							
	Low		*Moderate*		*High*		*Extreme*	
	2009	2019	2009	2019	2009	2019	2009	2019
Fire Regime Group 1	57,705	63,258	2,127	6,722	3,824	4,228	20,566	9,717
Fire Regime Group 3	27,235	36,674	853	1,162	1,132	773	16,053	6,617
Other	42,753	50,553	1,286	2,298	1,494	1,453	16,471	7,761
All	127,693	150,485	4,266	10,182	6,450	6,454	53,090	24,095

* Fire Regime Group 1 includes ponderosa pine forest types characterized by a frequent, low-severity fire regime. Fire Regime Group 3 includes mixed-conifer dry and moist forest types, which based on local science were historically shaped by frequent, low- to mixed-severity fire regimes. Other includes lodgepole pine, subalpine fir and mountain hemlock forest types characterized by infrequent, high-severity (stand replacement) fire regimes.

Such data highlights the degree to which our fire restoration treatments are lagging behind commercial thinning as a first step to restoring forest structure. It also underscores the strategy outlined in this proposal, focusing on completion of the full suite of restoration treatments to reestablish characteristic forest structure and a frequent, low-severity fire regime. We have also learned that in order to be successful, restoration efforts must also address the social, economic, and other human well-being dimensions inherent to forest-dependent communities.

Economic, Social, and Ecological Context

Ecological Context and Values At-Risk: The east slope of the Cascade Mountains of Central Oregon encompasses a diverse range of forest types, from cold and wet subalpine and

mountain hemlock forests at high elevations near the Cascade Crest, to warm and dry mixed-conifer and ponderosa pine forests at lower elevations around Sisters, Bend, and Sunriver. Among these, the dry and moist forest ecosystems that comprise more than two-thirds of the DCFP landscape are the priority focal areas for active forest restoration. For millennia, these mid- and lower-elevation ponderosa pine and dry and moist mixed-conifer forests were maintained by frequent, low-intensity fires burning every 10 to 25 years (Hagmann et al. 2013; Hagmann et al. 2014; Merschel et al. 2018). These fires sustained a forest of fire-dependent trees and plants, maintained a fine-scale mosaic of variable forest structures, patterns, and wildlife habitats, and supported properly functioning watersheds.

Beginning with Euro-American settlement in Central Oregon, and increasing over the past 100+ years, our mid- and lower-elevation forests have experienced significant changes. These changes first began with the removal of American Indians from the land and the elimination of tribal fire use, followed by the introduction of widespread livestock grazing, extensive logging of the largest and most fire-resistant trees, and a steady increase in wildfire suppression efforts over the past century (Hessburg and Agee 2003). Together, these factors led to unnatural conditions characterized by overly dense forests with overgrown, shrubby understories, uniformly young forests with few old, large fire-tolerant trees, and riparian and meadow ecosystems dominated by conifer instead of riparian species (Hessburg et al. 2005; Merschel et al. 2014). As a result, the forests of Central Oregon today are less resilient to modern wildfires, drought, insects, diseases, and encroachment of invasive annual grasses, all of which are further exacerbated by a warming and drying climate (Voelker et al. 2019; Halofsky et al. 2019). These changes are negatively impacting the plants and animals that historically thrived in our fire-adapted forests and watersheds. A loss of suitable habitat for the federally listed northern spotted owl (a key species in the DCFP landscape) is primarily due to wildfire. The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) recognizes the need for active management in fire-adapted landscapes to reduce the risk of loss of existing critical habitat and to provide for habitat connectivity.

Restoration activities within the CFLRP area have improved watershed condition since 2010 (14 of the 17 subwatersheds are in a Condition Class 1, or properly functioning, as classified by the WCF). However, at a landscape scale there continue to be key physical and biological issues that pose a risk to watershed condition. Road density, maintenance, and proximity to water are important influencers of watershed condition. Hydrologic connectivity of roads increases the drainage network of subwatersheds, adding to peak flows, increasing the potential for erosion, and conveying excess sediment to streams. The effects of hydrologically connected roads will amplify under conditions associated with climate change (Halofsky et al. 2019). High road density also leads to increased disturbance and functional habitat loss for many species, including mule deer and elk. Additional road closures and decommissioning are needed to increase core and refuge habitat for wildlife and sustain soil productivity and watershed function.

<u>Economic and Social Context and Values at Risk:</u> Overlaying this ecological context is a complex social and economic landscape. The DCFP boundary contains 78% of the Deschutes NF WUI. Deschutes County is home to nearly 200,000 residents (growing approximately 3% per year),

many of whom live, work, and play in and around the Deschutes NF. In addition, Central Oregon sees more than 4.5 million overnight visitors annually, three-quarters of whom cite outdoor recreation, leisure, and sightseeing as their main purpose for visiting the area (see Visit Bend; Central Oregon Visitors Association). The Deschutes NF receives 2.1 million forest visits and 3.2 million recreation site visits annually, the second highest in Region 6 and a 66% increase from 2013 to 2018 (FY18 National Visitor Use Monitoring [NVUM] data). The Forest has observed a direct correlation between the increasing population and forest visits to road and trail impacts over the past 10 years. Maintaining forest roads to a suitable standard for safe use requires more resources every year. Similarly, 70% of the annual 3.2 million forest visitors used the trail system, straining capacity on some popular trails and recreation sites (especially those within the DCFP boundary immediately adjacent to Bend). This has increased the need for visitor use management in order to minimize user conflicts and resource impacts.

This immense use of the Deschutes NF is, in part, a major driver of the nearly $1.1 billion in direct tourism economic impacts in Deschutes County in 2018, of which visitor spending on recreation-related commodities in Central Oregon totaled nearly $100 million (see Central Oregon Visitors Association). The impacts of wildfire on social and economic values in Central Oregon are comparably large, as evidenced in the 2018 Travel Oregon report about the 2017 wildfire season. The report estimated Central Oregon suffered $19 million worth of lost visitor spending, the highest loss among all regions statewide.

The threat to these economic and social values were highlighted in the recent Pacific Northwest Quantitative Risk Assessment, which rated much of the DCFP landscape as high or very high wildfire risk. These elevated wildfire risk ratings are primarily driven by the high potential of negative wildfire impacts to adjacent infrastructure, people, and property. Similarly, a recent assessment of community wildfire exposure conducted by the FS Region 6 and Pyrologix found that Bend, Sisters, Tumalo, and La Pine (all near or adjacent to the DCFP landscape) were among the top 50 most exposed communities to wildfire in Oregon, and Deschutes County ranked third in the state for highest housing unit exposure to wildfire (Scott et al. 2018). In this context, it is no surprise that the relationship between human and community well-being and forest restoration and resilience are so clearly linked. The DCFP landscape overlaps with four approved Community Wildfire Protection Plans (CWPPs) in Deschutes County, all of which have been updated in the past 5 years with strong local support. Recent public opinion research conducted by DCFP indicates that 63% of Deschutes County residents say that reducing wildfire risk in our forests is a very high priority. Similarly, the Bend City Council recently voted to include wildfire resilience as a priority in its 2019-2021 strategic plan, while also approving (in conjunction with the Deschutes County Board of Commissioners) a community response plan to facilitate increased prescribed fire use in the WUI, the first such plan in Oregon.

Desired Conditions and Strategy for Proposed Treatments

The overarching strategy for the DCFP landscape is to complete the full suite of needed forest and watershed restoration treatments to increase fire-adapted forest resilience to wildfire, drought, insects, diseases, and invasive species. This includes continued implementation of mechanical and fuel reduction treatments, and the reintroduction of frequent, low-intensity fire. Our strategy is guided by locally-developed, best-available science (e.g., Hagmann et al.

2013; Hagmann et al. 2014; Merschel et al. 2014; Merschel et al. 2018) describing the forest structure, species composition, spatial patterns, and ecological processes that support native plant communities, healthy soils, wildlife habitat, and functioning watersheds.

Our desired conditions include a matrix of mid- and late-successional open forest conditions, dominated by large-diameter, early-seral, fire- and drought-tolerant tree species (primarily ponderosa pine) and understories comprised of a mosaic of native grasses/sedges, forbs, and shrubs (Simpson 2007). Historically, this late-open forest condition, maintained by frequent, low-intensity fire, represented approximately 70 to 80% of our frequent fire-adapted forest types, but declined significantly following extensive early 20th-century logging and fire exclusion (LANDFIRE 2013). As previously mentioned, work to date has contributed to a significant increase in restored forest structure and a modest increase in low fire hazard, resulting in positive outcomes. The white-headed woodpecker, a FS sensitive species and a USFWS species of special concern, requires large, open ponderosa pine forests or dry mixed-conifer forests dominated by ponderosa pine. In some instances, recent restoration treatments have resulted in white-headed woodpeckers utilizing treated stands soon after implementation. Treatments will also benefit the threatened northern spotted owl, focusing on retaining habitat connectivity and promoting large tree structure across the project area.

The outstanding resource restoration treatments identified in this proposal, implemented at scale across the DCFP landscape, are critical to fully restore ecological processes and functions, many of which translate directly into benefits for people and communities. This combination of treatments is consistent with empirical and modeled evidence of the effectiveness of forest restoration and fuel reduction treatments to reduce future wildfire intensity and severity (Fule et al. 2012; Martinson and Omi 2013; Kalies and Kent 2016; Lyderson et al. 2017). These treatments are important to increasing the resilience and resistance of frequent-fire forests to the predicted/modeled changes in climate, including increased temperature, changes in the timing and type of precipitation, prolonged seasonal drought and drought stress, and increased duration, severity, and extent of wildfires (Voelker et al. 2019; Halofsky et al. 2019).

Objectives for road and trail closures (and maintenance) will focus on user experience balanced with wildlife habitat and watershed condition. Mule deer (a culturally and economically important species) have seen steady population declines throughout the western U.S. due to rapidly growing communities causing habitat fragmentation. Additional road and user-created trail closures will be critical to decrease the potential for disturbance and mitigate habitat loss. Many recreation sites and trails need additional hardening, signage, and visitor use controls to accommodate increasing recreational use and minimize resource impacts. This proposal would support several on-going collaborative efforts with partners to address these issues.

Wildfire Risk Reduction

Under extreme fire weather, wildfire starts within the DCFP landscape are only one to two burn periods from reaching a population center. Wildfire risk reduction is imperative not only for local residents but also for sustaining the local tourism economy. Reducing wildfire risk to high-use recreation areas and maintaining the forest characteristics that make them attractive to visitors is fundamental to our approach. Further, focused and sustained hazardous fuels

reduction treatments increase opportunities for indirect suppression tactics, improving firefighter safety. This approach, under the right weather conditions, allows for opportunistic use of larger mixed-severity wildfires to achieve restoration objectives (utilizing road systems and fuels treatment units for holding lines). Decreased potential for high-severity wildfire behavior reduces the number of resources needed as well as the time required for wildfire response, saving both time and money.

Two key components of the long-term strategy to address wildfire risk in the DCFP landscape are: (1) increased cross-boundary fuels reduction work within the WUI, and (2) expanded use of prescribed fire and wildfire to restore and maintain the frequent, low-intensity fire regime that historically dominated the landscape. Participating agreements that use authorities under the Wyden Amendment are the primary tool for completing this cross-boundary work, such as the ongoing prescribed fire projects with the Bend Parks and Recreation District, High Desert Museum, and the Tree Farm (a private residential housing development). Several agreements with other private landowners are in progress. Focusing on these mixed ownership projects reduces fuels in high-risk areas, cultivates relationships, and encourages a communal approach to wildfire risk reduction. This cross-boundary approach undertaken with partners and community support has allowed us to complete comprehensive prescribed fire treatments surrounding the City of Bend (Attachment I).

Our wildfire risk reduction strategy recognizes the balance and challenge of increasing prescribed fire with the regulatory and social issues surrounding smoke impacts to nearby communities. The DCFP Prescribed Fire Subcommittee has been central in helping the FS address these issues, as their goals center around the *"increased use of ecologically-appropriate wildland fire (prescribed fire and managed wildfire) in strategic locations on the Deschutes NF, the Wildland Urban Interface, and adjoining lands."* The Subcommittee spent the last year providing collaborative, science-based input to the recently revised Oregon's Prescribed Fire Smoke Management Plan. This effort informed changes to the Plan, opening up additional windows for prescribed fire implementation in Central Oregon. The Subcommittee further set a 10-year goal to increase the pace and scale of restoration through prescribed fire and managed wildfire by four times (~20,000 acres) in strategic, high-priority locations within and near to the existing DCFP landscape.

Consistent and real-time communication has been and will continue to be integral to our strategy for maintaining public support for prescribed fire activities. In addition to the efforts of the Prescribed Fire Subcommittee, DCFP has invested considerably in outreach resources and events to mitigate social barriers to prescribed fire. Most notably, they have worked in partnership with local public health officials, local government and state agencies to create the "Prescribed Fire, Smoke and Public Health Community Response Plan" (Attachment J).

Benefits to Local Communities

Central Oregon is unique in that it has its feet in both its historical roots as a timber economy and the "New West" as a mecca for outdoor recreation and tourism with a nearly $1.1 billion economy. The forest products and outdoor tourism industries are integrally linked to the health and sustainability of the Deschutes NF and DCFP landscape. This CFLRP project has meant that

communities in Central Oregon are safer thanks to focused fuels reduction treatments in the WUI. The Region's outdoor recreation economy is bolstered by landscape restoration that facilitates healthy, resilient forests in high-use recreation areas. The local wood products industry provides jobs and new economic opportunities (see the *Utilization of Forest Restoration Byproducts* section) as a result of a predictable supply of commercial timber and wood fiber supported by CFLRP funding over the past 10 years. In addition, the public health collaborative born from DCFP efforts further supports at-risk populations to utilize strategies to limit their exposure to smoke during prescribed fire, enhancing quality of life for many Central Oregonians.

The DCFP has played a critical role in maintaining public understanding and support for active restoration. Our outreach and education efforts have facilitated broader public understanding of the issues facing forest health, leading community members to take an active role in supporting forest restoration, even when logging operations and prescribed fires temporarily close recreational access or cause inconveniences. Thus, this extension embraces and builds upon the social and economic goals of our original proposal: enhancing community safety through WUI treatments, supporting a sustainable outdoor recreation economy through enhancing forest health and resilience, ensuring forest treatments address a multitude of social values (such as wildlife habitat and community drinking water), while also creating and maintaining jobs in the forest products industry. While we have made strides in each of these areas, it is critical we continue to do so through implementation of projects planned during the first phase of CFLRP. It is also critical that we leverage DCFP's social capital. Our recent public opinion poll shows that compared to 2013, the public today recognizes and supports the need for active forest restoration. This wide-spread public support is key to ensuring the increased pace, scale, and quality of forest restoration. The most relevant key metrics that best align with DCFP's ongoing socioeconomic goals include:

- Maintain or increase acceptance of frequent, low intensity wildfire or prescribed fire
- Maintain or increase the number and/or type of trainings related to restoration completed by project work
- Maintain or increase the number of visitor days open for locals to recreate
- Maintain or increase fuels reduction acres in relation to areas considered to be at highest risk from wildfire
- Maintain or increase perceived benefits of restoration activities
- Maintain or increase the extent to which stakeholders previously in conflict are now working together
- Maintain or increase the quality and timeliness of communication among all project partners

Utilization of Forest Restoration Byproducts

The Deschutes NF aims to offer a variety of forest restoration byproducts to help support the broader wood products industry economy, leverage timber value, and meet landscape restoration goals. The strategy for the utilization of forest restoration byproducts specific to this proposal follows the same approach (Attachment C). Sawtimber and biomass material from the DCFP landscape is delivered to a variety of wood products delivery points across Oregon and

southern Washington for the manufacturing of an assortment of finished products including mill works, dimension lumber, veneer, plywood, post and poles, fuelwood, and clean chips. This market diversity helps the Forest achieve maximum utilization of restoration byproducts across all product classes, and helps to support the local and regional economy. Notably, the majority of sawtimber harvested from the DCFP landscape over the past 10 years has been delivered to the only remaining local sawmill in central Oregon, Interfor U.S. Inc.

To ensure the Forest is supplying products to a variety of facilities, sawtimber and biomass material is required to be removed from all large vegetation contracts. This strategy provides an opportunity for delivery of material to all wood processing facilities within the local area, and ensures the Forest is efficiently moving towards the desired end result on the landscape. The sale of both of these products is able to either pay for the full suite of restoration treatments or offsets the higher restoration treatment costs, helping to leverage appropriated dollars to ensure these projects are completed.

Since the original 2010 CFLRP proposal was submitted, two new wood processing facilities have been established within the local area. The Quicksilver Mill (La Pine, Oregon) and the T2 Inc. Mill (Sweet Home, Oregon). Quicksilver and T2 Inc. mill owners took a risk to build small mills in the area based on the sustainable supply of forest restoration byproducts being generated. While both the Quicksilver and T2 Inc. facilities have the capability to process sawtimber, they both rely heavily on small size class products other sawmills are unable to handle. These mills are the largest consumer of small diameter volume from the Forest, and small diameter material is a key byproduct to completing holistic restoration in the DCFP landscape. Quicksilver Mill is designed to process different finished products such as utility poles and fencing, and it has the capability to adjust how and what is manufactured to take advantage of markets. T2 Mill is currently adding a small diameter sawmill to their processing facility that will generate small pallet stock and boards. Both facilities continue to provide clean chips to local paper and packing companies located in Oregon and Washington.

The Forest's strategy will include the continued use of various contract tools to best meet specific restoration objectives and utilize timber value. Over the past 10 years, the Forest generated 7 Integrated Resource Timber Contracts, 11 Integrated Resource Service Contracts, and 2 Stewardship Agreements in addition to multiple timber sale contracts. Combined, these stewardship projects generated $6,017,965 worth of product value, of which $3,649,946 has or will be exchanged as goods for services, and $2,153,231 will translate to retained receipts. The Forest plans to reinvest the retained receipts into outstanding optional service work items on several Integrated Resource Service Contracts.

Collaboration

Overview

Established in 2010, the DCFP works in partnership with the Deschutes NF to collaboratively plan, implement, and monitor forest and watershed restoration activities. DCFP engages a diverse range of stakeholders including local government, state and federal agencies, tribes, conservation and environmental groups, private landowners, forest products industry, academic researchers, recreation interests, watershed and aquatic resource organizations, and

community wildfire protection groups to successfully develop a robust community vision for forest restoration on the Deschutes NF.

Membership and Structure

DCFP's Charter outlines our vision, mission, goals, and governance structure. DCFP's leadership body, the Steering Committee, is comprised of up to 19 seats selected from among their stakeholder groups representing the following interests: watershed, environmental, forest products industry, local government, private landowners, state and federal agencies, community wildfire protection, tribal, recreation and tourism, at-large community members, and researchers (Attachment D). As with all community volunteer groups, DCFP's membership has changed over its 10-year history, although a handful of founding members remain and regularly attend meetings.

DCFP is served by 4 subcommittees: Community Outreach, Restoration Planning, Adaptive Management and Implementation Monitoring, and Prescribed Fire. Subcommittees each undertake specific aspects of DCFP's work and develop proposals that they bring to the Steering Committee for discussion, review, and approval. All of the subcommittees follow a set of common agreements and decision-making rules designed to build and enhance trust among members. Group meeting norms, such as respecting others' opinions and seeking common solutions, enhance meeting productivity. Decision-making rules ensure that those involved in the decision making have been consistently participating in the group. Members must have attended 2 out of the last 4 meetings in order to participate in the decision-making process. Although all are welcome to voice their views, only those who meet the attendance requirements "vote" in final consensus decisions. The DCFP operates on a consensus-minus one basis. Although DCFP strives for consensus, in the event that consensus cannot be reached, the minority voice develops a minority report and appends that to the majority's agreement. Minority reports are very rare. Communication between meetings largely occurs via email. Overlap of staff and membership between subcommittees and the Steering Committee also provides linkages between DCFP's different bodies of work. Collaborative leadership meets twice a year with DCFP's fiscal sponsor, the Central Oregon Forest Stewardship Foundation, to discuss shared work and coordinate funding needs.

Multi-party Monitoring

The DCFP engages in pre- and post-implementation multi-party monitoring to crosswalk planned and finalized forest restoration treatments with DCFP's recommendations. For each project, this involves outlining the planned restoration treatments, tiering them to DCFP's consensus agreements, and clarifying the rationale for any disparities. Discussions sometimes highlight the need for additional clarity within DCFP's recommendations, conflicting management objectives, site-specific complexities, and implementation challenges.

After a series of field trips and follow-up meetings, DCFP members develop a letter codifying their areas of agreement and outlining remaining challenges. These challenges are addressed through adaptive management processes that engage collaborative members in clarifying sticking points via additional learning, discussion, or other means. These conversations engage all stakeholder groups and are framed within the context of relevant science to ensure a

balanced discussion of issues. Experience has taught us to engage in communication early and often, especially on hot-button topics, such as forest stand opening sizes or retention of large and old trees. We have modified our communication processes to ensure that the FS presents draft alternatives for each project to the DCFP prior to finalizing or publishing them.

Through these efforts, DCFP has flagged and addressed concerns related to opening sizes, retention of large and old tree structure, as well as road decommissioning and closure (important to wildlife habitat and watershed function). The Forest addressed collaborative members' concerns in the Kew and Lex Vegetation Management projects and retained collaborative support. Our understanding of implementation challenges and limitations has increased in the process.

In addition to project-specific monitoring, DCFP is implementing an adaptive management pilot project to take an in-depth look at one particular element of our past recommendations: stand-level spatial heterogeneity. Spatial diversity of trees is associated with an array of important ecological functions such as snow retention and soil hydrology, wildlife habitat, understory plant diversity, drought, insect and pathogen resistance, and fire behavior modification.

To further explore this issue, DCFP worked with TNC to develop a multi-party monitoring and adaptive management pilot project employing cutting-edge analysis of small unmanned aircraft system (sUAS) collected photo orthomosaic data to evaluate the degree to which silvicultural prescriptions, marking guides, and designation methods resulted in spatial variability in tree patterns. Second-growth ponderosa pine stands were selected for analysis based on criteria intended to control for other drivers of variability. Then DCFP collected post-treatment, high-resolution photo data, which was then stitched together to create orthomosaic images and three-dimensional canopy models to compare against pre-treatment stem maps derived from LiDAR. DCFP was able to determine whether treatment (and the underlying combination of silvicultural prescription, marking guide, and timber designation method) had moved the stand toward greater spatial diversity or uniformity, and to what degree.

Taken as a whole, DCFP's multi-party monitoring maintains and enhances collaborative trust, improves outcomes on the ground, and has the potential to provide valuable site-specific data (and in some cases best available science) on the effectiveness and efficiency of various treatments to inform adaptive management into the future.

Readiness to Implement Extension

NEPA has been completed for all remaining projects in the proposed extension. The most significant workload will be the preparation of thinning and fuel treatment units and the implementation of contracts to accomplish this work. The Forest anticipates the need to reprioritize workloads for existing Level III Contracting Officer Representatives (CORs) and ensure new employees are provided training up to a COR Level III certification to keep pace with service and stewardship contract award and administration. The Forest will need to shift key staff time to expand business practices to improve implementation efficiencies and increase pre-sale capacity, including the use of DxP timber designation, Oregon Department of Forestry (ODF) assistance in sale preparation under the Good Neighbor Authority (GNA) and using stewardship authorities to apply timber value to accomplish service work. The Forest will

continue to maximize contracting under the streamlined award process with the Central Oregon Restoration Project (CORP), an umbrella stewardship contract with pre-vetted contractors that have expertise in restoration service work. As previously mentioned, the Deschutes NF also has several instruments currently in place to increase capacity, specifically for prescribed fire and fuels treatments within and adjacent to the DCFP landscape: 3 participating agreements for cross-boundary prescribed fire application, a participating agreement with TNC to host the Central Oregon Prescribed Fire Training Exchange (COTREX), a GNA with ODF for small tree thinning and other hazardous fuels reduction work, a contract for prescribed fire road flagging/traffic control, and a participating agreement with Oregon Department of Corrections for fuels reduction treatment assistance.

Unit Capacity and Project Funding

The Deschutes NF has been highly engaged with several members of DCFP since before the formal establishment of the collaborative in 2010. We expect key FS representatives from multiple levels of the organization and resource areas will continue to actively participate with the DCFP Collaborative over the life of the 5-year extension, as the Deschutes NF Leadership Team is committed to forest restoration through collaborative process and shared stewardship (Attachment G). In addition, the key FS staff that have been regularly engaged with the DCFP membership have a long-standing working relationship built on trust and shared learning.

The Forest anticipates unit costs for timber sale implementation will increase slightly with salary inflation and ongoing required surveys for projects within northern spotted owl critical habitat. In order to sustain the Forest's internal capacity to do this work, we are increasing our partnership with the ODF and have utilized some of their resources for increasing our capacity during planning and implementation. For example, the Forest has partnered with them to increase our botany and heritage survey and timber sale preparation capacity. Broader use of GNA timber sales is also being actively explored on the Deschutes NF, and forest leadership are evaluating which vegetation management projects would be a best fit to use this tool. Further, the Forest is planning to reinvest retained receipts (generated from completed DCFP projects) and capitalize on goods for services and partner in-kind contributions for future restoration treatments (Attachment F).

Prescribed fire implementation costs will ultimately be reduced in the future as treatment units receive a second entry burn. This second entry is critical to maintain fuels treatment investment over time, and in some areas the cost can be half as much as the initial entry. Additionally, local data suggests second entry burns produce only one-third of the smoke generated by a first entry burn. By FY2023, the majority of mechanical work will be completed and the emphasis will be on prescribed fire and managed wildfire. Recent changes to Oregon's Prescribed Fire Smoke Management rules will open up additional burn days for prescribed fire and will permit more daily acres in the DCFP landscape. DCFP has invested considerable effort into lobbying for these changes and recently spearheaded the State's first Community Response Plan and Smoke Sensitive Receptor Area exemption request (approved on December 7, 2019). Approval of this exemption will further open up windows for prescribed fire near the City of Bend.

The Deschutes NF and DCFP Collaborative have a strong interest in continuing to work together on the proposed extension and beyond (Attachment E). DCFP held a visioning workshop with key FS staff in spring 2019, where the many opportunities to expand and apply our CFLRP efforts and products (i.e., consensus level recommendations for ponderosa pine and mixed-conifer forests) to a broader geography were highlighted. Our vision includes leveraging the social license and momentum we have built over the past 10 years to continue increasing the pace and scale of restoration as we begin work on other project areas with similar ecological and socioeconomic considerations. In addition to completing the proposed work over the 5-year extension, our holistic landscape restoration within the existing footprint will also involve undertaking maintenance treatments and long-term monitoring. We will continue utilizing available tools for promoting implementation efficiencies (i.e., GNA, shared stewardship) and seeking other FS competitive funding and external grant funding sources to support this work. In short, our exit strategy is to expand our collaborative work beyond the existing DCFP boundary in 2024, and to leverage and expand our collaborative relationships and community support, utilize best available science, and explore new innovations and efficiencies to increase the pace and scale of restoration into the future.

References

Fulé, P.Z., J.E. Crouse, J.P. Roccaforte, E.L. Kalies. (2012). Do thinning and/or burning treatments in western USA ponderosa or Jeffrey pine-dominated forests help restore natural fire behavior? Forest Ecology and Management 269: 68-81.

Hagmann, K.R., J.F. Franklin, K.N. Johnson. (2013). Historical structure and composition of ponderosa pine and mixed-conifer forests in south-central Oregon. Forest Ecology and Management 304: 492-504.

Hagmann, K.R., J.F. Franklin, K.N. Johnson. (2014). Historical conditions in mixed-conifer forests on the eastern slopes of the northern Oregon Cascade Range, USA. Forest Ecology and Management 330: 158-170.

Halofsky, J.E., D.L Peterson, J.J. Ho, eds. (2019). Climate change vulnerability and adaptation in south-central Oregon. General Technical Report PNW-GTR-974. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region. 496 p. Available online: https://www.fs.fed.us/pnw/pubs/pnw_gtr974.pdf

Hessburg, P.F., J.K. Agee. (2003). An environmental narrative of inland Northwest United States forests, 1800-2000. Forest Ecology and Management 178: 23-59.

Hessburg, P.F., J.K. Agee, J.F. Franklin. (2005). Dry forest and wildland fires of the inland Northwest USA: contrasting the landscape ecology of the pre-settlement and modern era. Forest Ecology and Management 211: 117-139.

Kalies, E.L., L.L.Y. Kent. (2016). Tamm Review: Are fuel treatments effective at achieving ecological and social objectives? A systematic review. Forest Ecology and Management 375: 84-95.

LANDFIRE: LANDFIRE Vegetation Dynamics Models. (2013, June – last update). [Homepage of the LANDFIRE Project. U.S. Department of Agriculture, Forest Service; U.S. Department of Interior. Available online (last update June 2013): http://www.landfire.gov/index.php

Lydersen, J.M., B.M. Collins, M.L. Brooks, J.R. Matchett, K.L. Shive, N.A. Povak, V.R. Kane, D.F. Smith. (2017). Evidence of fuels management and fire weather influencing fire severity in an extreme fire event. Ecological Applications 27(7): 2013-2030.

Martinson, E.J., P.N. Omi (2013). Fuel treatments and fire severity: a meta-analysis. Research Paper RMRS-RP-103WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 38 p. Available online: https://www.fs.fed.us/rm/pubs/rmrs_rp103.pdf

Merschel, A.G., T.A. Spies, E.K. Heyerdahl. (2014). Mixed-conifer forests of central Oregon: effects of logging and fire exclusion vary with environment. Ecological Applications 24(7): 1670-1688.

Merschel, A.G., E.K. Heyerdahl, T.A. Spies, R.A. Loehman. (2018). Influence of landscape structure, topography, and forest type on spatial variation in historical fire regimes, Central Oregon, USA. Landscape Ecology 33(7): 1195-1209.

Scott, J.H., J. Gilbertson-Day, R.D. Stratton. (2018). Exposure of human communities to wildfire in the Pacific Northwest. Briefing paper. 10 p. Available online: http://pyrologix.com/ftp/Public/Reports/RiskToCommunities_OR-WA_BriefingPaper.pdf

Simpson, M. (2007). Forested plant associations of the Oregon East Cascades. R6-NR-ECOL-TP-03-2007. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region.

U.S. Fish and Wildlife Service (USFWS). (2011). Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*). Portland, OR: U.S. Department of the Interior, Fish and Wildlife Service. xvi + 258 p. Available online: https://www.fws.gov/oregonfwo/species/Data/NorthernSpottedOwl/Recovery/Library/Documents/RevisedNSORecPlan2011.pdf

Voelker, S.L., A.G. Merschel, F.C. Meinzer, D.E.M. Ulrich, T.A. Spies, C.J. Still. (2019). Fire deficits have increased drought sensitivity in dry conifer forests: Fire frequency and tree-ring carbon isotope evidence from Central Oregon. Global Change Biology 00: 1-16.

List of Attachments

Attachment A: Deschutes Collaborative Forest Project (Deschutes NF CFLRP) Landscape maps

Attachment B: DCFP Planned Treatments for Proposed 5-year Extension

Attachment C: DCFP Utilization of Forest Restoration Byproducts

Attachment D: DCFP Collaborative Membership

Attachment E: DCFP Letter of Commitment

Attachment F: DCFP Project Funding Plan for Proposed 5-year Extension

Attachment G: Deschutes NF Leadership Letter of Commitment

Attachment H: DCFP Community Outreach and Education Summary

Attachment I: Bend WUI Prescribed Underburning map

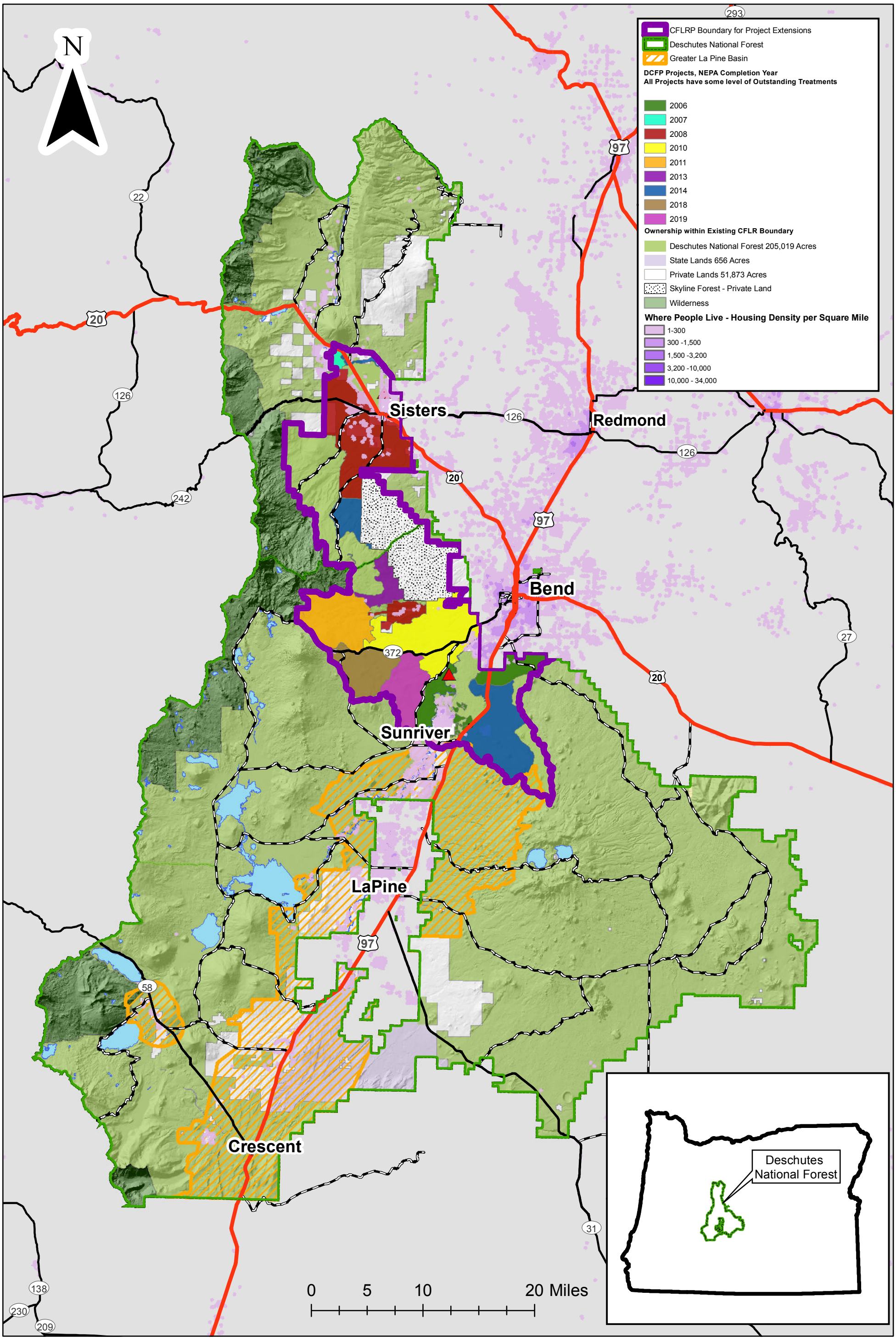
Attachment J: Prescribed Fire, Smoke and Public Health Community Response Plan

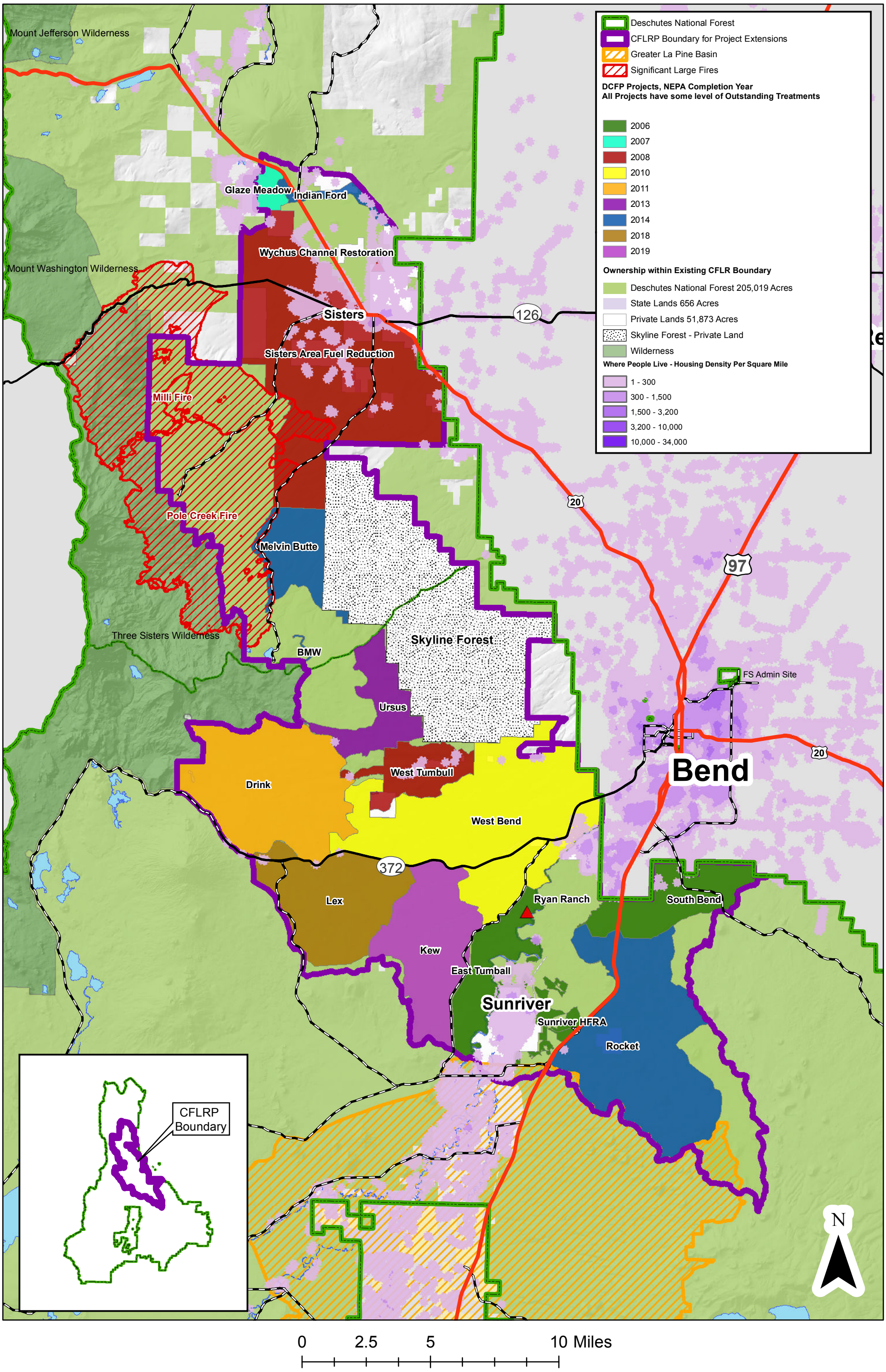
Attachment K: Senators Merkley and Wyden Letter of Support for DCFP Proposal

Attachment L: City of Bend Mayor Letter of Support for DCFP Proposal

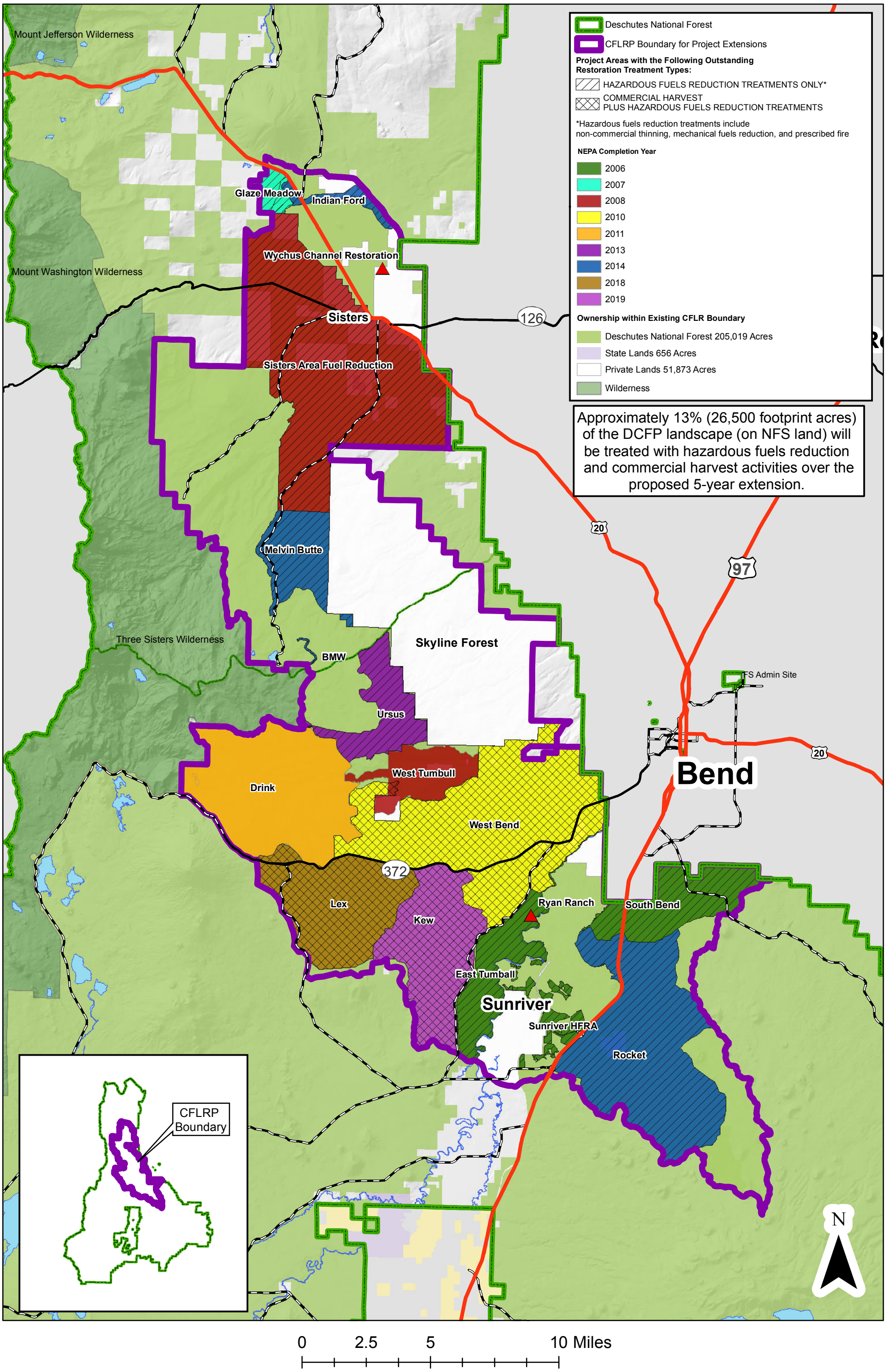
Attachment A:

Deschutes Collaborative Forest Project (Deschutes NF CFLRP) Landscape




Deschutes National Forest
CFLRP Boundary for Project Extensions
Greater La Pine Basin
Significant Large Fires
DCFP Projects, NEPA Completion Year
All Projects have some level of Outstanding Treatments
2006
2007
2008
2010
2011
2013
2014
2018
2019
Ownership within Existing CFLR Boundary
Deschutes National Forest 205,019 Acres
State Lands 656 Acres
Private Lands 51,873 Acres
Skyline Forest - Private Land
Wilderness
Where People Live - Housing Density Per Square Mile
1 - 300
300 - 1,500
1,500 - 3,200
3,200 - 10,000
10,000 - 34,000
Mount Jefferson Wilderness
Mount Washington Wilderness
Three Sisters Wilderness
Glaze Meadow
Indian Ford
Wychus Channel Restoration
Sisters
Sisters Area Fuel Reduction
Milli Fire
Pole Creek Fire
Melvin Butte
BMW
Skyline Forest
Ursus
Drink
West Tumbull
West Bend
Lex
Kew
East Tumball
Ryan Ranch
South Bend
Sunriver
Sunriver HFRA
Rocket
Bend
FS Admin Site
126
20
97
372
CFLRP Boundary
N
0
2.5
5
10 Miles

Proposed Integrated Vegetation Management Treatments



Attachment B: DCFP Planned Treatments for Proposed Extension

Core Restoration Treatment Types	*Please briefly fill in additional background information for the prompts below*	Year 1*	Year 2	Year 3	Year 4	Years 5-10	*TOTAL*	Key treatment objectives	Estimated % accomplished on NFS lands (across all ten years)	Other landownership types (other federal, tribal, state, private, etc.) where treatments will occur
Hazardous Fuels Reduction (acres)	These acres reflect expected fuels accomplishment (FP-FUELS-ALL), not footprint acres	13,000	14,500	14,050	7,750	4,500	53,800		100	
Mechanical Thinning (acres)	Includes commercial (crown bulk density reduction) and NCT/LFR Thinning	10,000	8,500	4,300	1,000	500	*24,300*	Reduce fire hazard and improve forest health	100	
Prescribed Fire (acres)	Underburning only, year 1 based on average yearly accomplishment in CFLRA over last 3 years, anticipate a growing number of acres completed in CFLRA over next 5 year with relaxed smoke management rules and additional projects available for burning	1,500	1,750	2,000	2,250	2,500	*10,000*	Reintroduce fire as an ecological disturbance and reduce uncharacteristic wildfire hazard	100	
Other (acres)	This includes piling, mastication, brush mowing, and slash pile burning	1,500	4,250	7,750	4,500	1,500	*19,500*	Reduce fire hazard	100	
Wildfire Risk Mitigation Outcomes - Acres treated to mitigate wildfire risk	All acres are treated with an objective of reducing wildfire risk	13,000	14,500	14,050	7,750	4,500	*53,800*	Reduce fire hazard	100	
Wildfire Risk Mitigation Outcomes - WUI acres	Approximately 85 % of CFLRA is in WUI	11,050	12,325	11,943	6,588	3,825	*45,730*	Reduce fire hazard	100	
Invasive Species Management (acres)		1600	1600	1600	1600	1600	*8,000*	Manage/reduce invasive species	100	
Road Decommissioning (miles)		19	7	7	7	7	*47*	Improve wildlife habitat and watershed condition	100	
Road Maintenance and Improvement (miles)		55	67	67	67	67	*323*	Sustain and improve forest access for multiple use	100	
Wildlife Habitat Restoration (acres)		4000	4000	4000	4000	4000	*20,000*	Improve wildlife habitat	100	
Crossing Improvements (number)			1	2			*3*	Improve fisheries habitat	100	
In-Stream Fisheries Improvement (miles)		2.25	0.87	0.87	0.4	0.4	*4.8*	Improve fisheries habitat	100	
Soil and Watershed resources enhanced or maintained (acres)		1000	1000	1000	1000	1000	*5,000*	Improve watershed condition	100	
Stand Improvement (acres)		2500	2500	2500	2500	2500	*12,500*	Improve forest health and reduce fire hazard	100	
Timber Harvest (acres)**	All (100%) timber harvest acres will be treated with ground-based equipment.	2,490	3,355	3,884	4,517	4,699	*18,945*	Improve forest health, reduce fire hazard and provide economic opportunities to local communities	100	
System Trails Maintained or Improved (miles)		60	60	60	60	60	*300*	Sustain and improve recreation experience and reduce impacts to natural resources	100	
Other (acres)							*0*			

**Assume funding requested for Year 1 will be allocated in February 2020 at the earliest*

***Note that timber volume produced from the treatment is estimated in a separate attachment - Attachment C.*

Last updated 11/21/19 to clarify, see FAQ:
https://www.fs.fed.us/restoration/CFLRP/questions/answers/qa018_submission.shtml

Attachment C: DCFP Utilization of Forest Restoration Byproducts

*Note that acres treated includes all acres treated within the CFLRP boundary. However, the projected annual harvested volume is only for NFS lands.

Fiscal Year	Estimate of acres awarded annually that will generate restoration byproducts**	Estimate of volume (ccf) sold annually that will generate restoration byproducts**	Total projected annual harvested volume (ccf) from NFS lands	Expected percentage commercially utilized* from NFS lands
2020	7,022	79,000	30,550	100
2021	3,496	40,000	38,058	100
2022	2,300	21,000	45,529	100
2023			49,529	
2024			34,183	
2025			13,567	
2026			6,567	
2027			6,567	
2028				
2029				
TOTALS:	12,818	140,000	224,550	300
	Estimated % of TOTAL acres accomplished on NFS lands:	100		
	Estimated % of TOTAL acres accomplished on other landownerships within the CFLRP boundary:	0		

*Commercially utilized refers to the volume you expect to sell across all product classes (sawtimber, biomass, firewood, etc.)

**These acres/volumes are from completed NEPA in the West Bend, Lex and Kew Projects

Attachment D: DCFP Collaborative Membership & FS Staff

DCFP Tier 2 Proposal for 2010 Project Extensions

Forest Service staff representative(s) working with collaborative: (Please provide list of key staff):

Holly Jewkes	Forest Supervisor
Shanda Dekome	Deputy Forest Supervisor
Ian Reid	District Ranger
Kevin Larkin	District Ranger
Daniel Rife	District Ranger
Kristen McBride	Natural Resources Staff Officer
Brian Tandy	Forest Products & Silviculture Program Manager
Lauri Turner	Wildlife Program Manager
Jason Gritzner	Hydrology Program Manager
Gregg Riegel	Area Ecologist
Jenifer Ferriel	Botany Program Manager
Alex Enna	Fuels Program Manager
Jana Johnson	Recreation Team Leader
Joe Bowles	District Silviculturist
Bill Munro	Natural Resource Team Leader
Pete Powers	Timber Operations Team Leader
Alicia Underhill	Environmental Coordinator
Doug Johnson	Deptuy Fire Staff Officer
Trevor Miller	Assistant Fire Management Officer - Fuels
Larae Guillory	Assistant Fire Management Officer - Fuels
Jean Nelson-Dean	Public Affairs Officer
Kassidy Kern	Public Information Officer

Collaborative Member/Partner Name	Organizational Affiliation (if applicable)	Was this person involved in proposal development?	Primary Issue Category	Second Issue Category	Third Issue Category	If "other," briefly describe
Bill Anthony	Upper Deschutes Watershed Council Board	Yes	Watershed	Other	Fire Ecology	Forest Health
Glen Ardt	Oregon Dept. of Fish & Wildlife (retired)	Yes	Wildlife	Fire Ecology	Watershed	
Jodie Barram	Project Wildfire	No	Other	Community Development	Fire Management	Community Wildfire Protection
Rod Bonacker	Deschutes Land Trust Board	Yes	Watershed	Fire Ecology	Fire Management	

Ed Brown	U.S. Forest Service (retired)	No	Other	Forest Products	Federal	Forest Management
Pete Caligiuri	The Nature Conservancy	Yes	Fire Ecology	Watershed	Research	
Vernita Ediger	Central Oregon Intergovernmental Council	Yes	Other	Community Development		Collaborative Governance
John Ernst	Quicksilver Contracting	No	Forest Products	Other		Forest Management
Erik Fernandez	Oregon Wild	Yes	Environmental	Wildlife	Fire Ecology	
Melanie Fisher	Central Oregon Trail Alliance	Yes	Recreation (non-motorized)	Tourism	Community Development	Community Outreach
Gordon Foster Jr.	Oregon Dept. of Forestry	Yes	Fire Management	State	Fire Ecology	
Dylan Fritz	Interfor	Yes	Forest Products	Other		Forest Management
Alison Green	Central Oregon Cohesive Strategy	Yes	Other	Fire Ecology	Fire Management	Community Wildfire Protection
Pam Hardy	Western Environmental Law Center	Yes	Environmental	Fire Ecology	Watershed	
Phil Henderson	Deschutes County Board of County Commissioners	Yes	County	Community Development	Other	Community Wildfire Protection
Chris Johnson	Shanda Asset Management	Yes	Forest Products	Other		Forest Management
Ed Keith	Deschutes County Forester	Yes	Other	Fire Ecology	Fire Management	Community Wildfire Protection
Loren Kellogg	Oregon State University (retired)	Yes	Forest Products	Research	College/University	
Bob Madden	Bend Fire Department	Yes	Other	Fire Management	Fire Ecology	Community Wildfire Protection
Marilyn Miller	Miller Conservation Consulting	Yes	Wildlife	Environmental	Fire Ecology	
Bridget Moran	U.S. Fish & Wildlife Service	Yes	Wildlife	Federal	Watershed	
Ron Reuter	Oregon State University	Yes	College/University	Research	Other	Soils
Sally Russell	City of Bend	Yes	Other	Other	Community Development	City; Community Wildfire Protection
David Stowe	Sierra Club	Yes	Environmental	Wildlife	Fire Ecology	
Lindsay Wallace	Intel (retired)	No	Fire Management	Other	Community Development	Community Outreach
John Williams	Quicksilver Contracting	Yes	Forest Products	Other		Forest Management

Rich Wininger	Weyerhaeuser (retired)	Yes	Forest Products	Other	Fire Management	Forest Management

DESCHUTES COLLABORATIVE FOREST PROJECT

U.S. Forest Service
Collaborative Forest Landscape Restoration Program
Attn: CFLRP FACA Advisory Panel
1220 SW 3rd Avenue
Portland, OR 97204

January 2, 2020

To the members of CFLRP Advisory Panel:

On behalf of the Deschutes Collaborative Forest Project (DCFP), we are writing to express our enthusiastic support for the application to extend Collaborative Forest Landscape Restoration (CFLR) funding for the Deschutes National Forest (DNF) and the DCFP. With more than ten years of experience working together, we pledge our ongoing commitment to this robust partnership with local U.S. Forest Service staff in the planning, implementation, monitoring, and community engagement around this unequivocally successful collaborative effort.

The DCFP is a multi-stakeholder, community-led forest restoration collaborative group representing more than two dozen local, state, federal, tribal, university, business, community member, and non-governmental organization partners working hand-in-hand with Deschutes National Forest staff to realize our vision for shared stewardship in Central Oregon. We have distinguished ourselves among the many forest collaborative groups working across the nation, as exemplified by the awarding of the 2017 U.S. Forest Service Chief's Honor Award to the DCFP and DNF for *"outstanding accomplishments contributing to Forest Service Strategic Goals."* We have a proven track record of exceeding our collaborative goals and objectives for landscape-scale, fire-adapted forest restoration and delivering quantified ecological, economic, and social benefits to our forests and communities.

The twenty-seven signatories below are active participants in the DCFP Steering Committee and/or the many technical sub-committees (Restoration Planning, Implementation, Monitoring and Adaptive Management, Community Outreach and Engagement, and Prescribed Fire) that have built and sustained the robust governance, trusting relationships, and respectful dialogue that are the hallmarks of the DCFP and the critical foundational elements upon which our many accomplishments are built.

We have provided local input into this CFLR Tier 2 application through collaborative visioning and strategic planning, as well as ongoing discussions between the DCFP Steering Committee and DNF. We greatly appreciate our local Forest Service leaders and staff that have made it a priority to engage us in the conversation regarding the future of CFLR, and to work with us in the formulation of this application. We look forward to your continued support of our work and stand ready to answer any questions you may have. Please do not hesitate to reach out to either one of us (srussell@bendoregon.gov - 541-388-5505 or ed.keith@deschutes.org - 541-322-7117).

Respectfully,

Sally Russell
DCFP Chair

Ed Keith
DCFP Vice-Chair

DCFP Members and Partner Organization Signatories:

Bill Anthony	Upper Deschutes Watershed Council Board
Glen Ardt	Oregon Dept. of Fish & Wildlife (retired)
Jodie Barram	Project Wildfire
Rod Bonacker	Deschutes Land Trust Board
Ed Brown	U.S. Forest Service (retired)
Pete Caligiuri	The Nature Conservancy
Vernita Ediger	Central Oregon Intergovernmental Council
John Ernst	Quicksilver Contracting
Erik Fernandez	Oregon Wild
Melanie Fisher	Central Oregon Trail Alliance
Gordon Foster Jr.	Oregon Dept. of Forestry
Dylan Fritz	Interfor
Alison Green	Central Oregon Cohesive Strategy
Pam Hardy	Western Environmental Law Center
Phil Henderson	Deschutes County Board of County Commissioners
Chris Johnson	Shanda Asset Management
Ed Keith	Deschutes County Forester
Loren Kellogg	Oregon State University (retired)
Bob Madden	Bend Fire Department
Marilyn Miller	Miller Conservation Consulting
Bridget Moran	U.S. Fish & Wildlife Service
Ron Reuter	Oregon State University
Sally Russell	City of Bend
David Stowe	Sierra Club
Lindsay Wallace	Intel (retired)
John Williams	Quicksilver Contracting
Rich Wininger	Weyerhaeuser (retired)

United States Senate
WASHINGTON, DC 20510

January 16, 2020

Vicki Christiansen, Chief
USDA Forest Service
1400 Independence Ave, SW
Washington, DC 20250-1111

Dear Chief Christiansen,

We write to express our support for the Deschutes National Forest's request for a 5-year extension of Collaborative Forest Landscape Restoration Program (CFLRP) funds for the existing Deschutes Collaborative Forest Project in central Oregon.

Deschutes County is a popular tourist destination and home to nearly 200,000 people. The Deschutes National Forest is an attractive area where both residents and visitors pursue a variety of outdoor recreation activities, such as hiking and mountain biking.

The Deschutes Collaborative Forest Project has demonstrated success since its creation in 2010. An open forest structure has been restored in key areas and more historically characteristic fire regimes have also been established. Further, over the last 10 years, the local wood products industry has improved its economic opportunities due to the reliable supply of wood products coming from the project.

Yet more work is needed on the landscape. The project area still has thousands of acres that are considered an extreme fire hazard. Mechanical and fuel reduction treatments as well as prescribed fire can help address this risk and help establish more natural forest structures.

Thank you for your full and fair review of the Deschutes National Forest's application for CFLRP. Should you have any further questions, please contact Senator Merkley's Natural Resources Liaison Jessica Keys at 503-326-3386 or Senator Wyden's Natural Resources Director Malcolm McGeary at 503-326-7525.

Sincerely,

Jeffrey A. Merkley
United States Senator

Ron Wyden
United States Senator

CITY OF BEND

710 NW WALL STREET
PO BOX 431
BEND, OR 97709
(541) 388-5505 tel
Relay Users Dial 7-1-1
(541) 385-6676 fax
bendoregon.gov

MAYOR
Sally Russell

MAYOR PRO TEM
Bruce Abernethy

CITY COUNCILORS
Barb Campbell
Gena Goodman-Campbell
Justin Livingston
Bill Moseley
Chris Piper

CITY MANAGER
Eric King

Dear Chief Christiansen,

January 22, 2020

As the chair of the Steering Committee for the Deschutes Collaborative Forest Project (DCFP), I would like to express the City of Bend's enthusiastic support for the extension of funding for the DCFP in central Oregon from the Collaborative Forest Landscape Restoration Program (CFLRP).

The City of Bend is immediately adjacent to the Deschutes National Forest and benefits greatly from the ecological, recreational, and economic amenities that the ecosystem offers. Bend's residents and visitors alike appreciate hiking, camping, and other recreational activities in the forest. Tourism contributes significantly to Bend's local economy and a healthy forest attracts tourists seeking outdoor adventure. Furthermore, the Deschutes National Forest supports key local businesses and industries such the local wood product industry and Mt. Bachelor ski resort.

The DCFP has been successful over the last ten years in bringing diverse stakeholders together, establishing trust between entities with different interests, and building an effective coalition around improving forest health and resiliency. Through this work, the DCFP has already made significant improvement in forest health through thinning, prescribed burning and other fuel reduction techniques. The region benefits greatly from increased wildfire resiliency, protection of our watershed, enhanced recreational opportunities, and the economic opportunity from harvesting local timber.

As successful as the initiative has already been, the region is still subject to very high risk of wildfire and many areas of the ecosystem would benefit from treatment. Building upon its strong foundation, the Deschutes Collaborative Forest Project is positioned to deliver even greater impact in the coming years with continued funding.

Thank you for considering the Deschutes National Forest's application for CFLRP funds. Please let me know if you have any additional questions.

Sincerely,

Sally Russell

Mayor Sally Russell
City of Bend

Attachment F: DCFP Project Funding Plan for Proposed Extension

Fiscal Year 1*	**Funding Planned/Requested**
Partner fund contributions on NFS lands	$88,000
Partner in-kind contributions on NFS lands	$701,100
Goods for Services or Revenue from GNA to be applied within CFLRP landscape	$700,000
USFS Appropriated, Perm, and Trust fund contributions on NFS lands	$1,201,615
Total non-CFLRP funding for NFS lands	$2,690,715
CFLRP Funding Request	
Total CFLRP funding for NFS lands	$2,259,090
Partner fund contributions on non-NFS lands	$0
Partner in-kind contributions on non-NFS lands	$0
USFS Appropriated, Perm, and Trust fund contributions on non-NFS lands	$0
Total non-CFLRP funding for non-NFS lands	$0
****Assume funding requested for Year 1 will be allocated in February 2020 at the earliest***	
Fiscal Year 2	**Funding Planned/Requested**
Partner fund contributions on NFS lands	$30,000
Partner in-kind contributions on NFS lands	$706,600
Goods for Services or Revenue from GNA to be applied within CFLRP landscape	$400,000
USFS Appropriated, Perm, and Trust fund contributions on NFS lands	$977,440
Total non-CFLRP funding for NFS lands	$2,114,040
CFLRP Funding Request	
Total CFLRP funding for NFS lands	$1,811,954
Partner fund contributions on non-NFS lands	$0
Partner in-kind contributions on non-NFS lands	$0
USFS Appropriated, Perm, and Trust fund contributions on non-NFS lands	$0
Total non-CFLRP funding for non-NFS lands	$0
Fiscal Year 3	**Funding Planned/Requested**
Partner fund contributions on NFS lands	$30,000
Partner in-kind contributions on NFS lands	$706,600
Goods for Services or Revenue from GNA to be applied within CFLRP landscape	$200,000
USFS Appropriated, Perm, and Trust fund contributions on NFS lands	$873,700
Total non-CFLRP funding for NFS lands	$1,810,300
CFLRP Funding Request	
Total CFLRP funding for NFS lands	$1,639,215
Partner fund contributions on non-NFS lands	$0
Partner in-kind contributions on non-NFS lands	$0
USFS Appropriated, Perm, and Trust fund contributions on non-NFS lands	$0
Total non-CFLRP funding for non-NFS lands	$0
Fiscal Year 4	**Funding Planned/Requested**
Partner fund contributions on NFS lands	$30,000
Partner in-kind contributions on NFS lands	$706,600
Goods for Services or Revenue from GNA to be applied within CFLRP landscape	$0
USFS Appropriated, Perm, and Trust fund contributions on NFS lands	$765,200
Total non-CFLRP funding for NFS lands	$1,501,800
CFLRP Funding Request	
Total CFLRP funding for NFS lands	$1,238,216
Partner fund contributions on non-NFS lands	$0
Partner in-kind contributions on non-NFS lands	$0
USFS Appropriated, Perm, and Trust fund contributions on non-NFS lands	$0
Total non-CFLRP funding for non-NFS lands	$0
Fiscal Years 5-10	**Funding Planned/Requested**
Partner fund contributions on NFS lands	$30,000
Partner in-kind contributions on NFS lands	$706,600
Goods for Services or Revenue from GNA to be applied within CFLRP landscape	$0
USFS Appropriated, Perm, and Trust fund contributions on NFS lands	$765,200
Total non-CFLRP funding for NFS lands	$1,501,800
CFLRP Funding Request	
Total CFLRP funding for NFS lands	$1,277,217
Partner fund contributions on non-NFS lands	$0
Partner in-kind contributions on non-NFS lands	$0
USFS Appropriated, Perm, and Trust fund contributions on non-NFS lands	$0
Total non-CFLRP funding for non-NFS lands	$0

Please provide an **estimate of any funding needed for NEPA and environmental compliance** in support of the CFLRP Project. You may copy/paste the response to the Tier 1 template and/or elaborate with additional details as needed. *NOTE: CFLN can only be used for implementation and monitoring (not planning).*

Forest Service

Deschutes National Forest

63095 Deschutes Market Road
Bend, OR 97701
541-383-5300

File Code: 1930; 2400; 2500
Route To: 2600; 3400; 5100

Date: January 6, 2020

Subject: Letter of Commitment CFLRP

To: CFLRP Federal Advisory Panel Member

The leadership team of the Deschutes National Forest (NF) fully supports the *Deschutes Collaborative Forest Project (DCFP) 2010 Project Extension Proposal for the CFLRP*. The success of the CFLRP efforts to date indicates the intention of the Deschutes NF, the collaborative, partners, contractors and public to prioritize restoration efforts in and around the communities of Bend, Sisters and Sunriver. The Deschutes NF intends to continue those efforts to protect communities from wildfire, provide high-quality water and wildlife habitat, and provide internationally known recreational opportunities in a fire-adapted setting.

The role of the Deschutes NF in these communities is environmentally, socially and economically complex. The Forest is the backyard, backdrop, playground, drinking water source, tourism draw, and source of work for both residents and visitors. As shared in the proposal, visitation continues to exponentially grow as do the communities.

Our partnership with the DCFP has been strong, enduring, and fruitful. Having DCFP as a partner allows us to communicate more effectively and with broader voices around the need for restoration and also allows us to understand the public's interests in a deeper way. Having a mature collaborative and educated population has allowed us to make great strides in restoration. This, especially, has led to exceptional social license with prescribed fire. One recent outcome of this trust is the successful effort to permit smoke exemptions in the City of Bend from prescribed fire.

While we have made great strides in restoration throughout the original CFLRP timeframe, the work is not complete. Funding of this proposal will allow efforts to continue in sharing stewardship of this remarkable landscape in the Deschutes NF, across and in protection of our neighbors and partners lands. We will continue to serve as an example of what is possible with collaboration in a complex social, economic, and environmental landscape.

HOLLY JEWKES
Forest Supervisor

DESCHUTES COLLABORATIVE FOREST PROJECT

Collaborative Forest Landscape Restoration Program

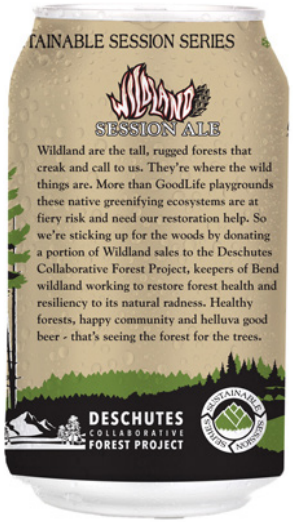
DCFP COMMUNITY OUTREACH AND EDUCTION

Thanks to generous grant support, the Deschutes Collaborative Forest Project (DCFP) Outreach Subcommittee has effectively produced strategic, timely, relevant, and engaging outreach campaigns. These efforts continue to grow and reinforce the DCFP outreach goals of increasing public understanding of local fire-adapted forest ecosystems and current health, fuels, and wildlife habitat restoration activities. These activities have also strengthened the public's appreciation of long-term benefits of active forest restoration, including thinning and prescribed burning, watershed restoration, wildlife habitat improvement, and job creation across the 260,000-acre Deschutes Collaborative Forest Landscape.

The DCFP's outreach efforts are especially relevant and timely for a public increasingly aware of active forest management and restoration efforts occurring directly adjacent to the cities of Bend, Sisters, and La Pine as well as nearby popular recreational trails in Central Oregon. These outreach campaigns have increased the residents, local and state elected officials, business, and tourism industry's understanding and support for the short-term impacts and long-term benefits of forest restoration activities.

DCFP Outreach Accomplishments

IN-PERSON EVENTS



Upper Deschutes River Coalition

- Pete Caligiuri and Ed Keith gave a presentation on fire ecology in Central Oregon forests and the work of the DCFP.

Local Homeowners Association Meetings

- Nicole Strong, Sally Russell and Alison Green spoke at a number of HOA meetings for neighborhoods immediately adjacent to restoration activity.

Central Oregon Trail Alliance

- During their summer movie series at McMenamins Theater, COTA played our 3 minute PSA trailer at the start of each film.

GoodLife Brewing's Wildland Session Ale

- For the third year in a row, DCFP was chosen as the recipient of GoodLife's Sustainable Session Series with the re-release the Wildland Session Ale.

Bend Bike Film Festival

- With numerous sold out shows, the film festival shared our 3-minute PSA at the beginning of each program.

Central Oregon Community College

- Vernita Ediger gave a presentation on the importance of integrating science and social values into natural resource management on federal lands.

High Desert Museum's Natural History Pub Series

- Nicole Strong and Pete Caligiuri facilitated a group discussion on the "Forest Ecology and Management in Central Oregon"

DESCHUTES COLLABORATIVE FOREST PROJECT

CENTRAL OREGON PRESCRIBED FIRE TRAINING EXCHANGE (TREX)

Each spring, more than 35 prescribed fire professionals from around the country and representing more than a dozen organizations gather in Central Oregon for twelve days of applied, on-the-ground training on prescribed fire use. We utilized this concentration of fire professionals to increase our resource database of images, video and interviews to further our outreach efforts. Our Outreach Coordinator was able to attend four different prescribed burns with camera equipment, which resulted in over six hours of video footage, ten personalized interviews, and over 300 images. This material will be used to grow our social media, advertising and online marketing content.

RYAN RANCH RESTORATION

This past year the Deschutes National Forest and other partners connected the Deschutes River with its floodplain at Ryan Ranch and restored the river's eroding riverbank. Making the connection created 65-acres of freshwater marsh-land, which provides renewed habitat for many wetland dependent wildlife and plants, including the threatened Oregon spotted frog. Youth crews recently re-planted the restored floodplain with native sedges to increase restoration of the native ecosystem.

DESCHUTES COLLABORATIVE FOREST PROJECT

Old Mill DISTRICT

The Old Mill District is Central Oregon's premier shopping, dining and entertainment district.

STREET BANNER DISPLAY CAMPAIGN

Working with our Outreach Committee members, we designed custom art to coincide with DCFP's core messages, tagline and consistent visual branding. Twenty double-sided banners were on display in the Old Mill District for 8 weeks during prescribed fire season.

SOURCE WEEKLY

PRINT AND ONLINE AD CAMPAIGN

Four week ad campaign in Source Newsletter to 14,786 subscribers, Bend Ticket Newsletter to 30,459 subscribers, and one month of bendsource.com web ad, which garnered 208,970 impressions and 141 click throughs - nearly double our numbers from the previous campaign!

CUSTOM COASTER DISTRIBUTION

Between Bend, Sisters, Redmond and Sunriver, our region has the highest micro-brewery per capita in the nation!

We distributed over 6,000 coasters bearing our logo, tagline, website address and a messaging statement regarding forest restoration to over 30 breweries and restaurants in the area.

This unique approach allowed us to capitalize on an attentive audience, educate our community members and engage with visitors who may have questions regarding the activity in our forest.

DESCHUTES COLLABORATIVE FOREST PROJECT

NEWS CHANNEL 21 KTVZ.COM + REGAL CINEMAS

30-second commercial spot

- https://youtu.be/4WG7wfckcLc

4 week duration to each ad campaign was shown on News Channel 21 during morning and evening news programs. At Regal Cinemas, it was screened in all 16 auditoriums every day before every movie and 4 times an hour on the TVs in the lobby to an average of 50,900 patrons/month.

YouTube + facebook

Video: 3-minute introduction to the DCFP

- https://youtu.be/Li9AKoarLCA

Video: Fuels reduction slows Milli fire video

- https://youtu.be/nFbyOe-DmbU

Video Series: Prescribed Fire Planning

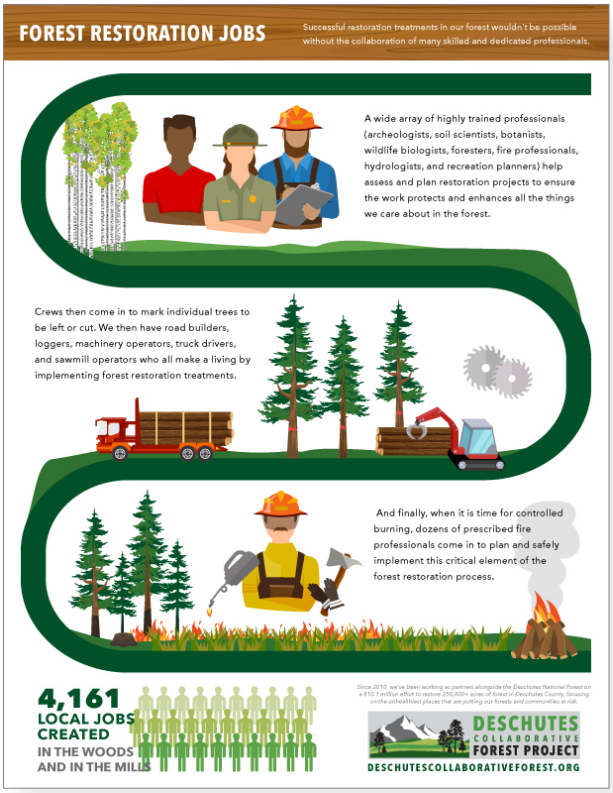
- https://www.youtube.com/watch?v=796DtKJzM_o&list=PLHMEymkVHh85ECC6b2Tnah3d4toKsOK6H

For the Spring 2019 awareness campaign, we developed a new video series highlighting the men and women behind prescribed fire, the planning that goes into implementation and the coordination of agencies prior to and during a prescribed fire.

Our "Meet the Crew" video, the second in the series, was shared by over 80 accounts and was featured on the U.S. Forest Service national and regional Facebook and Instagram accounts.

CUSTOM INFOGRAPHICS

DCFP Outreach has created several Restoration Infographics to help showcase the benefits of forest restoration and to illustrate our positive impact on the community:



Wildlife Habitat Restoration:

- http://deschutescollaborativeforest.org/forest-restoration-work/wildlife-habitat-deschutes-forest/

Creating Jobs in the Woods:

- http://deschutescollaborativeforest.org/forest-restoration-work/forest-restoration-jobs/

Forest Restoration Planning Timeline:

- http://deschutescollaborativeforest.org/forest-restoration-work/planning-forest-restoration-timeline/

TOP WEBSITE TRAFFIC

Why is there paint on trees within the Deschutes Forest?

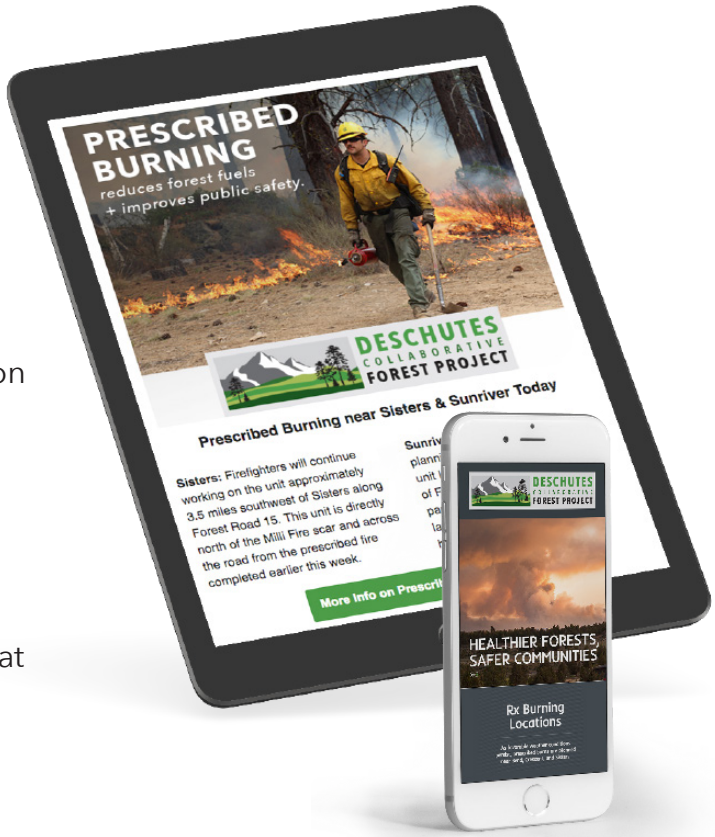
- One of our earliest original content blog posts and it continues to rank in our top 5 most visited pages! The successful Q&A style format continues to guide our content calendar.
- http://deschutescollaborativeforest.org/forest-restoration/paint-on-trees-in-deschutes-forest-bend-oregon/

How have trees, plants, and critters adapted to live with wildfire?

- Written in partnership with Nicole Strong, OSU Extension Central Regional Director
- http://deschutescollaborativeforest.org/forest-restoration/living-with-fire-how-trees-plants-and-critters-have-adapted-to-live-with-wildfire/

How can we help migrating elk and deer?

- Written in partnership with Sara Gregory, Wildlife Habitat Biologist at Oregon Department of Fish and Wildlife
- http://deschutescollaborativeforest.org/guest-bloggers/migrating-elk-deer-central-oregon/



DESCHUTES COLLABORATIVE FOREST PROJECT

THE HIGH DESERT MUSEUM

HIGH DESERT MUSEUM
BEND, OREGON

After a year of careful planning, on May 23rd, 2018 the Deschutes National Forest and the High Desert Museum successfully completed a 121 acre mixed ownership prescribed fire that included 47 acres of USFS managed land and 74 acres of High Desert Museum owned property. The High Desert Museum is one of Central Oregon's top attractions, it is located a few miles south of Bend, Oregon. The prescribed fire was planned and implemented under a participating agreement between the High Desert Museum and the USFS using Wyden Amendment authorities. The two primary objectives of the project were improving defensible space surrounding the museum and providing an educational opportunity for the public to learn about fire adapted ecosystems. Successful implementation was a collaborative effort that included assistance from the Oregon Department of Transportation, the City of Bend Fire Department and the Nature Conservancy. In addition, the Oregon Department of Forestry provided firefighters and equipment under an interagency agreement for prescribed fire support. Plans are in the works for more cross boundary prescribed burning in the future. https://highdesertmuseum.org/a-prescription-for-the-forest/

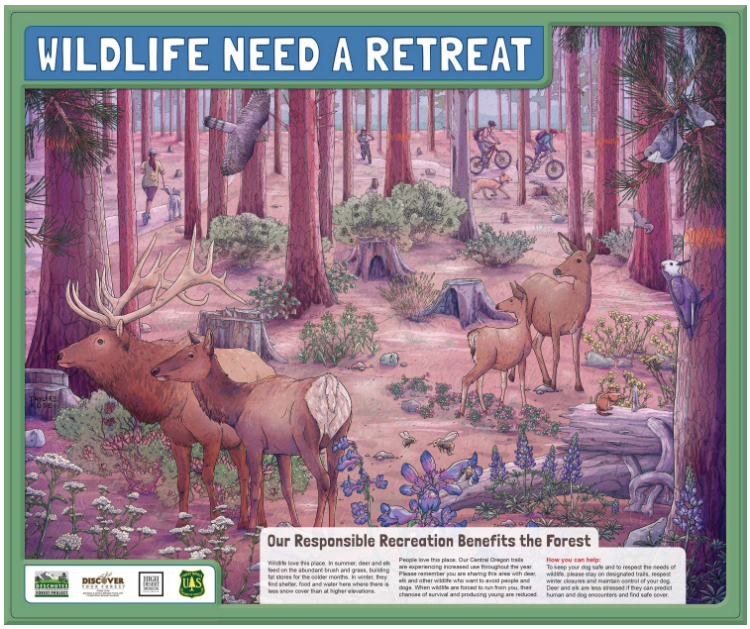
CENTRAL OREGON FIRE INFORMATION

The goal of the centraloregonfire.org is website is to locate information about prescribed fire, wildfire, and smoke issues in a central location for local residents. The website is integral to the City of Bend's Community Smoke and Public Health Response Plan and is a key part of the communication strategy surrounding an increase in the pace and scale of prescribed fire. The website is a by-product of collaboration by many local agencies and organizations. Partners include Deschutes County Health Department, Oregon Department of Forestry, Project Wildfire, The Nature Conservancy, US Forest Service, Bureau of Land Management, Oregon DEQ, Oregon Health Authority and the Deschutes Collaborative Forest Project.

DESCHUTES COLLABORATIVE FOREST PROJECT

INTERPRETIVE KIOSK PANELS

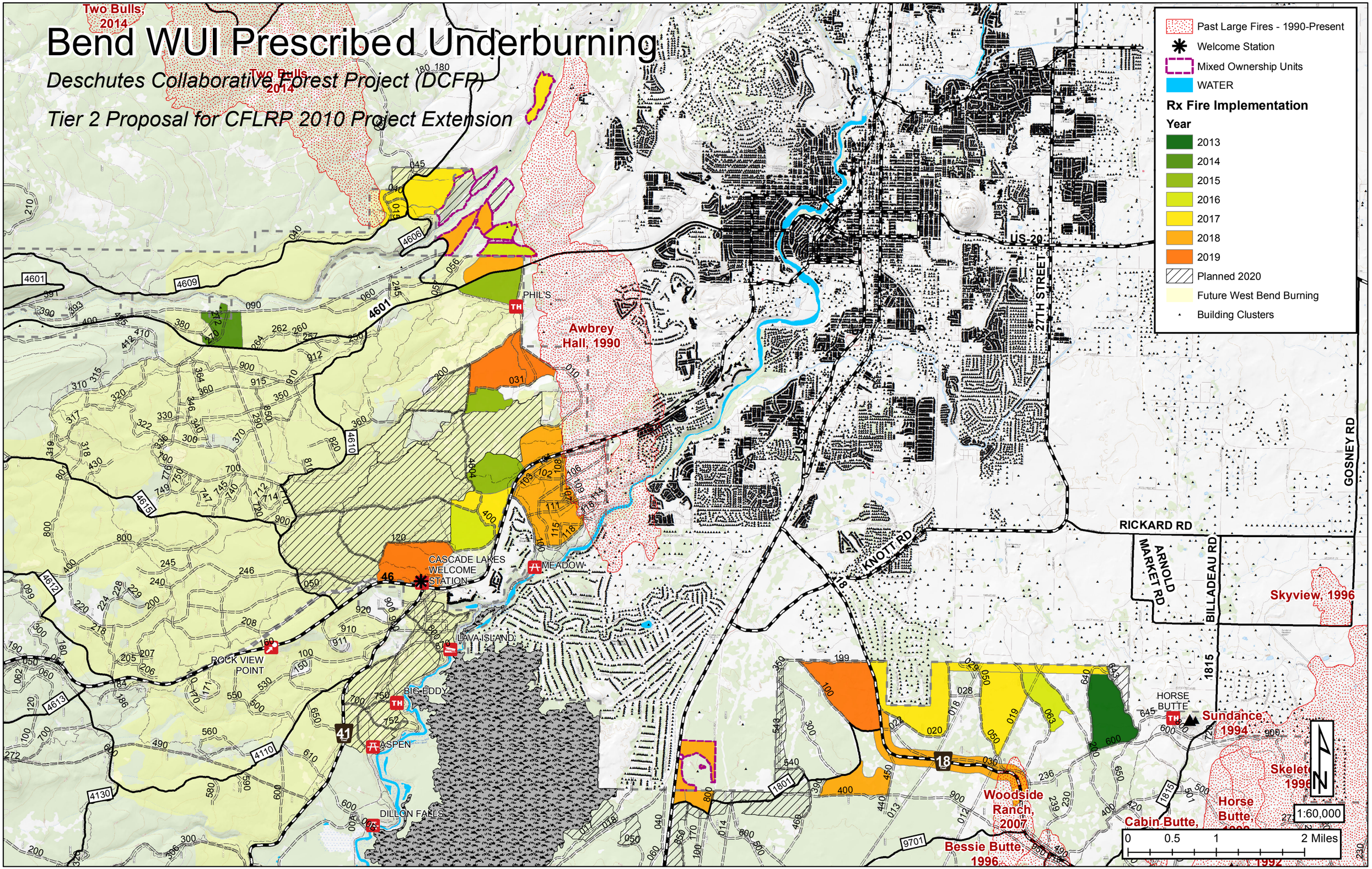
Working in partnership with the USFS and the High Desert Museum, we have created two educational kiosk panels that focus on forest restoration and responsible recreation. The panels have been installed at the Phil's Trail Complex, the most popular trailhead of the Deschutes National Forest, and at the High Desert Museum.



Bend WUI Prescribed Underburning

Deschutes Collaborative Forest Project (DCFP)

Tier 2 Proposal for CFLRP 2010 Project Extension



PRESCRIBED FIRE, SMOKE, AND PUBLIC HEALTH:

A Community Response Plan for the Bend Smoke Sensitive Receptor Area

CITY OF BEND

DESCHUTES COUNTY

Prescribed Fire, Smoke, & Public Health Community Response Plan

Bend Smoke Sensitive Receptor Area

October 2019

Contents

Declaration of Agreement 2

Executive Summary 3

Rationale for the Bend SSRA Community Response Plan 3

State-Required Components of the Community Response Plan 5

Components of the Bend SSRA Community Response Plan 6

1. Description of Smoke-Vulnerable Populations in the Bend SSRA 7
2. Means of Communication & Notification about Fire, Smoke Impacts, & Air Quality 8
3. Options to Protect Public Health & Mitigate Exposure to Smoke 11
4. Coordination & Communication Plan for Fire, Air Quality, & Public Health in Bend 12

Fire, Smoke, & Air Quality Analysis for the Bend SSRA Community Response Plan 13

1. Prescribed Fire Smoke and Air Quality 14
2. Wildfire Smoke and Air Quality 14
3. Characteristics of Prescribed Fire Smoke Events & Impacts 14
4. Prescribed Fire Smoke & the National Ambient Air Quality Standard (NAAQS) for PM2.5 15
5. Contrasting Emissions from First-entry and Second-entry Prescribed Burns 16

Annual Reporting 16

Conclusion 17

Appendix A: Sample Press Releases 18

Appendix B: Press Release Protocols 22

Appendix C: Interactive Prescribed Fire Map Update Protocols 23

Appendix D: Comparing Emissions from First- & Second-entry Prescribed Fire Use 26

Prescribed Fire, Smoke, & Public Health Community Response Plan

Bend Smoke Sensitive Receptor Area

October 2019

Declaration of Agreement

The Bend City Council, in coordination with the Deschutes County Board of County Commissioners, has reviewed and approved the Bend Smoke Sensitive Receptor Area Community Response Plan (Bend SSRA CRP). Per OAR 629-048-0180 of the 2019 Oregon prescribed fire Smoke Management Plan, the City of Bend and Deschutes County jointly agree to submit the Bend SSRA CRP to the Oregon Department of Forestry and Oregon Department of Environmental Quality as a formal request for exemption from the 1-hour smoke intrusion threshold for the Bend SSRA.

Sally Russell, Mayor
City of Bend

Nov 6, 2019
Date

Philip G. Henderson, Chair
Deschutes County Board of County Commissioners

10-16-19
Date

Prescribed Fire, Smoke, & Public Health Community Response Plan

Bend Smoke Sensitive Receptor Area

October 2019

Executive Summary

The City of Bend, in coordination with the Deschutes County, has approved the following Prescribed Fire, Smoke, and Public Health Community Response Plan for the Bend Smoke Sensitive Receptor Area (hereafter referred to as the Bend SSRA CRP) consistent with OAR 629-048-0180. The Bend SSRA CRP will be included in the request to the Oregon Department of Forestry (ODF) and Oregon Department of Environmental Quality (DEQ) for an exemption from the 1-hour smoke intrusion threshold within the 2019 Oregon prescribed fire Smoke Management Plan (SMP). The goals of the Bend SSRA CRP and exemption request are:

1. To increase opportunities to accomplish critical prescribed fire treatments in the Wildland Urban Interface (WUI) to improve forest health, reduce the risk of extreme wildfires, and increase community and firefighter safety when wildfires do occur;
2. To enhance coordination, communication, and notification of residents and visitors of Bend (and Central Oregon more broadly) about planned prescribed fire, potential smoke and air quality impacts, and recommendations to reduce exposure and mitigate the health impacts of wildland fire smoke from all sources (prescribed fire and wildfire).

Rationale for the Bend SSRA Community Response Plan

Fire is a natural and necessary component of the dry forests of Central Oregon. Prior to the late-1800's, frequent, low-intensity fires burning every ten to twenty-five years sustained forests composed of fire-adapted trees and plants, provided wildlife habitat for a diversity of native animals, recycled nutrients, and maintained healthy watersheds with significantly lower risk of large, high-severity fires. Many of the functions that were historically provided by these healthy, fire-adapted forests are the same benefits people depend upon today, including reduced wildfire risk to communities, robust populations of fish and wildlife, high quality water, and a thriving local tourism, recreation, and forest products economy.

However, over the past century the fire-adapted forests surrounding Bend have undergone dramatic changes, driven primarily by past forest management and highly-effective fire suppression efforts that all but eliminated the natural role of fire. The unintended consequences of these actions are evident in the unnatural and unhealthy conditions in our forests today (i.e., uniform, dense, primarily young forests, with a century of accumulated burnable material), and the extreme wildfires such conditions fuel.

Several factors exacerbate the forest and fire challenge facing Bend: our population has more than tripled in the past twenty years; development in the WUI has steadily decreased the buffer between forests and human communities; and across the western U.S. we are experiencing a steady trend towards longer, hotter, and drier summers, and therefore larger, longer duration, and more intense wildfires. These factors compound the overall threat of catastrophic wildfire, Bend's high exposure (4th highest in Oregon) to such wildfires, and the significant ecological, economic, social, and human health and safety costs they carry. (See Figure 1 below)

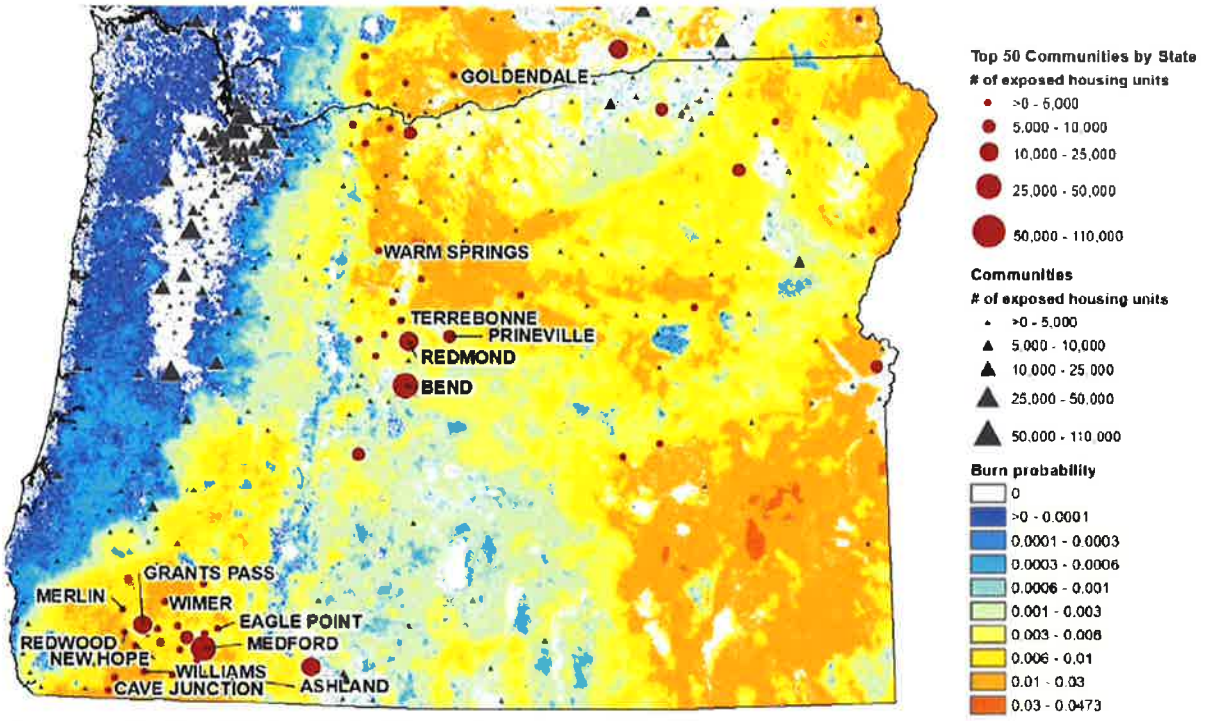


Figure 1: Annual burn probability across Oregon and exposed human communities. The 50 most-exposed communities are mapped in dark red. Bend is the fourth most vulnerable community in Oregon. (from Scott et al. 2018)

That is why the City of Bend and Deschutes County are working together, in partnership with state and federal forest managers, local elected officials, and community groups, to address this challenge through proactive fire-adapted forest restoration treatments and fire-adapted community preparedness efforts. Using a combination of strategically-placed forest thinning, mechanical fuels removal, and prescribed fire, we are finding a safe and controlled way to reintroduce fire in order to restore a more natural and healthy forest landscape and reduce wildfire risk in the forests around Bend. Moreover, we are partnering with diverse community organizations to engage a broad cross-section of community members and groups to ensure that residents and visitors alike have access to much-needed information about forest restoration activities, including prescribed fire.

Thanks to these ongoing efforts – some more than a decade in the making – the City of Bend and Deschutes County are well-positioned to develop the following Community Response Plan. The Bend SSRA CRP outlines our strategy to provide timely, accurate, reliable, locally-relevant, and advanced notification regarding planned prescribed fire (and unplanned wildfire), potential smoke impacts, air quality, and public health recommendations. The Bend SSRA CRP was developed through a collaborative process involving a diversity of local stakeholders from Deschutes County Health Services, Deschutes County Natural Resources, Deschutes Collaborative Forest Project (DCFP), ODF, DEQ, Oregon Health Authority (OHA), Project Wildfire, The Nature Conservancy (TNC), U.S. Forest Service – Deschutes National Forest (DNF), and Central Oregon Fire Management Service (COFMS).

Together, the City of Bend and Deschutes County will be submitting the Bend SSRA CRP to ODF and DEQ as part of a formal request under the 2019 Oregon prescribed fire SMP for an exemption from the 1-hour smoke intrusion threshold. Such action is necessary because of the urgent need to

increase the pace and scale of prescribed fire treatments in the forests in the Wildland Urban Interface around the Bend SSRA (+/- 15 miles). It is from these prescribed burn areas that, due to topography and seasonal nighttime temperature inversions, residual prescribed fire smoke invariably settles into the Bend SSRA along the Deschutes River causing short-duration smoke impacts that would, based on analysis of past smoke events, periodically exceed the 1-hour smoke intrusion threshold (See section titled Fire, Smoke, & Air Quality Analysis for the Bend SSRA CRP below for further detail).

For this reason, an exemption for the Bend SSRA is critical to local, state, and national initiatives underway in Central Oregon to increase strategic forest restoration and prescribed fire treatments in the WUI surrounding Bend to improve forest health, reduce the risk of extreme wildfires, and increase community and firefighter safety when wildfires do occur. Through enhanced community outreach, communications, and notification as outlined in this document, we will both increase the window of opportunity for these critical treatments while mitigating public exposure to smoke from all wildland fire sources (prescribed and wildfire) and better protecting public health and safety in the near- and long-term.

State-Required Components of the Community Response Plan

As required by the 2019 Oregon SMP, this plan has been coordinated through the local public health authority, which in this case is the Deschutes County Board of Commissioners, and was developed collaboratively with input from members or representatives of vulnerable populations, community officials, representatives from entities that have responsibility for prescribed fire, forest restoration collaborative groups, local businesses, and other interested members of the public.

As the 2019 Oregon prescribed fire SMP states, ODF and DEQ "recommend communities that are SSRAs and have experienced repeated smoke incidents and/or intrusions in the past collaboratively develop a community response plan and program. Within the SMP, OAR 629-048-0180, Section 2 spells out the following required components of such a plan:

1. A description of populations in an SSRA community that are vulnerable to the health effects of short-term smoke;
2. Adequate means by which the public, especially vulnerable populations in the SSRA community, will be notified in a clear and reliable way of anticipated smoke impacts in a timely manner;
3. Adequate options for protecting the health of vulnerable populations (or helping such populations to protect themselves) from short-term exposure to smoke, and;
4. A plan and program for communications between the entities that conduct prescribed fire, the local public health authority, and the community's public and vulnerable populations who may be impacted by smoke.

Prior to the finalization of the 2019 Oregon SMP a local group called the Central Oregon Prescribed Fire, Smoke, and Public Health Collaborative convened a diverse group partners (including representatives from the DCFP, The Nature Conservancy, Deschutes County Health Services, Deschutes County Natural Resources, Deschutes County Public Health Advisory Board, Project Wildfire, Oregon Department of Environmental Quality, Oregon Health Authority, Oregon Department of Forestry, Deschutes National Forest, and Central Oregon Fire Management Service) to craft a shared strategy to address the components outlined above through a shared strategy of

proactive community outreach regarding fire, smoke, and public health in Central Oregon. This group began meeting in early 2018 and formed two working subcommittees, which collectively met more than 16 times, to develop shared messaging and a central platform to disseminate information. In addition to consistent messaging, the larger group discussed and agreed upon additional actions that were needed and feasible to protect smoke-vulnerable populations in Central Oregon.

The outcome and deliverable of this group's work is a shared community outreach platform, key messages, and agreement on how to disseminate information regarding fire, smoke, and public health impacts in Central Oregon. Central to the strategy is the new website www.centraloregonfire.org, which was launched in June 2018 to serve as a "one-stop-shop" for all information in Central Oregon on fire, smoke, and public health. The website answers the following questions:

- Why is prescribed fire essential to make our forests healthier and communities safer?
- When and where is prescribed fire and prescribed fire smoke expected?
- What is being done to minimize smoke impacts during prescribed fires?
- What can people do to reduce their exposure and protect themselves from smoke?

In addition, the website includes interactive maps on prescribed fire locations and status, as well as air quality. It is also designed to transition easily between wildfire and prescribed fire seasons, so that the information and overarching communication and engagement strategy is relevant and applicable regardless of the source of smoke.

Once the group finalized its initial work feedback was solicited from the Deschutes County Public Health Advisory Board, adjoining counties' (Crook and Jefferson) public health staff, the Deschutes County Board of Commissioners, the Bend City Council, and the Project Wildfire Steering Committee to assure that diverse needs were met. The Central Oregon Prescribed Fire, Smoke, and Public Health Collaborative continues to meet on a quarterly basis to adaptively manage the strategy, make improvements to the website, messaging, and the delivery of information based on input received from partners and the community at large.

In summary, we were able to develop the Bend SSRA CRP quickly and robustly following final approval of the 2019 Oregon prescribed fire SMP thanks to a year-long effort by diverse partners working collaboratively to reach shared agreement about how to proactively address fire, smoke, and public health in Central Oregon.

Components of the Bend SSRA Community Response Plan

In developing the Bend SSRA CRP, including the state-required components detailed below, we have relied on communication best-practices gleaned from the best available social science related to community engagement and communications during wildland fire and smoke events.

A synthesized list of these best-practices as they apply to prescribed fire, smoke, air quality, and public health includes:

- Providing timely, accurate, reliable, locally-relevant, and advanced notification about planned prescribed fire and potential smoke impacts;

- Using clear, simple, and consistent messaging to improve recall, understanding, and compliance with public health recommendations to reduce smoke exposure;
- Preemptively identifying smoke-vulnerable populations and strategies to provide advanced warning so these individuals can take appropriate actions to reduce their exposure;
- Using multiple channels/methods of communication to optimize reach across a diverse public;
- Using innovative technologies, such as social media networks and text alerts, to complement and enhance traditional communication systems, and;
- Collaboratively developing and implementing communications plans to leverage the reach of partner organizations, ensure trust and credibility of messages and messengers, and thereby enhance communication effectiveness.

1. Description of Smoke-Vulnerable Populations in the Bend SSRA

Many factors influence a person's sensitivity to smoke, including severity and duration of smoke exposure and a person's health. Smoke may worsen symptoms for people who have pre-existing health conditions and those who are particularly sensitive to air pollution. These smoke-vulnerable populations include:

- Persons with asthma or other chronic respiratory diseases, such as COPD and emphysema
- Persons with cardiovascular disease
- Persons 65 years of age or older
- Infants and children
- Pregnant women
- Smokers, especially those who have smoked for several years
- Persons without housing or access to closed-loop air conditioning

According to 2017 Census data, Deschutes County's total population is approximately 186,875. When considering Smoke-Vulnerable Populations in Deschutes County, the data below provides insight into how many residents may be more vulnerable during smoke events. Please note, one individual may fall into multiple categories.

Deschutes County persons with asthma or other chronic respiratory diseases:

- Around 9.4% of Deschutes County adults aged 18+ report that they have asthma – estimated 14,221 adults *(Source: Oregon Behavior Risk Factor Surveillance System (BRFSS))*
- Around 8.3% of Deschutes County 8th graders and 12.1% of Deschutes County 11th graders report that they have asthma *(Source: Oregon Healthy Teens Survey)*
- Around 5.0% of Deschutes County adults have Chronic Obstructive Pulmonary Disease (COPD) – estimated 7,564 adults *(Source: Oregon BRFSS)*

Deschutes County persons with cardiovascular disease:

- Around 6.3% of Deschutes County adults aged 18+ have cardiovascular disease (defined as angina, heart attack, and/or stroke) – estimated 9,531 adults *(Source: Oregon BRFSS)*
- Around 29.4% of Deschutes County adults aged 18+ have hypertension – estimated 44,478 adults *(Source: Oregon BRFSS)*

Deschutes County older adults:

- Population size of adults aged 65+: 35,868 *(Source: American Community Survey, U.S. Census Bureau, 2017 population estimates)*

Deschutes County infants and children:
(Source: American Community Survey, U.S. Census Bureau, 2017 population estimates)

- Population size of children aged <18: 35,589
- Population size of children aged <5: 9,716
- Population size of children aged <1: 1,867

Deschutes County pregnant women:

- Total number of pregnancies: 2,179 *(Source: Oregon birth certificates and induced abortion records, 2017)*

Deschutes County smokers:

- Around 15.6% of Deschutes County adults aged 18+ currently smoke cigarettes – estimated 23,600 adults *(Source: Oregon BRFSS)*
- Around 1.9% of Deschutes County 8th graders and 9.3% of Deschutes County 11thgraders report that they smoked cigarettes over the past 30 days *(Source: Oregon Healthy Teens Survey)*

Persons without housing:

- Point-in-time estimate of total number of individuals who experienced homelessness in Deschutes County: 960 *(Data source: Central Oregon point-in-time homeless count, 2018)*

It is critical to ensure that the most smoke-vulnerable individuals in the community are included in the development of communication materials and outreach plans. To do this, staff from Deschutes County Health Services consulted with organizations serving vulnerable populations, as well as individuals that are smoke-vulnerable, to get feedback on draft messaging and identify communication strategies that would reach those most likely to experience health impacts from smoke. Key findings were that neighborhood associations are a trusted way to disseminate information in this community and that text alerts were highly valued. These findings were incorporated into the plan and ongoing feedback will be incorporated following an annual community-wide survey to evaluate and improve the efficacy of the Bend SSRA CRP strategy.

2. Means of Communication & Notification about Fire, Smoke Impacts, & Air Quality

Providing timely, accurate, reliable, locally-relevant, and advanced notification about planned prescribed fire in the forests around Bend and potential smoke impacts has been shown to be critical in effective communication plans, as well as a key factor in ongoing efforts to build and maintain local social license to support prescribed fire use. Providing this information through multiple channels or methods of communication using clear, simple, and consistent messaging is also the most effective means of helping residents and visitors plan for and avoid smoky conditions and potential health impacts. With respect to smoke-vulnerable individuals, we have paid particular attention to describing who and how many individuals comprises these sub-populations, which will be provided a wide range of possible communication and notification methods outlined below.

Prescribed fire smoke levels in the Bend SSRA can rise and fall rapidly depending on many factors, such as topography, seasonal nighttime temperature inversions, wind speed, and wind direction.

Consequently, we are utilizing a wide-range of existing and new communications and notification strategies and tools to expand our reach among a diverse public with different preferences for how they receive information. One of the central components of this multi-pronged strategy is the newly-created Central Oregon Fire website (www.centraloregonfire.org). The impetus for creation of the website came from a collaborative effort involving Deschutes County Health Services, Deschutes County Natural Resources, DCFP, ODF, DEQ, OHA, Project Wildfire, TNC, DNF, and COFMS who together recognized the need for agreed upon language and a corresponding central website to serve as a clearinghouse for information regarding wildland fire (prescribed and wildfire), smoke impacts, air quality conditions, and public health recommendations. From this platform, we provide (in English and Spanish) a range of information, tools, and resources regarding wildfires, planned prescribed fires, smoke impacts, air quality, and public health information serving all Central Oregon, including Deschutes, Crook, and Jefferson counties. Components of the website include:

- Important information, key messages, and recommendations addressing: 1) the purpose and importance of prescribed fire, 2) when and where prescribed fire is planned, 3) strategies employed to reduce emissions from prescribed fire, 4) the health impacts of smoke from all sources, and 5) recommendations to reduce exposure and mitigate potential health impacts caused by smoke;
- Blog and subscription-based newsfeed providing press releases from local, county, state, and federal partner organizations regarding prescribed fire, smoke, and air quality;
- Integrated text-alert system to receive real-time notifications from local, county, state, and federal partner organizations regarding prescribed fire, smoke, and air quality;
- Embedded interactive prescribed fire planning and implementation map providing real-time updates about planned, upcoming, and completed prescribed burning on federal lands across Central Oregon provided by COFMS;
- Embedded interactive Air Quality Index map for current air quality information provided by DEQ;
- Information and instructions for using the 5-3-1 Visibility Index when/where air quality monitoring data is not available, and;
- Links to online resources provided by agencies, such as OHA

Through this effort, local partners worked together to craft clear, simple, and consistent messaging that will be used in a wide range of traditional (or existing) and novel communication and notification methods. Much of this strategy will be utilized prior to every planned prescribed fire on public lands in Central Oregon. However, particular attention will be paid to fully implementing this strategy for prescribed burns in the WUI surrounding Bend, where past experience with prescribed fire and smoke events has taught us that enhanced communication and notification is critical. These enhanced means of communication and notification include:

- Press releases disseminated by local, state, and federal partners to the public through local media (television, radio, and print);
- Personal phone calls conducted by fire managers to interested individuals and community groups;
- Online and social media channels, such as Central Oregon Fire Info, partner organization websites, newsfeeds, Twitter, and Facebook, and;

- Email notification to community organizations connected to smoke-vulnerable populations, such as local school districts, the Health Alert Network, neighborhood associations, and more;
- Voluntary opt-in text-alert system provided through Deschutes County Emergency Services;
- Information about Cleaner Air Spaces when smoke is severe

In addition, Deschutes County Health Services provides information about emerging health threats, including smoke, to the community and to healthcare providers through the Health Alert Network (HAN). The HAN reaches approximately 200 health care providers in the County, including many who serve populations most vulnerable to smoke. This allows an opportunity to share consistent, accurate information with providers and to share information (e.g. factsheets) that providers can share with their patients. At the beginning of fire season, Deschutes County Health Services will share health information and best practices for protecting health during periods of smoke with the HAN. In addition to sharing information through the HAN, Deschutes County Health Services conducts seasonal outreach to local agencies to share key messages. This includes sharing information through social media, the Central Oregon Emergency Information Network that covers over 30 local agencies, and on the Deschutes County webpage. During periods of significant smoke, these messages also include information on current local Cleaner Air Spaces. Deschutes County Health Services maintains a list of public spaces in the community that are equipped with high efficiency air filtration systems. This allows Deschutes County Health Services to serve as a resource to the local healthcare system and assure that accurate information is available to protect community health.

The above information is also disseminated through person-to-person interactions and presentations including events such as community meetings, city club events and other civic group presentations, homeowner association meetings, and pub talks. Collectively, this array of methods complements and enhances our ability to reach the widest population possible with advanced notification and clear, simple, and consistent recommendations to improve the overall effectiveness of this strategy.

To assure that these communication methods are reaching the intended audiences and providing information that is relevant to the public, the Central Oregon Prescribed Fire, Smoke, and Public Health Collaborative will conduct an annual community-wide survey. This survey will capture information on where they turn for information about fire, smoke, and public health, as well as resources that they feel are lacking, and feedback on how to improve communication. Annual survey results will be used to continually improve the program and inform outreach in the community each year.

In addition to ongoing feedback and annual surveys, Deschutes County Health Services also participates in and seeks feedback from the Central Oregon Access and Functional Needs Work Group. The Oregon Office of Emergency Services defines access and functional needs (AFN) as individuals who are or have: physical, developmental or intellectual disabilities, chronic conditions or injuries, limited English proficiency, older adults, children, low income, homeless and/or transportation disadvantaged (i.e., dependent on public transit), and pregnant women. Messaging and communication methodology is shared with this work group prior to prescribed fire season to assure that access and functional needs are considered when sharing information.

3. Options to Protect Public Health & Mitigate Exposure to Smoke

A great deal of work happens in the forest before a prescribed burn is conducted, including thinning and removing trees and mowing brush. Completing these steps reduces the amount of combustible material available to burn, which in turn reduces the intensity of the fire and helps ensure that prescribed burns produce less smoke, achieve forest restoration goals, and can be safely controlled. During prescribed burn operations, a great deal of care and attention is paid to monitoring changing weather, fuel, and fire behavior, as well as where smoke is going during and after prescribed fires, to minimize smoke impacts to nearby communities. Nonetheless, some smoke in the air is inevitable during burn operations and the night and early morning immediately after prescribed fires.

Based on our analysis of the air quality data during prescribed fire smoke events in the Bend SSRA (see section titled Fire, Smoke, & Air Quality Analysis for the Bend SSRA CRP below) we have devised the following key messages and recommendations for the public to mitigate and reduce their exposure. This analysis highlights a clear and consistent pattern of prescribed fire smoke events that occur in the Bend SSRA, namely short-duration, low to moderate magnitude, occurring overnight or pre-dawn hours, and resulting primarily from WUI burns in the spring (see subsequent section below for detailed explanation). The recommendations are also consistent with established state protocols outlined in the June 2018 Oregon Severe Wildfire Smoke Episode Response Protocol created by DEQ, LRAPA, OHA, OOSHA, OEM, ODF, and USFS designed to address short-term (i.e. less than 24 hours) wildfire smoke impacts.

Key Messages: Smoke is made up primarily of small particles, gases, and water vapor. These particles can be inhaled deeply into the lungs, damaging lung tissue and causing respiratory and cardiovascular problems. Regardless of the source, smoke is a form of air pollution that can pose a health risk. Symptoms of short-term smoke exposure can include:

- Watery or dry eyes
- Persistent cough, phlegm, wheeze, scratchy throat, or irritated sinuses
- Headaches
- Shortness of breath, asthma attack, or lung irritation
- Irregular heartbeat, chest pain, or fatigue

Recommendations: The following guidelines are things members of the public and vulnerable populations can do to minimize short-duration smoke impacts from prescribed fire or wildfire:

- Limit your exposure to smoke.
- Reduce time spent outdoors when smoke is present. This can usually provide some protection, especially in a tightly closed, air-conditioned house. Set your A/C or heating unit to recycle or recirculate when at home or in your car, to limit your exposure.
- Reduce the time you engage in vigorous outdoor activity. This can be an important, effective way to lower the amount of smoke you are breathing in. It can minimize health risks during a smoke event.
- Stay hydrated. Drink plenty of water.
- Reduce other sources of indoor smoke and dust. These can be burning cigarettes, candles, gas or propane ranges, wood burning stoves and furnaces, and vacuuming.

- If you have heart or lung disease or respiratory illnesses such as asthma, follow your health care provider's advice about prevention and treatment of symptoms.
- More vulnerable or smoke sensitive persons may consider using an indoor high-efficiency air filter (HEPA) or electrostatic precipitator for your home or to help create one or more rooms with cleaner air to breathe.
- Before you go to bed at night, close doors and windows to prevent outside smoke from getting inside and keep indoor air clean.
- If you feel like smoke is already impacting your health, avoid outdoor physical exertion and remain indoors. Contact your medical provider if you experience serious health problems caused by smoke.

These mitigation actions are listed on the Central Oregon Fire Info website and incorporated into all communication and notification methods outlined above to ensure we have clear, simple, and consistent messaging and that the public is aware of the actions they can and should take to protect themselves from potential smoke impacts.

In addition to these key messages and recommendations, to protect the public's health and mitigate the impact of smoke, Deschutes County Health Services develops an annual list of Cleaner Air Spaces that are equipped with high efficiency air filtration systems that the public can access during periods of heavy longer duration smoke. Furthermore, in 2019 Deschutes County Health Services received grant funding from the Region 7 Health Care Coalition to purchase eleven portable air cleaners to station at locations serving smoke-vulnerable populations. Increasing the number and capacity of Cleaner Air Spaces and communicating those locations to the public is critical to protecting the health of the community. As events arise that warrant the use of Cleaner Air Spaces these locations will be communicated to the public through the communication and notification methods outlined above, such as press releases, social media, and text alert systems.

Finally, to assure that smoke-vulnerable populations receive these key messages and recommendations we conduct additional outreach targeted specifically at these sub-populations. These messages, along with information about the www.centraloregonfire.org website and text alert system are shared annually with: local school districts, health care providers, Parks and Recreation, Homeless Leadership Coalition, Latino Community Association, neighborhood associations, sports associations, and the Health Care Coalition. By building relationships with and informing these agencies, we are able to get critical health information to the public and smoke-vulnerable populations through trusted, pre-existing relationships.

4. Coordination & Communication Plan for Fire, Air Quality, & Public Health in Bend

The Bend SSRA CRP and underlying information and notification options were developed through the Central Oregon Prescribed Fire, Smoke, and Public Health Collaborative involving partners from state and federal forest and fire management (ODF, DNF, and COFMS), local forest collaborative (DCFP), community wildfire protection (Project Wildfire), forest conservation and restoration (TNC), Deschutes County (Natural Resources and Health Services), OHA, and DEQ. This group provided the knowledge and expertise to develop the strategy, core messages, and communication and notification methods that underlie the Bend SSRA CRP, as well as formal mechanisms, such as quarterly cross-organizational meetings, shared information and notification platforms, and collaboratively-developed messaging, to formalize coordination and communication across the relevant partners.

The core elements of this coordinated strategy now live on the Central Oregon Fire website and all the communication and notification methods to be utilized in the Bend SSRA and across the Central Oregon region. And because all the relevant partner organizations have web access and editorial privileges to provide real-time press releases and news updates through this integrated platform, as well as their respective communication and notification methods, we have greatly enhanced our already robust community outreach and engagement efforts here in Central Oregon. In addition to the website, the collaborative has developed coordinated language for press releases to assure health information is included in pre-season, burn season, burn day, as well as when smoke is currently impacting the SSRA and post-season communication. Examples of these press releases are provided in appendix A. The responsibility to initiate each of these press releases lies with the agency who is primarily responsible for the information. For example, the U.S. Forest Service will in most cases initiate messaging for planned burns while Deschutes County Health Services may initiate messaging about ongoing smoke impacts. The most regular communication will be related to planned burn units. In this case the U.S. Forest Service prescribed fire burn boss leading the burn will initiate the process and work with the public information officer to populate a press release with the relevant information. The press release is distributed to media partners, posted on the Central Oregon Fire website, partner social media platforms, and a text alert is initiated. In addition, the burn boss supplies the needed information to update the online interactive prescribed fire map showing the burn unit location, extent, and notes about potential smoke impacts. See the appendices for sample press releases, messaging protocols, and interactive map update protocols underlying this strategy.

In addition to the messaging procedures outlined above, we also use a variety of methods to provide other venues for people to learn more about prescribed fire and provide their input. These include presentations to civic groups and utilizing venues such as the Central Oregon City Club, visiting with homeowner associations in neighborhoods that are likely to experience smoke, holding public meetings in advance of some highly visible burns, as well as prescribed fire field tours. The public is also able to engage in the process followed by the federal agencies that is required by the National Environmental Policy Act (NEPA), offering the opportunity for public comment on proposed actions.

Furthermore, through the Central Oregon Prescribed Fire, Smoke, and Public Health Collaborative, we have institutionalized the process to address challenges, unanticipated changes, new opportunities, feedback from residents and community partners to any of our organizations, changes in technology, or identified gaps in the strategy, through our quarterly cross-organizational coordination meetings and the annual community-wide survey.

Fire, Smoke, & Air Quality Analysis for the Bend SSRA Community Response Plan

The health of residents, visitors, and smoke-vulnerable populations in Central Oregon is important. A sense of wellbeing, healthy environment, and high quality of life are important reasons why people choose to live in and visit Bend. For that reason, we are interested in preparing our forests and our community to be healthy and resilient in the face of all wildland fire (prescribed and wildfire) in both the near- and long-term and are carefully weighing the tradeoffs between prescribed fire and wildfire across a broad suite of ecological, economic, and social/community values. Syntheses of research from across the western United States has consistently shown that prescribed fire, when used in conjunction with mechanical thinning and applied across the

landscape, can significantly reduce the intensity and severity of future wildfire, thereby protecting the broad values our community cares about.

To that end, we have sought to better understand the duration, magnitude, time of day, smoke source location, and seasonality of both wildfire and prescribed fire smoke impacts in the Bend SSRA. Detailed analysis of air quality data from the Bend Pump Station nephelometer, as well as statewide permanent air quality monitoring sites, highlights the following important facts that inform the Bend SSRA CRP and our strategy with regard to fire, smoke, air quality, and public health messaging.

1. Prescribed Fire Smoke and Air Quality

Prescribed fire is not a significant cause of degraded air quality in the Bend SSRA. As Figure 2 below indicates, between 2011 and 2016, prescribed fires were responsible for only 112 hours, or 0.5%, of degraded air quality hours as measured in the 26 permanent air quality monitoring sites around the state. Locally, between 2011 and 2018, there was on average 10 hours per year, or 0.1%, of degraded air quality (moderate or worse) caused by prescribed fire in the Bend SSRA.

Causes of Degraded Air Quality from 2011-2016 in Oregon

(as measured by 1-hour PM2.5 concentration)

Air Quality Index	Prescribed Fire	Wildfire	Other (woodstove, mobile, industry, etc.)	TOTAL
Moderate	90	3,716	16,044	19,850
Unhealthy for Sensitive Groups	14	712	976	1702
Unhealthy	8	558	148	714
Very Unhealthy	0	78	1	79
Hazardous	0	42	0	42
TOTAL	**112** 0.5%	**5,106** 22.8%	**17,169** 76.7%	**22,387** 100%

Figure 2: Causes of degraded air quality between 2011 and 2016 in the 26 permanent air quality monitoring sites in Oregon.

2. Wildfire Smoke and Air Quality

Wildfire is a significant cause of degraded air quality in the Bend SSRA and statewide, as noted in Figure 2. In recent years (notably 2012, 2017, and 2018), wildfire has been a primary contributor to the poorest air quality experienced in the Bend SSRA throughout the entire year, as indicated in Figure 3 below.

3. Characteristics of Prescribed Fire Smoke Events & Impacts

Prescribed fire smoke events in the Bend SSRA demonstrate a clear and consistent pattern of smoke impacts. Analysis of hourly air quality data from the Bend Pump Station nephelometer reveals a clear and consistent pattern in terms of the duration, magnitude, time of day, smoke source

location, and seasonality of historical prescribed burn smoke impacts in the Bend SSRA. For all prescribed fire smoke events between 2011 and 2018 which would, under the new SMP qualify as an intrusion above either the 1-hour or 24-hour PM 2.5 threshold, we found that:

- The average duration of degraded air hours (i.e., moderate or worse) was 6.5 hours
- The average 24-hour PM 2.5 concentration was 30.9 μg/m³, within the Moderate Air Quality Index category
- The average time of day of the max PM 2.5 concentration was 3:10am
- The average distance to the nephelometer was 11 miles, and 76% of the prescribed burns were WUI burns
- 70% of the prescribed burns occurred during the mid-April to early-June spring prescribed fire season

4. Prescribed Fire Smoke & the National Ambient Air Quality Standard (NAAQS) for PM2.5

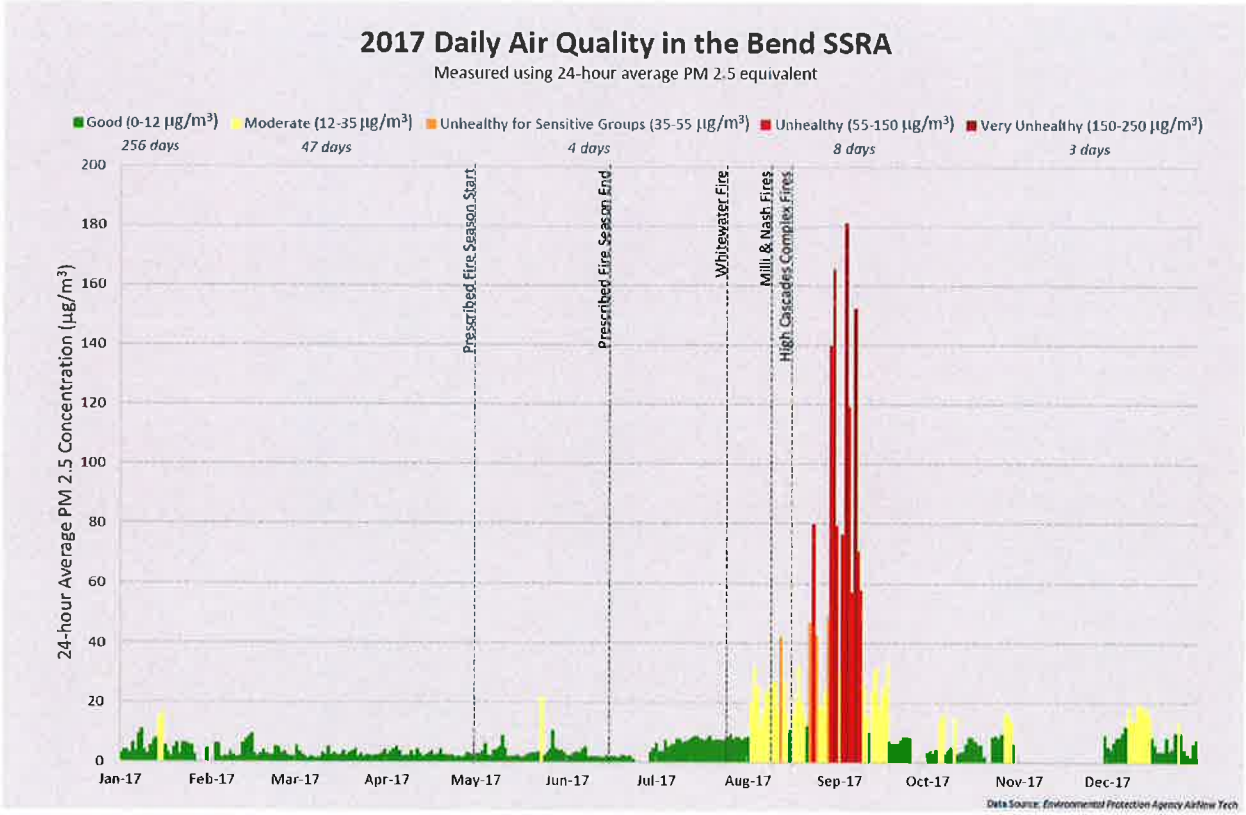


Figure 3: 2017 daily average PM 2.5 levels in the Bend SSRA, with additional notations indicating the start (early-May) and end (mid-June) of prescribed fire season, as well as primary local wildfires in central Oregon.

Due to Bend's generally high air quality throughout the year, prescribed burning does not pose a significant threat to violation of the National Ambient Air Quality Standards (NAAQS) for PM 2.5. In fact, analysis of hourly air quality data from the Bend Pump Station nephelometer helps us understand the potential risk of a violation. And while we understand that the Bend Pump Station is not a Federal Reference Monitor and therefore the data cannot be used in actual calculations of primary daily and annual PM 2.5 design values, the exercise is nonetheless informative. Figure 4 below illustrates that although Bend is not at risk of non-attainment for either the primary daily or

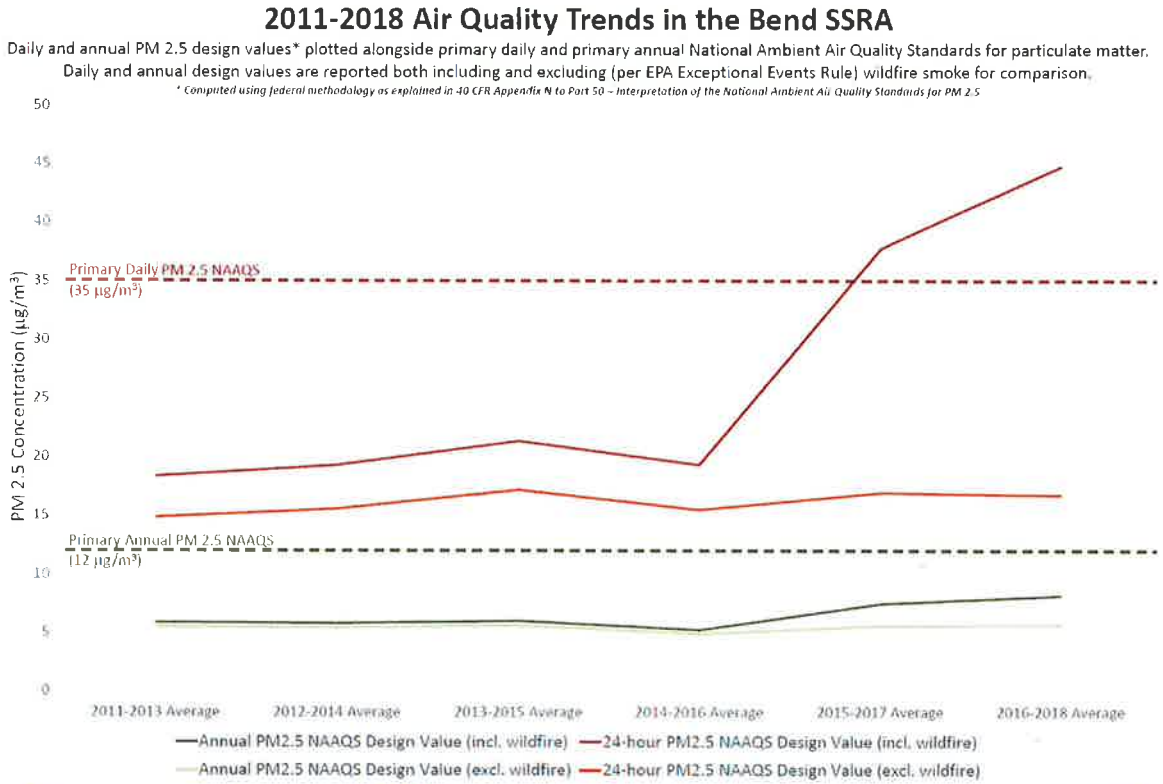


Figure 4: Primary annual and primary daily PM 2.5 design values relative to the primary daily and primary annual NAAQS for PM 2.5 for the Bend SSRA.

primary annual NAAQS for PM 2.5, it does reveal that the enhanced communication and notification we propose in the Bend SSRA about the public health impacts of smoke, in this case wildfire smoke, are particularly important to protecting the health and wellbeing of residents and visitors.

5. Contrasting Emissions from First-entry and Second-entry Prescribed Burns

Re-introducing fire to the fire-dependent forests adjacent to the Bend SSRA is complex, particularly after more than a century's worth of accumulation of combustible material. However, empirical data (presented in appendix D) highlights significant differences in the smoke emissions produced from first- and second-entry prescribed fires. These burns were implemented on the same 234-acre unit five years apart under similar spring wind and weather conditions within the same two-week burn window using the same techniques for ignitions, holding, and mop-up. The data highlight the potential of repeated prescribed fire use to reduce future prescribed fire smoke impacts to the community.

Annual Reporting

Per OAR 629-048-0180 Section 3(f) of the 2019 Oregon prescribed fire SMP, the City of Bend and Deschutes County jointly commit to reporting annually to ODF and DEQ on our implementation of the Bend SSRA CRP. In this report we will document continued compliance with the four required components of the Bend SSRA CRP outlined above, as well as summary of the methods used to communicate to the public and smoke-vulnerable populations, a log of dates and times the Bend SSRA CRP is initiated, and a record of local meetings to discuss or update the Bend SSRA CRP.

Unless otherwise specified, we will plan to submit annual reports in March of each year, prior to the commencement of each spring prescribed burn season.

Conclusion

In Bend and Deschutes County, we have a proven track-record of successful collaboration and coordination around the most pressing environmental and natural resource challenges facing our communities. Thanks to a long history of locally-driven initiatives, such as the Central Oregon Project for Wildfire Risk Reduction (COPWRR), the Greater Bend Community Wildfire Protection Plan (CWPP), Project Wildfire, the Upper Deschutes Fire Learning Network, the Deschutes Collaborative Forest Project, and now the Central Oregon Smoke and Public Health Collaborative we have a foundation of robust community dialogue, outreach, and engagement to build upon in the creation and implementation of the Bend SSRA CRP.

What we have outlined above is a significant step forward in timely, accurate, reliable, locally-relevant, and proactive outreach to residents, visitors, and smoke-vulnerable populations of Bend (and Central Oregon more broadly). As we work to increase the pace and scale of prescribed burning to ensure the near-term and long-term health, safety, and resilience of our forests and communities, we are confident that the Bend SSRA CRP will ensure that this important work does not compromise the health and wellbeing of the people who live and visit here, and that Bend and Central Oregon will continue to be a national leader in fire-adapted forest restoration and prescribed fire use.

Appendix A: Sample Press Releases

Pre-season example (Smoke and Public Health Collaborative)

For Immediate Release

Contact: Alison Green
Central Oregon Fire
541-419-1116

Need Up to Date Prescribed Fire Information?

Land managers and public health officials have come together to develop two new tools that will provide Central Oregonians with a one-stop shop fire information resource. Central Oregon Fire (www.centraloregonfire.org) offers up to date information on prescribed fire and wildfire locations, smoke impacts, and health resources. Also, you sign up for text alerts about prescribed fire by texting "cofire" to 888777. Living in a fire adapted ecosystem means Central Oregonians have a season for wildfire and another for prescribed fire. Residents will start seeing prescribed burns around Central Oregon in preparation for fire season and to create a healthier forest.

Prescribed burning is primarily done in the spring and fall. Whenever fire is used deliberately as a tool to improve the health of the forest and increase community and firefighter safety, it requires careful planning and is conducted under specific conditions of temperature, wind, and humidity. This ensures land managers accomplish the desired ecological outcomes and the fire can be safely controlled, all while reducing the likelihood that heavy amounts of smoke will blow into nearby communities. Prescribed fire, when used strategically and repeatedly across larger areas, helps sustain healthy forest ecosystems, reduces the risk of out-of-control fires, reduces the severity of future wildfires when they do occur, and keeps our communities and firefighters safer.

With the implementation of prescribed burning, some communities in Central Oregon will have short duration smoke events. Many factors influence a person's sensitivity to smoke, including severity and duration of smoke exposure and a person's health. Your health and the health of your family are important. There are things you can do to minimize the impacts of smoke on you and your family; such as, limit your exposure, stay hydrated, and close windows during periods of smoke and at night when prescribed burns are planned to prevent smoke from getting inside.

For more information on prescribed burning, smoke and your health, interactive maps and wildfire information, visit www.centraloregonfire.org or text "cofire" to 888777 to receive text alerts.

####

Beginning season example (Deschutes National Forest)

Prescribed Burning Season Begins on the Deschutes

Central Oregon – If conditions remain favorable, firefighters on the Deschutes National Forest plan to ignite two prescribed burns tomorrow, the first is southwest of Sisters and the other is approximately 25 miles southeast of La Pine. Ignitions are scheduled to begin around 10:00 a.m. for the burn on SAFR unit 131, 3 miles southwest of Sisters, just east of Forest Road 1513. The smoke from this 62 acre burn will be visible from Sisters and people using the Metolius-Windigo Trail can expect a short duration trail closure on a portion of the trail just north of Cow Camp. A reroute has been designated for hiker and horse travel will be offered through signage near the prescribed burn area.

Firefighters will also be burning a 350 acre unit off Forest Road 18 about 25 miles southeast of La Pine called Maintenance 2D. If there's time, they will also ignite the adjacent unit Maintenance 2C, that's 875 acres. Ignitions are scheduled to start at 10:00 a.m. and continue through late afternoon.

On Friday, ignitions are scheduled to begin at 10:00 a.m. on South Bend 137, a 286 acre unit south of Bend adjacent to Lost Tracks Golf Course and China Hat Road. The Deschutes National Forest has partnered with Oregon Department of Fish and Wildlife for this burn which is intended to improve habitat for wildlife. Additionally, there is a significant amount of trash that has been dumped on this unit. Before this burn can happen, inmates from the Deschutes County jail will be cleaning up trash on the unit and Bend Towing will be hauling off large abandoned campers on Thursday. The Deschutes National Forest appreciates the cooperation of our community partners in helping us clean and prepare the area to be burned so we can restore the forest and reduce hazardous fuel accumulations within the Wildland Urban Interface near Bend.

Due to the location of these units, the public could see smoke and drivers may experience smoke impacts on nearby highways and Forest roads. For all prescribed fires, signs will be posted on significant nearby Forest roads and state highways that could be impacted. The public is encouraged to close their windows at night and if smoke is on the roadway, turn on headlights and slow down while traveling through smoky areas. The public's health is important to the Forest Service. While significant preventive measures are taken, many factors influence a person's susceptibility to smoke, including severity and duration of smoke exposure and a person's health. If individuals feel impacted by smoke, they should avoid outdoor physical exertion and remain indoors. If people experience serious health impacts from the smoke, they should contact their doctor. For more information about smoke and health, visit the Oregon Health Authority recommendations through this link:
http://www.oregon.gov/oha/PH/Preparedness/Prepare/Pages/PrepareForWildfire.aspx#health

Fuels specialists will follow policies outlined in the Oregon Department of Forestry smoke management plan, which governs smoke from prescribed fires (including pile burning), and attempts to minimize impacts to visibility and public health. Keep up with prescribed burns in Central Oregon by visiting this live map: http://www.fs.fed.us/r6/webmaps/deschutes/cofms-rxfire/

For more information, visit the Deschutes website at www.fs.usda.gov/deschutes and follow us on twitter @CentralORFire.
-End-

Day of burning example (Deschutes National Forest)

Firefighters Plan Burn West of Bend for Wednesday
Burning has prompted several short term trail closures in the Phil's Trail System

Central Oregon – If conditions remain favorable, firefighters on the Deschutes National Forest are planning a burn west of Bend near the Cascade Lakes Welcome Station on Wednesday.

On May 8, ignitions are planned for approximately 9:00 a.m. on Welcome Station 9, a 231 unit one mile west of Bend near the Cascade Lakes Welcome Station on Cascade Lakes Highway. Due to the location of this burn, the project will close portions of the Ticket to Ride, COD and Westside Paved Path trails. These trails will likely be closed for a few days to allow firefighters to safely cool hot spots near the trail. Additionally, smoke will be highly visible from Cascade Lakes Highway and portions of Forest Road 41. Signs and flaggers will be available if smoke begins to impact traffic flow the highway. Forest Service firefighters will be assisted on this burn by Bend Fire, The Nature Conservancy and Interagency hotshots.

Outside of Sisters, firefighters are planning to burn the 138 acre SAFR unit 282 adjacent to the Cold Springs Cutoff (Forest Road 1012) northwest of Sisters. Smoke will be visible from Highway 20 and the town of Sisters but no closures are anticipated with this burn.

While no road closures are expected with any of these burns, smoke may be visible from state highways and nearby Forest Roads and drivers may experience smoke impacts. For all prescribed fires, signs will be posted on significant nearby Forest roads and state highways that could be impacted. The public is encouraged to close their windows at night and if smoke is on the roadway, turn on headlights and slow down while traveling through smoky areas. The public's health is important to the Forest Service. While significant preventive measures are taken, many factors influence a person's susceptibility to smoke, including severity and duration of smoke exposure and a person's health. If individuals feel impacted by smoke, they should avoid outdoor physical exertion and remain indoors. If people experience serious health impacts from the smoke, they should contact their doctor. For more information about smoke and health, visit the Oregon Health Authority recommendations through this link: http://www.oregon.gov/oha/PH/Preparedness/Prepare/Pages/PrepareForWildfire.aspx#health

Fuels specialists will follow policies outlined in the Oregon Department of Forestry smoke management plan, which governs smoke from prescribed fires (including pile burning), and attempts to minimize impacts to visibility and public health.

Keep up with prescribed burns in Central Oregon by visiting: http://www.centraloregonfire.org or text "COFIRE" to 888-777 to receive text alerts.

For more information, visit the Deschutes website at www.fs.usda.gov/deschutes and follow us on twitter @CentralORFire.

Ongoing smoke impacts (Deschutes County)

Deschutes County Health Services advises residents to take health precautions during periods of smoke. Many factors influence a person's sensitivity to smoke, including severity and duration of smoke exposure and a person's health.

There are things you can do to minimize the impacts of smoke on you and your family:

- Reduce time spent outdoors when smoke is present.
- Use an indoor high-efficiency air filter (HEPA) or electrostatic precipitator in your home to help create one or more rooms with cleaner air to breathe.
- Set your A/C or heating unit to recycle or recirculate when at home or in your car.
- Stay hydrated. Drink plenty of water.
- Reduce other sources of indoor smoke and dust, including: burning cigarettes, candles, gas or propane ranges, wood burning stoves and furnaces, and vacuuming.
- Reduce the time you engage in vigorous outdoor activity.
- If you have heart or lung disease or respiratory illnesses such as asthma, follow your health care provider's advice about prevention and treatment of symptoms.
- Consider maximizing time in air-conditioned homes or buildings during smoky periods or visit public, air-conditioned places such as libraries, community centers, senior centers, restaurants, and retailers for relief from smoke.

Smoke may worsen symptoms for people who have pre-existing health conditions and those who are particularly sensitive to air pollution. Contact your health care provider to develop a smoke plan. Sensitive groups include:

- Persons with asthma or other chronic respiratory diseases, such as COPD
- Persons with cardiovascular disease
- Persons 65 years of age or older
- Infants and children
- Pregnant women
- Smokers, especially those who have smoked for several years

For current information on air quality, visit https://oraqi.deq.state.or.us/home/map or use the 5-3-1 visibility index:

- **If visibility is well over five miles**, the air quality is generally good.
- **Even if visibility is five miles but generally hazy**, air quality is moderate and beginning to deteriorate, and is generally healthy, except possibly for smoke sensitive persons. The general public should avoid prolonged exposure if conditions are smoky to the point where visibility is closer to the 5-mile range.
- **If under five miles**, the air quality is unhealthy for young children, adults over age 65, pregnant women, and people with heart and/or lung disease, asthma or other respiratory illness. These people should minimize outdoor activity.
- **If under three miles**, the air quality is unhealthy for everyone. Young children, adults over age 65, pregnant women, and people with heart and/or lung disease, asthma or other respiratory illness. These people should minimize outdoor activity.
- **If under one mile**, the air quality is unhealthy for everyone. Everyone should avoid all outdoor activities.

For current information on fires and how to protect your health, visit: www.centraloregonfire.org.

Appendix B: Press Release Protocols

Prescribed Fire News Release Info Form

Please complete the following information and send to *DESCHUTES NF PUBLIC AFFAIRS OFFICER* (PAO), XXXX@fs.fed.us, when you have finalized plans to conduct a prescribed fire. It would be helpful for you to fill out as much as you can ahead of time. Since there is usually a quick turnaround once the conditions are right, please provide a courtesy call to *DESCHUTES NF PAO* at office (xxx-xxx-xxxx) or cell (xxx-xxx-xxx). This also applies if your project is cancelled or delayed. If you cannot reach *DESCHUTES NF PAO*, please contact *BLM PAO* (for BLM-administered lands) at xxx-xxx-xxxx; ALTERNATE DESCHUTES PAO (for Deschutes NF lands) at xxx-xxx-xxxx; or Ochoco NF PAO at xxx-xxx-xxx

1. Name and size of the prescribed burn project.

2. Location in terms the public understands, as mileage from a nearby community or landmark (for example, "About seven miles southeast of Bend and in the vicinity of Coyote Butte").

3. Ignition date and approximate time, if possible.

4. Expected smoke impacts on Highways or Forest Roads and whether you'll have signing/flaggers. Any closures or traffic delays?

5. Burn objectives. Be specific – not just fuels reduction, but what are the specific goals (e.g., introducing fire back into the ponderosa pine ecosystem, maintenance burning, removing leftover vegetation associated a thinning project to prevent the possibility of high intensity crown fires in the wildland urban interface, restoring old-growth juniper woodlands, enhancing riparian areas, etc.). If possible, also identify NEPA document.

6. Any previous treatments or is this the first entry?

7. Any biomass utilization?

8. Agencies and cooperators involved. Specify if crews, such as the hotshots, will be involved or any unique partners.

9. Project duration. (How long will the burn take? Mop up? Will there be a patrol over the weekend or overnight?)

10. If a subdivision may be impacted, identify name of subdivision and distance from the project area and nearest community.

11. Any other item of interest, for example: Is it a second treatment, a helicopter ignition, or have other treatments in the area mitigated the spread of wildfire in the recent past? Have we already treated a significant amount of acres? Special funding source (e.g., Elk Foundation, ARRA, etc.)

Appendix C: Interactive Prescribed Fire Map Update Protocols

Protocols for Updating and Editing the Central Oregon Prescribed Fire Interactive Map

The public facing Prescribed Fire Interactive Map can be found on the Central Oregon Fire Information website. http://www.centraloregonfire.org/

UPDATING INSTRUCTIONS

PRESEASON

GIS staff will solicit for GIS shapefiles that depict Fiscal Year prescribed fire units for the Deschutes and Ochoco National Forests and the Prineville BLM. **It is important for Divisions to ensure that the units they plan to burn are included on the map, prior to ignitions.** It is important that when the public views the map, they are receiving an accurate view of near term burn plans. Only those units available for burning and those units with a realistic chance (>25% likelihood) of being burned should be included on the map. Most often, only underburning and jackpot units should be included, but Divisions can submit GIS shapefiles for high visibility pile burning units as well.

DURING PRESCRIBED FIRE SEASON

Public Affairs, Map Editors (see below), Burn Bosses (or their delegate), and Prescribed Fire Managers (if assigned) will have a role in keeping the Prescribed Fire Interactive Map current. Note that the Map Editor role is not-technical; there is an editing app that allows for performing edits while on the Forest Service network, outside of ArcMap. Editing access can be granted by contacting GIS staff. See Map Editor Instructions below for more detail.

During Prescribed Fire Season, the fields to keep current in the Prescribed Fire Interactive Map are **FIRESTATUS** and **NOTES**.

FIRESTATUS options are as follows:

- COMPLETE - ignitions were completed or partially completed (black color in the map)
- ACTIVE – unit is planned to be burned shortly (within 24 hours), is currently being burned, or was burned very recently (last 24 -48 hours) (red color in the map)
- NOT ACTIVE- unit could potentially be burned (green color in the map)

The **NOTES** field has a 254 character limit and can be used to document anything relevant to the burn unit. **However, for units with the potential to impact a Smoke Sensitive Receptor Area (SSRA), the NOTES field should be used to inform the public about potential smoke impacts.** This is important, as providing information on potential smoke impacts is one component of a Community Response Plan (CRP) – a plan that is developed to allow for exemptions to the 1-hour smoke intrusion threshold for SSRAs.

Example Notes:

Although the main plume is expected to avoid the city of Bend, residual smoke will settle at night and residents can expect smoke to linger in the Deschutes River drainage and other low lying areas through late morning. (219 characters)

Smoke is not expected to affect any communities. However, drivers on China Hat road should be prepared for potential impaired invisibility due to smoke impacts. Pilot cars and other traffic control measures may be taken to ensure safety of drivers. (248 characters)

Phil's Trail complex users can expect smoke impacts during burn implementation. Portions of the COD trail will be closed. (121 characters)

With forecasted weather, the Day Road area will likely experience some smoke impacts during the afternoon and early evening hours. (130 characters)

In order to ensure that the Prescribed Fire Interactive Map is kept current, whomever has been assigned to submit media release information to Public Affairs should CC a Map Editor (see below) on any correspondence about the prescribed fire. **Public Affairs will verify that the unit is showing FIRESTATUS "ACTIVE" in the Prescribed Fire Interactive Map prior to sending out any media releases.** If the map has not been updated, Public Affairs will update the map or contact a Map Editor to update.

If a Division is burning a unit that does not require a media release, the Burn Boss or their delegate has the responsibility of making edits or contacting a Map Editor to ensure that the map is updated prior to ignitions.

If a prescribed fire is cancelled OR approximately 24 – 48 hours after ignitions are complete, the Burn Boss or their delegate should change FIRE STATUS in the map from ACTIVE (red) to COMPLETE (black) or NOT ACTIVE (green) or contact a Map Editor to make these updates.

When a Prescribed Fire Manager is assigned, they will monitor the map for accuracy and either update the map or coordinate with a Map Editor for updates.

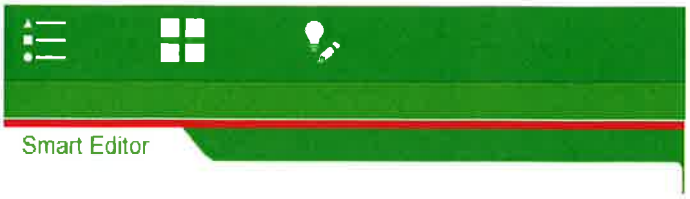
MAP EDITOR INSTRUCTIONS

LOGGING IN
Contact GIS staff for Access and instructions to the Prescribed Fire Interactive Map Editing Application

VIEW AND EDIT FEATURE ATTRIBUTES

Zoom in to your area of interest. This can be done by using the + and – buttons in the upper left corner. Select the Edit Widget at the top of the page.

Click the point or polygon of interest. Note that if a red bar appears above the Smart Editor, editing will no longer work. Click another widget, such as the Basemap widget (4 white squares) next to the Edit widget, then click the Edit widget again.



Use the drop down list to correct fields or complete any fields that are missing information. The primary fields that an editor will need update are: **FIRESTATUS** and **NOTES**.

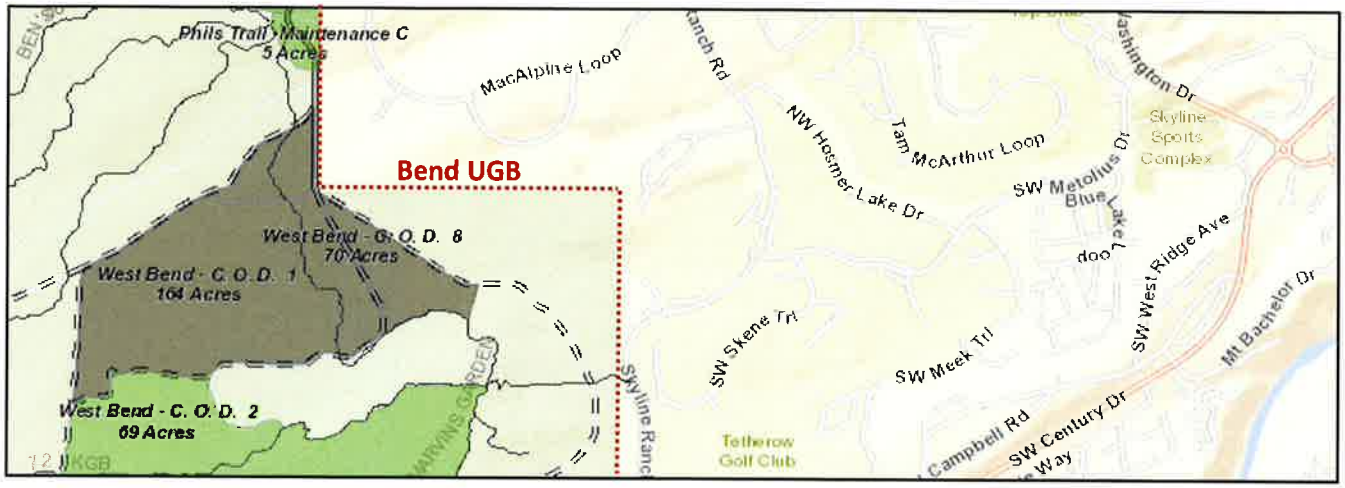
Under FIRESTATUS, select one of the following: 1) ignitions were completed or partially completed (COMPLETE; black color in the map); 2) is planned to be burned shortly, is currently being burned, or was burned very recently (ACTIVE; red color in the map); OR 3) could potentially be burned (PLANNED; brown color in the map).

Under NOTES, anything relevant to the local unit can be entered. Some examples: "Expect smoke along Highway 242", "This is the second time this unit was burned over the last 10 years", "This project is a collaboration between the State and the US Forest Service". **Note however that for units with the potential to impact a Smoke Sensitive Receptor Area (SSRA), the NOTES field is used to inform the public about potential smoke impacts.**

Save any changes you make.

REPEAT THIS PROCESS FOR BOTH THE POINT AND POLYGON FEATURES ASSOCIATED WITH THE UNIT. Check that your updates were successfully by checking the public facing interactive map.

Appendix D: Comparing Emissions from First- & Second-entry Prescribed Fire Use



West Bend Project
C.O.D. Units 1 & 8

Size
234 acres

Distance to Smoke Monitor
4 miles

	First-entry Burn *April 13, 2014*	Second-entry Burn *April 29, 2019*
Fuel Tonnage (est.)	468 tons	234 tons
Start time of Smoke Impact	0:00 am	10:00 pm
Duration of Smoke Impact	13 hours	4 hours
Max Hourly PM 2.5	251.2 $\mu g/m^3$	61.3 $\mu g/m^3$
Max Hourly AQI Category	Unhealthy	Moderate
Time of Max Hourly PM 2.5	1:00 am	0:00 am
24-hour PM 2.5	30.0 $\mu g/m^3$	9.8 $\mu g/m^3$
24-hour AQI Category	Moderate	Good

Summary

The data from two prescribed burns presented above occurred on the same 234-acre unit in the West Bend Project on the Deschutes National Forest near Phil's Trailhead immediately west of the Bend Urban Growth Boundary. The first- and second-entry burns were conducted five years apart under similar spring wind and weather conditions within the same two-week burn window in the second half of April using the same techniques for ignitions, holding, and mop-up.

Key Takeaways

- Estimated fuel load was half in the second entry, primarily due to consumption of stumps from early 20th century logging. These stumps are primary contributors to overnight smoldering smoke production that drive smoke intrusions in the Bend Smoke Sensitive Receptor Area.

- The maximum hourly PM 2.5 concentration in the second-entry was less than one-quarter of the first-entry burn, and fell within the "moderate" AQI range.

- The maximum 24-hour average PM 2.5 concentration in the second-entry was less than one-third of the first-entry burn, never exceeding "good" AQI, and was less than one-third of the 24-hour NAAQS threshold.

- Both smoke events occurred late in the evening/overnight, however the duration of the smoke incident resulting from the second-entry burn was less than one-third the length of the smoke intrusion caused by the first-entry burn.