

Greater Bend Community Wildfire Protection Plan

May 16, 2006











Prepared by

Declaration of Agreement

The Healthy Forests Restoration Act requires that the applicable local government, the local fire department, and the state entity responsible for forest management agree to the Community Wildfire Protection Plan. The undersigned have reviewed this plan and agree to the completed document.

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Dennis Luke, Chair Deschutes County Board of Commissioners	Date
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Acknowledgements

Assembled within the true spirit of collaboration, the following people are acknowledged for their participation and commitment resulting in the creation of the Greater Bend Community Wildfire Protection Plan.

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Greater Bend Community Wildfire Protection Plan

Purpose

The purpose of the Greater Bend Community Wildfire Protection Plan (CWPP) is to:

- Protect lives and property from wildland fires;
- Instill a sense of personal responsibility for taking preventive actions regarding wildland fire:
- Increase public understanding of living in a fire-adapted ecosystem;
- Increase the community's ability to prepare for, respond to and recover from wildland fires;
- Restore fire-adapted ecosystems; and
- Improve the fire resilience of the landscape while protecting other social, economic and ecological values.

This document outlines the priorities, strategies and action plans for fuels reduction treatments in the greater Bend wildland urban interface. This CWPP also addresses special areas of concern and makes recommendations for reducing structural vulnerability and creating defensible spaces in communities at risk. It is intended to be a living vehicle for fuels reduction, educational, and other projects to decrease overall risks of loss from wildland fire; updated and revisited at least semi-annually to address its purpose.

Wildland fire is a natural and necessary component of forest ecosystems across the country. Central Oregon is no exception. Historically, wildland fires have shaped the forests valued by residents and visitors. Forests and other wildlands in greater Bend however, are now significantly altered due to fire prevention efforts, modern suppression activities and a general lack of large scale fires, resulting in overgrown forests with closed canopies and decadent fuels that burn more intensely than in the past. In addition, the recent explosion in population has led to increased residential development into forests, in the wildland urban interface (WUI). To address these issues, members of fire agencies, local businesses and organizations, and individuals collaborated to develop the Greater Bend Community Wildfire Protection Plan.

Although reducing the risk of catastrophic wildland fire is the primary motivation behind this plan, managing the forests and wildlands for hazardous fuels reduction and fire resilience is only one part of the larger picture. Residents and visitors desire healthy,

fire-resilient forests and wildlands that provide habitat for wildlife, recreational opportunities, and scenic beauty.

The Greater Bend Community Wildfire Protection Plan will assist the City of Bend Fire Department, Deschutes County Rural Fire Protection District #2 and Bend area residents in the identification of surrounding lands, including federal and state lands, at risk from catastrophic wildland fire. It identifies strategies for reducing hazardous wildland fire fuels while improving forest health, supporting local industry and economy and improving fire protection capabilities. It also identifies actions that individuals can take to help protect themselves and their neighborhoods against the threat of wildland fires.

Collaboration

In 2003, the Congress passed historical bi-partisan legislation: the Healthy Forests Restoration Act (HFRA). This legislation directs federal agencies to collaborate with communities in developing a Community Wildfire Protection Plan which includes the identification and prioritization of areas needing hazardous fuels treatment. It further provides authorities to expedite the National Environmental Protection Act (NEPA) process for fuels reduction projects on federal lands. The act also requires that 50% of funding allocated to fuels projects be used in the wildland urban interface.

For the first time, communities have the opportunity to direct where federal agencies place their fuels reduction efforts. With a Community Wildfire Protection Plan in place, community groups can apply for federal grants to treat hazardous fuels and address special concerns to reduce the risk of catastrophic loss as a result of wildland fire.

Following three public meetings to generate interest and participation in the planning process, community members of Bend, Oregon came together with representatives from the City of Bend Fire Department, Deschutes County Rural Fire Protection District #2, Oregon Department of Forestry, the USDA Forest Service, the USDI Bureau of Land Management, and Deschutes County to develop the Greater Bend Community Wildfire Protection Plan. The plan was created by this Steering Committee in accordance with *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (Communities Committee, Society of American Foresters, National Association of Counties, National Association of State Foresters 2005); and Deschutes County Resolution 2004-093.

A draft of the Greater Bend CWPP was available for public comment for 30 days prior to the final signing and approval of the plan. Interested parties provided comments during this period.

The Bend City Council adopted the Greater Bend Community Wildfire Protection Plan by resolution on May 3, 2006. The Greater Bend CWPP was also formally adopted by Deschutes County by resolution on May 8, 2006.

Background information

Bend, Oregon is located in the center of the state and is the social, economic and recreational hub of Deschutes County. According to the 2000 census 82,849 residents call the greater Bend area home.

Historically, the Bend area was a mix of forest types including ponderosa pine, some open tracts of western juniper, bitterbrush, sage and open grasslands. Forests in the higher elevations were composed of mixed conifers and true fir.

Today, with more development into the wildland urban interface, less stand management, less logging activity and highly effective wildland fire suppression, the greater Bend area is characterized by thicker stands of western juniper on the north and east sides and ponderosa pine, bitterbrush and bunchgrasses to the west and south. The higher elevations are still a mix of conifers including ponderosa pine.

The Bend community has experienced several large fires (over 100 acres) in the last 100 years. Three large fires that occurred within the last 20 years have threatened lives, property, wildlife and the landscape. In 1990, the Awbrey Hall Fire burned 3,032 acres and destroyed 22 homes. In 1996, the Skeleton Fire consumed 22,000 acres, 19 homes and 15 outbuildings. In 2003, the 18 Road Fire charred 3,800 acres and threatened the southwest side of Bend and the High Desert Museum.

As part of the ongoing wildland fire risk management of the surrounding public and private forestlands, the US Forest Service, the Bureau of Land Management, Oregon Department of Forestry, Deschutes County and private landowners are engaged in several hazardous fuels treatment projects.

Oregon Department of Forestry (ODF) is currently engaged in multiple projects including the West Bend Fuel Break along the FS 4606 Road and a secondary fuel break along Johnson Road. ODF recently completed defensible space projects in the Saddleback and Woodside Ranch subdivisions and has ongoing projects to help individual landowners comply with the Oregon Forestland-Urban Interface Fire Protection Act of 1997 also known as Senate Bill 360.

The US Forest Service is currently involved in the East Tumbull Project which will treat a proposed 4,500 acres of hazardous fuels along the Cascade Lakes Highway and the Kelsey Project which encompasses the southern boundary of the Greater Bend CWPP planning area and will treat a proposed 10,500 acres. The Forest Service recently completed the 18 Fire Project and the Katalo Project; both in the southeast portion of the planning area. Future Forest Service projects include the West Tumbull Project which will reduce hazardous fuels around the Bridge Creek watershed, a drinking water source for Bend, and an area of special concern for the Greater Bend Steering Committee.

Community Base Maps

The Greater Bend CWPP relies on the following maps and GIS data (Appendix A):

- Greater Bend WUI boundary with identified Communities at Risk
- Fire starts in the last five years and fires over 100 acres in the last 100 years
- Fire Regime Condition Class

Community Profile

The community of Bend presents a unique challenge for the wildfire planning process. Although the core urban area is not at significant risk from wildfire due to the amount of development and lack of vegetation, the areas adjacent to the core of Bend are characterized by large trees and ground vegetation that contributes to its scenic beauty as well as the overall wildland fire risk. Closed canopies are rare inside the city limits. However, there are significant areas of hazardous wildland fuels intermixed with homes and businesses that in the event of a grass or brush fire, could sustain a wildland fire event with catastrophic losses likely.

Wildland Urban Interface Description

The Healthy Forests Restoration Act defines wildland urban interface (WUI) as an area within or adjacent to an at-risk community that has been identified by a community in its wildfire protection plan.

For areas that do not have such a plan, it is identified as:

- extending ½ mile from the boundary of an at-risk community,
- extending 1½ miles from the boundary of an at-risk community when other criteria are met such as a sustained steep slope or a geographic feature that creates an effective firebreak, or is classified as Condition Class 3 land,
- adjacent to an evacuation route.

The Bend CWPP Steering Committee has carefully planned and mapped the WUI (see Appendix A). The southern edge of the boundary is the northern boundary of the Sunriver CWPP. The northern part of the WUI is the Greater Sisters Country CWPP boundary on the northwest side and the boundary for the future Greater Redmond CWPP on the northeast side. The east and west portions of the WUI are defined by the rural fire district boundaries. An area around the Bridge Creek watershed is also included in the Greater Bend WUI. The city of Bend lies in the core of the Greater Bend WUI boundary. The Greater Bend wildland urban interface boundary is approximately 245 square miles and covers 156,616 acres.

Communities at Risk

The Healthy Forest Initiative (HFI) and the Healthy Forests Restoration Act (HFRA) define a "community at risk" from wildland fire as one that:

- is a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) in or adjacent to federal land;
- has conditions conducive to large-scale wildland fire; and
- faces a significant threat to human life or property as a result of a wildland fire.

The Steering Committee utilized US Census figures from 2000 and the tax information from December 2005 to identify and name the following ten "Communities at Risk" within the Greater Bend WUI for assessment and prioritization.

North -17,725 acres with 2,513 structures. Population -4,927.

Northeast – 27,302 acres with 2,630 structures. Population – 7,264.

Southeast – 36,148 acres with 2,252 structures. Population – 6,896.

Urban Growth Reserve (UGR) East – 11,002 acres with 13,302 structures. Population – 35,917.

Urban Growth Reserve (UGR) West -10,294 acres with 11,808 structures. Population -20,073.

West -47,969 acres with 1,421 structures. Population -1,656.

Deschutes River Woods (DRW) -3,534 acres with 2,022 structures. Population -5,138.

Tumalo – 1,234 acres with 99 structures. Population – 535.

Skyliners – 257 acres with 46 structures. Population – 39.

Saddleback – 1,151 acres with 114 structures. Population – 404.

Fuel Hazards and Ecotypes

The Greater Bend WUI encounters diverse vegetation types including:

- Ponderosa pine
- Western juniper
- Bitterbrush
- Manzanita
- Western sage

Ponderosa pine is currently found in the southern and western portions of the greater Bend area, and in the higher elevations. Historically, ponderosa pine forests contained more understory grasses and less shrubs than are present today. These plants combined with fallen pine needles, formed fast-burning fuels that led to recurrent widespread burning. The fire history for ponderosa pine is characterized by low-intensity ground fires that occur at intervals of 11-15 years. The pattern of low ground fires and stand dynamics resulted in the open park-like conditions that early inhabitants and visitors found in the region.

Less stand management, less logging activity and highly effective wildland fire suppression have significantly altered the ponderosa pine forest type. Removal of the larger "yellow belly" pines has dramatically decreased open park-like forests, replacing them with more evenly spaced and smaller "black-bark" forests. Similar to other species of conifer forest types, the suppression of fire has greatly increased the stocking levels (number of trees) and density of trees, creating ladder fuels and putting the stands at risk of attack from insects and disease. These factors have contributed to more intense fires in ponderosa pine forests in recent years.

Western juniper occurs mainly in the northern and eastern sections in the Greater Bend WUI. The fire history of western juniper is characterized by fire that occurs approximately every 30 years and is generally limited by the availability of fuels. Western juniper trees have thin bark and fires kill them easily. Western juniper appears to be expanding its range over the previous century. Several factors may account for the expansion: a) fire suppression which allows the stands to grow unchecked by fire, b) overgrazing by domestic livestock which opens up new sites for colonization, c) reestablishment of juniper after being logged, and d) climate change.

Bitterbrush occurs throughout the Greater Bend area on all aspects and elevations and is frequently found with mixed shrubs such as manzanita and sage. Fire severely damages bitterbrush, especially if rain is not received shortly after a burn. Bitterbrush is fire dependent, but not fire resistant. It regenerates mostly from seed after a fire and often sprouts from caches of seeds made by rodents. Bitterbrush will sprout after burning regardless of the severity of the burn and matures relatively quickly. Consequently, the Greater Bend wildland urban interface area is rich with patches of bitterbrush that burn well on their own and provide fire-ready ladder fuels for taller tree stands.

Manzanita is a shrub that occurs throughout the Greater Bend area, usually mixed with other shrub species such as bitterbrush. Manzanita is established both through sprouts and seeds that are stimulated by fire. Fires in manzanita are conducive to rapid and extensive fire spread due to both physical and chemical characteristics. The shrub has volatile materials in the leaves, low moisture content in the foliage and persistence of dead branches and stems. Manzanita is particularly susceptible to fire where it is the primary understory component.

Western sage is found on the eastern portions of the greater Bend planning area and commonly grows in association with juniper and bitterbrush. Most fires kill western sage plants. In many western sage communities, changes in fire occurrence along with fire suppression and livestock grazing have contributed to the current condition of sage communities. Prior to the introduction of annuals, insufficient fuels may have limited fire spread in big sagebrush communities. Introduction of annuals, especially cheatgrass, has increased fuel loads so that fire carries easily. Burning in sage communities commonly sets the stage for repeated fires. Fire frequency can be as little as 5 years, not sufficient time for the establishment and reproduction of big sagebrush. In these cases annuals such as cheatgrass commonly take over the site.

The result of the fuel hazards and forest types in the greater Bend area is an overgrowth of trees, forest floor fuels and an abundance of dead or dying vegetation that contribute to a substantially elevated risk of wildland fires that are difficult to control. These overly dense conditions lead to fire behavior that produce flame lengths over eight feet with crowning and torching that can result in stand replacement severity fires.

Not only have large, stand replacement fires not occurred, but also the more frequent low intensity fires have not been allowed to burn either. This practice of fire exclusion along with insufficient vegetation/fuels reduction has resulted in the buildup of excessive live and dead fuels.

Community Assessment of Risk

The Greater Bend Community Wildfire Protection Plan utilizes two risk assessment methodologies: the Oregon Department of Forestry Assessment of Risk Factors and a combined risk assessment that considers Fire Regime - Condition Class, Fire Starts & Large Fire History.

ODF Assessment of Risk Factors

Risk of Wildfire Occurrence

The risk of wildfire occurrence refers to the likelihood of a fire occurring based on historical fire occurrence, home density and ignition sources. The risk is high for the

entire Bend area based on historical evidence of fire history as well as ready ignition sources like dry lightning storms, debris burning, equipment use, juveniles, campfires, and arson.

The current condition of the vegetation on the federal and private lands adjacent to and within the greater Bend WUI poses an extreme risk of catastrophic loss from wildland fire. Bend is also threatened by the likely possibility of a crown fire sweeping into the community, or by embers falling on the community from an adjacent wildland fire.

Hazard

The hazard rating describes resistance to control once a fire starts based on weather, topography (including slope, aspect and elevation), vegetation and crown fire potential. As stated earlier, less logging activity, effective wildland fire suppression and a lack of forest management has led to dense vegetation in the wildland urban interface. The entire Greater Bend planning area is rated extreme under this assessment.

A wildland fire could start within the communities or in any of the forested areas adjacent to or surrounding the communities. With a fire of any significance, it could be difficult to assemble the resources necessary to adequately address all of the fire and life safety issues that could arise in the early stages of emergency operations. The potential exists for a catastrophic wildland fire for any number of reasons, during a significant portion of each year.

Values Protected

The human and economic values protected in the Greater Bend planning area are moderate to high with four communities at risk in the moderate category and six in the high category. These ratings are based on home density per ten acres and community infrastructure such as power substations, transportation corridors, water and fuel storage, etc.

Based on Deschutes County tax records from 2005, there are approximately 36,207 homes in the Greater Bend WUI, with an appraised value of \$8.4 billion. In addition, 2,386 businesses operate in the Bend area, with an appraised value of \$3.3 billion.

The essential infrastructure includes multiple webs of utilities, roads, water and sewer systems and has an approximate replacement value of \$275,000 per mile for electrical transmission lines; \$150,000 per mile of electrical distribution lines; and \$2 million per electrical sub-station. Loss to roads, water and sewer systems would be minimal because most are underground or otherwise not flammable.

Other Community Values

Of high importance to residents and business owners in Bend is the value placed on scenic beauty and recreational opportunities that exist on public lands both within and adjacent to the planning area. If a large wildland fire occurs in this area which resulted in

area closures or the closure of either US Highway 97 or state highway 20, the economic loss to businesses could exceed \$3.5 million per day.

The loss of recreational use by visitors to the area as a result of scenic quality, specifically large "burn over" areas, will have an unknown economic impact not only to the Bend area, but to the remainder of Deschutes County and neighboring cities like Sunriver, La Pine, Redmond and Sisters. If a large wildland fire occurs in this area, the result will be catastrophic loss to both the developed and dispersed recreational opportunities in the greater Bend area.

Protection capability

Fire protection capability ranges from low to moderate in the Greater Bend planning area with an average ranking of moderate. The ratings are based on fire protection capability and resources to control and suppress wildland and structural fires. The ratings also consider response times and community preparedness.

When local resources are fully engaged, all agencies can request additional resources through the State of Oregon and request federal resources through the Pacific Northwest Coordination Center.

In addition to this high level of coordination, all fire departments and agencies in Central Oregon convene each year for a pre-season meeting to discuss the upcoming wildland fire season. Topics addressed at this meeting include predicted wildland fire activity, weather forecasts and how agencies can/will respond to meet the needs of fire events.

City of Bend Fire Department

The City of Bend Fire Department is a combination career and volunteer fire department that provides first response structural and wildland fire coverage within its 250 square mile service district. Through five stations Bend Fire Department provides Emergency Medical Services, including Advanced Cardiac Life Support transport, within a 1,600 square mile boundary. The Department also provides Hazardous Materials and Rescue services. The Fire Department has adopted the National Incident Management Systems (NIMS) and all personnel have received training and continue to train in its use. The Fire Department employs one Fire Chief, three Deputy Chiefs, five Battalion Chiefs, 57 firefighter/paramedics and Emergency Medical Technicians (EMTs), six members in the Fire Prevention Division, and three administrative staff members. The Department also employs six part-time EMTs and utilizes volunteers in other programs.

The City of Bend Fire Department utilizes a fleet of firefighting and EMS apparatus including: eight structural engines, five off-road brush engines, three water tenders, one ladder truck, one heavy rescue vehicle, five ambulances, four command vehicles and six fire prevention vehicles.

The Department is a party to the Central Oregon Mutual Aid Agreement. In the event of a major fire the department may request assistance from all other fire departments that are

signatory to the agreement. In addition to Central Oregon Fire Departments, this includes the US Forest Service (USFS), Oregon Department of Forestry (ODF), and the Bureau of Land Management (BLM). Conversely, when these agencies need assistance and the District has resources available, it assists them. The Bend Fire Department is also a party to an Automatic Aid Agreement with Redmond, Cloverdale, and the USFS and ODF. Through a streamlined Computer Aided Dispatch (CAD) center, Bend Fire responds automatically to certain calls in areas up to five miles beyond the fire district.

Deschutes County Rural Fire Protection District #2 (DCRFPD#2)

DCRFPD #2 is directed by a five-member elected board of directors. Day-to-day operations of the fire district are handled by the Fire District Manager. The Fire District contracts with the City of Bend to provide fire and EMS services within the fire district.

Oregon Department of Forestry (ODF)

Within the greater Bend WUI, private forestland and State Parks are protected by the Central Oregon District of the Oregon Department of Forestry. ODF provides wildland fire response for fires burning on, or threatening private forestlands paying a Forest Patrol Assessment. There are some areas within the greater Bend WUI that receive dual protection from ODF and the Bend Fire Department because they are located within the rural fire protection district and are also classified as private forestland within the ODF district.

Oregon Department of Forestry provides two off-road brush engines to patrol the Bend area during fire season, typically June through October. Twelve additional engines are available for response in the Prineville-Sisters unit. Statewide resources are also available to ODF including initial attack hand crews, dozers, water tenders, helicopters, air tankers, and overhead staff positions.

USDA Forest Service and USDI Bureau of Land Management

The Forest Service and BLM provide wildland fire protection on the federal lands within the greater Bend area. Together, they are identified as the Central Oregon Fire Management Service (COFMS). COFMS includes the Deschutes National Forest, the Ochoco National Forest, the Crooked River National Grassland, and the Prineville District of the BLM. These four units are managed cooperatively under combined leadership, with an Interagency Fire Management Officer, two Deputy Fire Management Officers, and a Board of Directors including decision makers from both agencies, with Forest Service District Rangers and BLM Field Managers. COFMS has a central dispatching facility in partnership with the Oregon Department of Forestry that serves as a communications hub for fire and fuels operations, as well as safety and training issues for COFMS. In total, COFMS provides the following resources: 15 engines, 4 initial attack hand crews, 6 prevention units, 2 dozers, 2 water tenders, and 1 helicopter with module. Additional regional and national resources are available and include 35 smokejumpers, 2 inter-regional Hotshot crews, 1 air tanker, 1 National Fire Cache, and 20 overhead staff positions.

Law Enforcement

Police services are provided by the City of Bend Police Department and Deschutes County Sheriff. Both entities have responsibility for ensuring the safe and orderly evacuation of the community in the event of a major emergency. A number of resources have been allocated to accomplish this task including hi/lo sirens on vehicles; emergency notification via radio and television; reverse 9-1-1 capability; Police and Sheriff's Department staff; Bend Fire Department staff and community-wide volunteers. Any other issues relative to a major emergency are addressed by the Countywide Disaster Plan and the Deschutes County Department of Emergency Services.

Oregon State Police assists the law enforcement efforts and cooperates with the City of Bend and Deschutes County for protection in the greater Bend area.

Community Preparedness

Also under the category of Protection Capabilities, the ODF Assessment of Risk examines a community's level of organization and preparedness to respond in an emergency situation. The assessment looks at whether the area has an organized stakeholder group that looks out for its own area through mitigation efforts, a phone tree, etc. Or, does the area only receive outside efforts such as newsletters, mailings or FireFree information from other groups? In the Greater Bend WUI, the communities at risk varied from having a high level of organization to not having any. The Steering Committee used local knowledge to determine the level of preparedness. The average value rating for community preparedness was moderate.

Structural Vulnerability

In recent years, many neighborhoods in the greater Bend area have taken steps to decrease the vulnerability of structures to wildland fire. Although attitudes and behaviors towards fire are changing in the Bend area thanks to educational programs like FireFree, the exponential population growth and continued development into the wildland urban interface present fresh challenges each year. The Steering Committee puts high value on the importance of making structures and neighborhoods in the Greater Bend WUI as fire safe as possible.

A subcommittee comprised of leaders from the Bend Fire Department, DCRFPD #2, Oregon Department of Forestry, the US Forest Service, the BLM and Deschutes County met to address structural vulnerability based on a combined approach including the NFPA 1144 survey and the ODF Assessment of Risk standards. The average rating for structural vulnerability was moderate. The survey included assessments of the following:

- Flammable roofing wood or non-wood present;
- Defensible space meets local requirements or not;
- Ingress/egress one, two or more roads in/out;
- Road width 0 to more than 24 feet wide;

- All season road conditions surfaced or not with grade more or less than 10%;
- Fire Service access more or less than 300 ft with or without turnaround;
- Street signs Present with 4" reflective characters or absent.

The following table is a summary of the ten Communities at Risk, the value ratings (with corresponding scores) and the total scores for each community in each category. The higher the total score in this assessment, the higher the overall risk.

Table 1 – ODF Assessment of Risk

Community at risk	What is the likelihood of a fire occurring?	Hazard rating	Protection capability	Human and economic values protected	Structural vulnerability	Total score
	High	Extreme	Moderate	High	Moderate	
DRW	40	76	10	50	37	213
	High	Extreme	Moderate	High	Moderate	
Skyliners	30	76	10	35	60	211
	High	Extreme	Moderate	High	Moderate	
Southeast	35	76	10	35	46	202
	High	Extreme	Moderate	Moderate	Moderate	
Saddleback	30	76	10	25	53	194
	High	Extreme	Low	High	Low	
West UGR	40	76	2	50	22	190
	High	Extreme	Moderate	High	Moderate	
North	35	62	10	35	46	188
	High	Extreme	Moderate	Moderate	Moderate	
West	30	76	10	22	43	181
	High	Extreme	Low	High	Low	
East UGR	40	66	2	50	17	175
	High	Extreme	Moderate	Moderate	Low	
Northeast	35	62	10	35	30	172
	Low	Extreme	Moderate	Moderate	Moderate	
Tumalo	10	66	10	22	36	144

Risk: Describes the likelihood of a fire occurring based on historical fire occurrence and ignition sources. Low = 0 - 13 points; Moderate = 14 - 27 points; High = 28 - 40 points.

Hazard: Describes resistance to control once a fire starts based on weather, topography and fuel. Low = 0 - 9 points; Moderate = 10 - 40 points; High = 41 - 60 points; Extreme = 61 - 80 points.

Protection capability: Describes fire protection capability and resources based on type of protection, response times and community preparedness. Low = 0-9 points; Moderate = 10-16 points; High = 17-40 points.

Values protected: Describes the human and economic values in the community based on home density per ten acres and community infrastructure such as power substations, transportation corridors, water and fuel storage, etc. Low = 0 - 15 points; Moderate = 16 - 30 points; High = 31 - 50 points.

Structural vulnerability: Describes the likelihood that structures will be destroyed by wildfire based on roofing and building materials, defensible space, separation of homes, fire department access and street signage. Low = 0 - 30 points; Moderate = 31 - 60 points; High = 61 - 90 points.

Total score: A sum of all the points from each category surveyed.

Fire Regime - Condition Class, Large Fire History and Fire Starts

Fire Regime - Condition Class considers the type of vegetation and the departure from its natural fire behavior return interval.

Five natural (historical) fire regimes are classified based on the average number of years between fires (fire frequency) combined with the severity of the fire on dominant overstory vegetation. Fire regimes I through IV are each represented on the landscape in the Greater Bend WUI. Ponderosa pine for example has an 11-15 year fire interval with low potential for stand replacement fires. Ponderosa pine therefore falls within Fire Regime I which describes species with fire return intervals between 0-35 years. Western juniper has a fire return interval of 31 years with high potential for stand replacement fires. Therefore, it falls within Fire Regime II.

Table 2 summarizes Fire Regimes.

Table 2 – Fire Regimes

Fire Regime Group	Fire Frequency	Fire Severity	Plant Association Group
I	0 – 35 years	Low severity	Ponderosa pine, manzanita, bitterbrush
II	0 – 35 years	Stand replacement	Western juniper
III	35 – 100+ years	Mixed severity	Mixed conifer dry
IV	35 - 100+ years	Stand replacement	Lodgepole pine
V	> 200 years	Stand replacement	Western hemlock, mixed conifer wet

Condition Class categorizes a departure from the natural fire regime based on ecosystem attributes. In Condition Class 1, the historical ecosystem attributes are largely intact and functioning as defined by the historical natural fire regime. In other words, the stand has not missed a fire cycle. In Condition Class 2, the historical ecosystem attributes have been moderately altered. Generally, at least one fire cycle has been missed. In Condition Class 3, historical ecosystem attributes have been significantly altered. Multiple fire cycles have been missed. The risk of losing key ecosystem components (e.g. native species, large trees, soil) is low for Class 1, moderate for Class 2, and high for Class 3.

Table 3 – Condition Class

Condition Class	Attributes
	■ Fire regimes are within or near an historical range.
	■ The risk of losing key ecosystem components is low.
Condition Class 1	• Fire frequencies have departed from historical frequencies (either increased or decreased) by no more than one return interval.
	 Vegetation attributes are intact and functioning within an historical range.
	■ Fire regimes have been moderately altered from their historical range.
	■ The risk of losing key ecosystem components has increased to moderate.
Condition Class 2	• Fire frequencies have departed (either increased or decreased) from historical frequencies by more than one return interval. This change results in moderate changes to one or more of the following: fire size, frequency, intensity, severity or landscape patterns.
	• Vegetation attributes have been moderately altered from their historic ranges.
	■ Fire regimes have been significantly altered from their historical range.
	■ The risk of losing key ecosystem components is high.
Condition Class 3	• Fire frequencies have departed (either increased or decreased) by multiple return intervals. This change results in dramatic changes to one or more of the following: fire size, frequency, intensity, severity, or landscape patterns.
	• Vegetation attributes have been significantly altered from their historic ranges.

Table 4 shows the percentage of Condition Class 2 and 3 lands in each Community at Risk.

Table 4 – Percentage of Condition Class 2 & 3

Community at Risk	Total Acres	Percentage of CC 2 & 3
North	17,725	42%
Northeast	27,302	48%
Southeast	36,148	62%
DRW	3,534	75%
Skyliners	257	36%
Saddleback	1,151	90%
UGR West	10,294	0%
UGR East	11,002	5%
Tumalo	1,234	68%
West	47,969	49%

Table 5 shows the number of large fires and the number of fire starts in each Community at Risk.

Table 5 – Large Fire History (# of fires > 100 acres in last 100 years) and number of Fire Starts (since 2000)

Community at Risk	Large Fires	Fire Starts
North	0	60
Northeast	0	99
Southeast	8	154
DRW	1	113
Skyliners	1	4
Saddleback	0	10
UGR West	4	168
UGR East	1	186
Tumalo	0	0
West	8	291

The Steering Committee presents Table 6 as a composite of the ODF Assessment of Risk (Table 1), Condition Class (Table 4) and Large Fire History (Table 5). The Steering Committee used Table 6 as a method to identify and assign priorities for treatment.

Table 6 – Composite of ODF Assessment of Risk & Condition Class/Large Fire History/Fire Starts

Community at Risk	ODF Rank	Condition Class, Large Fire History & Fire Starts Rank	Composite Rank of both Assessments
DRW	1	3	1
Southeast	3	2	2
Saddleback	4	4	3
West	7	1	4
West UGR	5	6	5
Skyliners	2	10	6
East UGR	8	5	7
North	6	9	8
Northeast	9	7	9
Tumalo	10	8	10

Areas of special concern

Evacuation routes

The Steering Committee is concerned with the lack of maintained roads leading in and out of the high risk areas in the WUI boundary. The Steering Committee expressed great concern over the quality of the evacuation routes should an evacuation be necessary. Many of the egress routes in Deschutes River Woods for example, are dirt roads that contribute to substantial dust and debris clouds as vehicles attempt to use them. Lack of maintenance has led to deteriorated road surfaces with large potholes, ruts and washboards that slow evacuation efforts and cause some vehicles to break down, further complicating a mass departure from the area. In Skyliners, additional routes are needed to ensure fire access as well as safe exit. There is also an opportunity in Skyliners for a "shelter in place" area in case a fire from below the community cuts off an egress route. A more detailed look at each Community at Risk is included in Recommendations to Reduce Structural Vulnerability.

Bend drinking water protection area

The Greater Bend CWPP Steering Committee included the Bridge Creek Watershed in the WUI boundary. Approximately half of Bend's water comes from this area. The watershed was established in 1926 in cooperation with the Deschutes National Forest and a subsequent 1991 Memorandum of Understanding describes protection measures in place for the watershed. Annual inspections of the watershed are conducted with the Department of Environmental Quality and the Deschutes National Forest. A wildland fire occurring in or near this watershed could severely affect water quality in the Bridge Creek watershed. The Steering Committee recommends treatment for hazardous fuels as identified in this plan to prevent damage from catastrophic wildland fires to the watershed.

Hazardous vegetation along railroads

The Steering Committee expressed concern over the condition of the vegetation immediately adjacent to the railroad tracks in those Communities at Risk that the railroad transects. In Deschutes River Woods for example, residents are concerned about the increased flammability of the weeds due to their unchecked growth. In the past, trains traveling in the area have ignited dry weeds along the railways. These fires have high spreading potential to nearby homes and neighborhoods already at risk. The Steering Committee recommends encouraging the owners of the railroad to comply yearly with requests that the weeds be maintained below 4" to deter the spread of any potential fires.

Prioritized Hazard Reduction Recommendations and **Preferred Treatment Methods**

The Steering Committee agreed that the Greater Bend Community Wildfire Protection Plan is a tool that can be used for many outcomes. The following is an outline of the priorities, as well as preferred treatments and goals under the Greater Bend Community Wildfire Protection Plan.

Priorities

Based on the combined assessment as shown in Table 6 the Steering Committee has identified the following priorities:

Priority One – Deschutes River Woods, Southeast and Saddleback

Priority Two – West, West UGR and Skyliners

Priority Three – East UGR, North, Northeast and Tumalo

Preferred treatments and goals

Appendix A includes detailed maps of the WUI boundary throughout the Greater Bend CWPP and the recommended areas for treatments by reducing wildland fuel hazards on both public and private lands.

The standard of the Greater Bend CWPP is to decrease the risk of uncharacteristic wildland fire behavior by reducing fuel loads to that which can produce flame lengths of less than four feet. This enables safe and effective initial attack. The overall goal is to return the landscape to Condition Class 1 and provide for a healthy, fire resilient landscape that supports the social, economic and ecological values of greater Bend area residents and visitors.

Federal and State owned lands

Federal lands occupy 31% of lands in the Greater Bend planning area. Eight of the ten Communities at Risk are adjacent to public lands managed by either the Forest Service or the Bureau of Land Management. State owned lands represent only a small percentage of the lands (1.6%) within the plan area. It is the intent of the Steering Committee that the Greater Bend planning area is subject to expedited measures for hazardous fuels treatment and allocation of funds to protect the communities and neighborhoods as stipulated by the Healthy Forests Restoration Act.

Federal and state landowners will work toward the overall standard by treating Condition Class 2 and 3 lands with the goal of returning the landscape to Condition Class 1 by reducing fuels loads to that which can produce flame lengths of less than four feet:

- Within a ¼ mile buffer of adjacent communities at risk. Treatments should begin here and increase in ¼ mile increments until the WUI boundary is reached.
- Within 300 feet of any evacuation route from adjacent communities at risk.

The standard will be achieved through a variety of treatment methodologies such as thinning, prescribed burning and mechanical treatments. Specific treatments should address fuels issues on a landscape scale rather than acre by acre. These treatments shall be consistent with the current COFMS Fire Management Plan on the federal lands and existing land management plans on state owned lands.

Industrial and non-industrial private forestlands

Private forestlands are generally larger landholdings managed for multiple values including timber, wildlife, recreation and water. The landowner may or may not live on the property however the property is largely forest vegetation excluding the area directly adjacent to any structures. There are several private forestland parcels in the Greater Bend WUI that directly border some of the Communities at Risk. The Steering Committee recommends continued partnerships with private forestland owners that encourage fuels management to the standards above as part of an overall plan for management of the forest resource.

Industrial and non-industrial private forestland owners can meet the overall standard by treating Condition Class 2 and 3 lands with the goal of returning the landscape to Condition Class 1 by reducing fuels loads to that which can produce flame lengths of less than four feet:

- Within a ¼ mile buffer of adjacent communities at risk. Treatments should begin here and increase in ¼ mile increments until the WUI boundary is reached.
- Within 300 feet of any evacuation route from adjacent communities at risk.

The standard can be achieved through a variety of treatment methodologies such as thinning, prescribed burning and mechanical treatments. Specific treatments should address fuels issues on a landscape scale rather than acre by acre. These treatments shall be consistent with existing land management plans for these areas.

Private and county owned lands

The majority of the land (66%) in the Greater Bend planning area is private land and is considered developed, or in rare cases intermixed with development. The County owns less than 2% of the land in this planning area.

Private land with structural improvements

On private lands within the Greater Bend CWPP WUI boundary with structural improvements, the goal is for each structure to meet the Default Standards identified in the Oregon Forestland – Urban Interface Fire Protection Act of 1997, also known as Senate Bill 360. This statute outlines standards and requirements for defensible space on private property that has fire protection from Oregon Department of Forestry.

Not all property in the Greater Bend planning area is provided wildland fire protection by ODF. The Steering Committee agrees however, that the Default Standards from Senate Bill 360 will be the minimum goal to achieve on private lands throughout the Greater Bend WUI. Citizens and homeowners can achieve this goal by complying with SB 360 standards regardless of whether they are classified under the statute.

A detailed description of the standards is available from the Oregon Department of Forestry in the handbook for the Oregon Forestland – Urban Interface Fire Protection Act of 1997.

The Default Standards under the Oregon Forestland – Urban Interface Fire Protection Act of 1997 are:

- Establish a fuel break around structures
- Improve driveway access for fire trucks
- Remove tree branches near chimneys
- Remove dead branches overhanging a roof
- Move firewood away from structures, or cover it
- Remove flammables from under decks and stairways
- Create fuel breaks along roadsides and property lines

Property owners can also create and/or maintain defensible space, a fire-resistant buffer that allows for effective first-response firefighting and a significantly reduced risk of the spread of fire by participating in programs like FireFree and Firewise which promote a variety of fire safe actions to help prevent the spread of fire to protect individual homes and neighborhoods.

Vacant lots

Within the Greater Bend WUI, approximately 10% of the private land is vacant lots. Many of those are owned by "absentee owners". In general, vacant lots owned by absentee owners present a specific threat to neighborhoods in that owners have little to no connections to the neighborhoods and in most cases do not recognize their responsibility to contribute to the safety of the entire neighborhood by reducing the hazardous vegetation on their properties. The risk of destructive wildland fires is thereby greater inside these neighborhoods due to the lack of owner attention on vacant lots.

Senate Bill 360 only addresses vacant lots that are afforded wildland fire protection by Oregon Department of Forestry and are classified as "High Density Extreme". This amounts to approximately 25% of the private lands within the Greater Bend WUI.

Senate Bill 360 recommends a standard of a 20-foot fuel break around each vacant lot for "High Density Extreme" properties.

The Steering Committee recommends that those acres *not protected* by ODF that are primarily agricultural follow the guidelines under Senate Bill 360 for "High". Those acres that are dominated by wildland fuels follow the guidelines for "High Density Extreme".



Recommendations to Reduce Structural Vulnerability

Structural Vulnerability

Based on the assessment of structural vulnerability for the ODF Assessment of Risk, Table 7 identifies the main hazards within the ten Communities at Risk in the Greater Bend planning area. For each hazard or risk listed, an action is recommended to address the threat or decrease the risk. The communities are listed in priority order from Table 6.

 $Table\ 7-Structural\ Vulnerability\ Hazards\ \&\ Recommendations$

Community at Risk	Primary Hazards	Recommended Actions
	Defensible space – hazardous vegetation	FireFree, Fire Wise, SB 360 compliance
Deschutes	Structural composition	FireFree, Fire Wise, SB 360 compliance
River Woods	Insufficient water supply	Improve water supply
Mivel Woods	Poor condition of roads	Identify, upgrade and maintain
	Some inadequate signage	Identify and improve
	Defensible space – hazardous vegetation	FireFree, Fire Wise, SB 360 compliance
Southeast	Structural composition	FireFree, Fire Wise, SB 360 compliance
Journeast	Insufficient access & evacuation routes	Improve route(s), sign and maintain
	Poor condition of evacuation routes	Identify, upgrade and maintain
	Defensible space – hazardous vegetation	FireFree, Fire Wise, SB 360 compliance
	Structural composition	FireFree, Fire Wise, SB 360 compliance
Saddleback	Hydrants only, no draft sites	Improve water supply
	Insufficient access & evacuation routes	Establish route(s), sign and maintain
	Poor condition of interior roads	Identify, upgrade and maintain
	Defensible space – hazardous vegetation	FireFree, Fire Wise, SB 360 compliance
	Structural composition	FireFree, Fire Wise, SB 360 compliance
West	Draft sites only	Develop water supply
	Insufficient access & evacuation routes	Establish route(s), sign and maintain
	Some inadequate signage	Identify and improve
	Defensible space – hazardous vegetation	FireFree, Fire Wise, SB 360 compliance
West UGR	Structural composition	FireFree, Fire Wise, SB 360 compliance
	Insufficient access & evacuation routes	Improve route(s), sign and maintain
	Defensible space – hazardous vegetation	FireFree, Fire Wise, SB 360 compliance
	Structural composition	FireFree, Fire Wise, SB 360 compliance
Skyliners	Draft sites only	Develop water supply
	Insufficient access & evacuation routes	Establish route(s), sign and maintain
	Poor condition of interior roads	Identify, upgrade and maintain
	Inadequate signage	Identify and improve
	Defensible space – hazardous vegetation	FireFree, Fire Wise, SB 360 compliance
East UGR	Structural composition	FireFree, Fire Wise, SB 360 compliance
	Defensible space – hazardous vegetation	FireFree, Fire Wise
	Structural composition	FireFree, Fire Wise
North	Insufficient access & evacuation routes	Establish route(s), sign and maintain
	Poor condition of some roads	Identify, upgrade and maintain
	Some inadequate signage	Identify and improve
		FireFree, Fire Wise
Northeast	Defensible space – hazardous vegetation Structural composition	
	Insufficient access & evacuation routes	FireFree, Fire Wise
		Improve route(s), sign and maintain
	Poor condition of some roads	Identify, upgrade and maintain
	Some inadequate signage	Identify and improve
	Defensible space – hazardous vegetation	FireFree, Fire Wise
Tumalo	Structural composition	FireFree, Fire Wise
	Draft sites only	Develop water supply
	Insufficient access & evacuation routes	Improve route(s), sign and maintain

Table 8 provides a checklist for residents seeking to reduce the risk of catastrophic losses to their homes and properties.

Table 8 – Defensible Space Checklist

\checkmark	What can I do to help prevent losses to my property and my neighborhood?
	Post easy-to-read address signs so emergency crews can find your home.
	Reduce flammable vegetation and brush around your home.
	Reduce the density of nearby trees.
	Clear wood piles and building materials away from your home.
	Remove low tree branches and shrubs.
	Keep grass and weeds cut low.
	Remove overhanging branches and limbs.
	Remove leaves & needles from gutters, roofs and decks.
	Remove dead plants and brush.
	Maintain a minimum of 30 feet of defensible space around your home.
	Screen vents and areas under decks with 1/8" metal mesh.
	Keep decks free of flammable lawn furniture, doormats, etc.
	Choose fire-resistant roofing materials.
	Trim vegetation along driveways a minimum distance of 14' x 14' for fire trucks.
	Use alternatives to burning debris.

Education

As stated in the Purpose of the Greater Bend CWPP, three of the goals for this planning effort are to:

- Instill a sense of personal responsibility for taking preventative actions regarding wildland fire.
- Increase public understanding of living in a fire-adapted ecosystem, and
- Increase the community's ability to prepare for, respond to and recover from wildland fires.

With these goals in mind, education and outreach are top priorities for the Greater Bend CWPP. The rapid influx of new residents is just one reason the Steering Committee places high value on the education of Bend area residents and landowners. Many new residents are unfamiliar with wildland fire and have limited experience with issues like defensible space. Residents and visitors will continue to benefit from clear examples of what a fire resilient forest and community look like as well as easy access to resources that help them take action.

There are several opportunities to enhance educational efforts in the greater Bend area. The City of Bend Fire Department, the Central Oregon Fire Prevention Cooperative and Project Wildfire all provide wildland fire prevention programs through a variety of individual and collaborative efforts.

Some neighborhoods in the greater Bend area are well organized through homeowners associations and other groups. These groups provide valuable ongoing education to their populations about the risks of catastrophic wildland fire and ways to improve their protection. The Steering Committee supports these groups and encourages their formation in the greater Bend area to address the educational needs of current and incoming residents about living in a fire adapted environment and increasing personal responsibility for creating defensible space.

Local residents are encouraged to contact the Bend Fire Department for information. Residents may also find additional information on how they can reduce hazards and protect themselves from loss due to wildland fires at www.firefree.org and www.firewise.org.

Action Plan and Implementation

The Steering Committee will make copies of the Greater Bend CWPP available to all adjacent landowners including the Deschutes National Forest, the Bureau of Land Management, Oregon Department of Forestry, industrial and non-industrial timberland owners. The intention of the Steering Committee is to engage in continued discussions

with the greater Bend community and adjacent landowners to implement the CWPP and accomplish projects that address the outlined priorities in the Greater Bend planning area in the most expeditious manner possible.

Regarding Structural Vulnerability, the Steering Committee is charged with the task of engaging community members to review the Structural Vulnerability Assessment in this CWPP and identify projects that will strengthen the potential for the neighborhoods to survive a catastrophic wildland fire within the Greater Bend WUI.

In addition, the Steering Committee will encourage and assist community groups in seeking funding for fuels reduction, educational, and other projects to decrease overall risks of loss from wildland fire.

Evaluation and Monitoring

The Steering Committee faced a complex task in the development of the Greater Bend Community Wildfire Protection Plan. Implementing and sustaining these efforts will require a significant commitment. Building a collaborative and cooperative environment with the City of Bend Fire Department, Deschutes County RFPD #2, community-based organizations, local government and the public land management agencies has been the first step in reducing the risk of wildland fire. The Steering Committee pledges to maintain this cooperation with the public over the long-term with the commitment of all the partners involved.

The City of Bend Fire Department will work with Project Wildfire to convene the Steering Committee yearly as follows, or as often as the Steering Committee deems necessary to accomplish agreed upon tasks:

After fire season – late Fall

- Identify and assess new or treated risks.
- Evaluate and track progress toward goals, and update maps.
- Adopt new and/or revised priorities, with specific projects.
- Identify specific fuels treatment projects.
- Discuss grant opportunities and determine which communities at risk will seek funding for identified projects.
- Review grant opportunities, write grants.

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- Identify appropriate projects to decrease structural vulnerability, address issues with evacuation routes, condition of roads and water supply.
- Identify appropriate projects to address educational needs.
- Review grant opportunities, write grants.

At a minimum, the Steering Committee shall include: a Deputy Fire Chief from the City of Bend Fire Department; a representative from ODF; representatives from the US Forest Service, the BLM, and Deschutes County along with members of the greater Bend public.

Project Wildfire will ensure that the evaluation and monitoring activities listed above are addressed by the Steering Committee each year. As members of the Steering Committee change, Project Wildfire will ensure that it maintains a balanced representation of agency and public members, with a continued focus on inviting interested parties to participate in the review and planning process.