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June 27, 2024

BCC Agenda Date/Item: _____

Board of County Commissioners
Clackamas County

Approval of a Memorandum of Agreement with the Clackamas District Fire Defense Board and the Oregon Department of Forestry to acknowledge approval of the changes to the 2024 Community Wildfire Protection Plan. No fiscal impact. No County General Funds are involved.

Previous Board Action/Review	Briefed at Policy Session – June 11, 2024, Approved to go to consent agenda		
Performance Clackamas	1. Healthy, Safe, & Secure Communities		
Counsel Review	03/12/2024 HH	Procurement Review	N/A
Contact Person	Jay Wilson	Contact Phone	503-209-2812

EXECUTIVE SUMMARY: The purpose of the Clackamas County Community Wildfire Protection Plan (CWPP) is to provide a countywide scale of wildfire risk and protection needs and identify potential priority areas where mitigation measures are needed to protect life, property, and critical infrastructure from wildfire. The County’s first CWPP was adopted in 2005 and updated about every 5 years. The CWPP makes the county and its partners eligible for wildfire mitigation funding. The current CWPP was adopted in 2018 and helped to bring in over \$2.3 million in wildfire grants. Disaster Management received grant funding in 2022 to update the CWPP and hired a consultant team through the University of Oregon to lead the update.

RECOMMENDATION: Staff recommends the Board sign the Memorandum of Agreement to acknowledge approval of the changes to the 2024 Community Wildfire Protection Plan.

Respectfully submitted,

Daniel Nibouar
Director

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MEMORANDUM OF AGREEMENT
Collaboration for Clackamas County Community Wildfire Protection Plan

This Memorandum of Agreement is made by and between CLACKAMAS COUNTY, the CLACKAMAS DISTRICT FIRE DEFENSE BOARD, and the OREGON DEPARTMENT OF FORESTRY (hereinafter "parties").

WHEREAS the Healthy Forests Restoration Act of 2003, Public Law 108-148, was enacted, in part, to plan, prioritize, and implement hazardous fuel reduction projects on Federal lands for the protection of communities and watersheds from catastrophic wildfire and to address threats to forest and rangeland health;

WHEREAS Title I, Section 101(3) of the Healthy Forests Restoration Act states that Community Wildfire Protection Plans that are adopted pursuant to the Healthy Forests Restoration Act be developed through collaborative agreements between the applicable local government, local fire department, and State agency responsible for forest management;

WHEREAS Clackamas County is adopting a Community Wildfire Protection Plan for Clackamas County, dated March 14th, 2024;

NOW, THEREFORE, the parties agree as follows:

1. The parties agree that the Community Wildfire Protection Plan has been developed collaboratively for Clackamas County per the guidance established in Section 101(3) of the Healthy Forests Restoration Act;
2. The parties agree that the Community Wildfire Protection Plan has been developed, and will continue to be implemented and updated, in consultation with the following organizations and agencies:

Clackamas District Fire Defense Board:

Aurora Rural Fire District #63
Canby Rural Fire District #62
Clackamas Fire District #1
Colton Rural Fire District #70
Estacada Rural Fire District # 69
Gladstone Fire Department
Hoodland Fire District #74
Lake Oswego Fire Department
Molalla Rural Fire District #73
Monitor Rural Fire District #58
Sandy Fire District #72
Silverton Fire District #2
Tualatin Valley Fire and Rescue

Clackamas County (Disaster Management, Land Use Planning, Building, Geographic Information Systems, Forestry, Parks and Recreation, County Administration)
Clackamas County Fire Prevention Co-op
Clackamas Soil and Water Conservation Service
Clackamas Wildfire Collaborative
Bureau of Land Management
Keep Oregon Green
Mt Hood Corridor Wildfire Partnership
Oregon Department of Forestry-North Cascade District
Oregon Office of the State Fire Marshal
Oregon State University Extension
Mount Hood National Forest

Date: 3/14/2024


Dan Mulick, Chair
Clackamas District Fire Defense Board

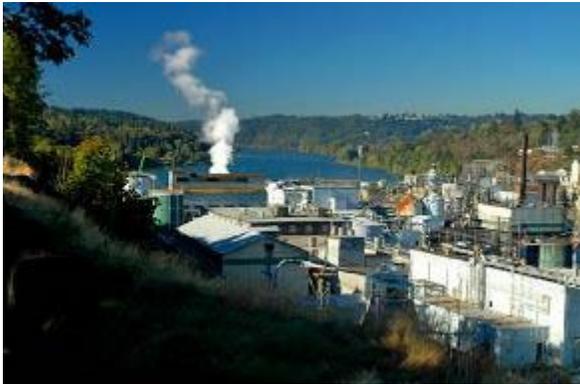
Date: 3/14/2024


Scott West
Oregon Department of Forestry

Date: _____

Tootie Smith, Chair
Clackamas County Board of Commissioners

Clackamas County Community Wildfire Protection Plan



Photos courtesy of Gary Halvorson/Oregon State Archives

May 2024

Final Report

Prepared for
Clackamas County
150 Beaver Creek Road
Oregon City, OR 97045

Prepared by
The University of Oregon
Institute for Policy Research & Engagement
School of Planning, Public Policy, and Management



Acknowledgements

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About the Institute for Policy Research and Engagement



**School of Planning, Public
Policy and Management
Institute for Policy
Research and Engagement**

The Institute for Policy Research & Engagement (IPRE) is a research center affiliated with the School of Planning, Public Policy, and Management at the University of Oregon. It is an interdisciplinary organization that assists Oregon communities by providing planning and technical assistance to help solve local issues and improve the quality of life for Oregon residents. The role of IPRE is to link the skills, expertise, and innovation of higher education with the transportation, economic development, and environmental needs of communities and regions in the State of Oregon, thereby providing service to Oregon and learning opportunities to the students involved.

Table of Contents

Executive Summary i

Chapter 1: Introduction 1

Purpose 1

Introduction 1

CWPP Vision, Mission, Goals, and Actions 2

Objectives of a Community Wildfire Protection Plan 19

Context and Problem Definition 19

Chapter 2: Planning Process 21

Clackamas County Wildfire Protection Plan History (2004-2023) 21

Progress since the 2018 Plan Update 22

Clackamas Community Wildfire Protection Plan 2023 Update 24

Interconnection with Other Plans and Legislation 27

Chapter 3: Community Profile 31

Population Demographics 31

Geography and Environment 37

Fire History 40

Climate Change 42

Chapter 4: Community Education, Engagement, and Outreach 45

Background 45

Engagement Methodology 46

Stakeholder Interviews 46

Community Survey 47

Community Partner Forum 47

Fire District and Agency Outreach 48

Community Education Strategies 49

Chapter 5. Emergency Operations 55

Fire Defense Board 55

Emergency Operations Objectives 55

Emergency Operations Accomplishments 55

Emergency Operations Actions 55

Chapter 6: Risk Assessment 57

Risk Assessment Objectives 57

Risk Assessment Accomplishments 57

Risk Assessment Priority Actions 58

Supplemental Maps 58

Communities at Risk 58

Wildland Urban Interface 61

Mapping Methods 62

Chapter 7: Structural Ignitability Policies and Programs 65

Structural Ignitability Policies and Programs 65

Structural Ignitability Objectives 65

Oregon Senate Bill 762 65

Structural Ignitability Action Items 66

Chapter 8: Implementation, Monitoring, and Evaluation 67

Implementation Strategy 67

Chapter 9: Clackamas County Fire Agencies 73

Introduction 73

Local CWPP Content 73

9.1. Community at Risk: Aurora Rural Fire Protection District #63 74

9.2. Community at Risk: Canby Rural Fire Protection District #62 81

9.3 Community at Risk: Clackamas Fire District 89

9.4. Community as Risk: Colton Rural Fire District #70 101

9.5. Community at Risk: Estacada Rural Fire District #69 109

9.6. Community at Risk: Gladstone Fire Department 119

9.7. Community at Risk: Hoodland Fire District #74 125

9.8. Community at Risk: Lake Oswego Fire Department 133

9.9. Community at Risk: Molalla Rural Fire Protection District #73 141

9.10. Community at Risk: Monitor Rural Fire Protection District #58 149

9.11. Community at Risk: Sandy Fire District #72 153

9.12. Community at Risk: Silverton Fire District #2 161

9.13. Community at Risk: Tualatin Valley Fire & Rescue 169

9.14. Community at Risk: Wildland Agencies (ODF and USFS) 173

Chapter 10: Post-Fire Recovery 185

Importance of Post-Fire Recovery 185

Recommendations 185

Appendix A: Wildfire Mitigation Funding Opportunities A-1

Funding Wildfire Mitigation Projects A-1

Determining Grant Eligibility A-1

Appendix B: Clackamas County Community Survey B-1

Purpose B-1

Key Takeaways B-1

Methodology B-1

Survey Limitations B-2

Survey Results B-3

Cross-Tabulation B-21

Discussion B-24

Recommendations B-26

Appendix C: Public Engagement C 1

Stakeholder Interviews C-1

Community Partner Forum C-8

Fire District and Agency Engagement C-11

Appendix D: Annual Review Table D-1

Appendix E: Maps E-1

List of Tables

TABLE 1-1 WILDFIRE MITIGATION AND COMMUNITY ENGAGEMENT ACTION PLAN, CLACKAMAS COUNTY, 2023	5
TABLE 2-1 CLACKAMAS COUNTY GRANT-FUNDED PROJECTS, 2012-2017.....	23
TABLE 2-2 CLACKAMAS COMMUNITY WILDFIRE PROTECTION PLAN MAP DIRECTORY	26
TABLE 3-1 CLACKAMAS COUNTY CITIES AND CENSUS DESIGNATED PLACES.....	31
TABLE 3-2 HOUSING TENURE, CLACKAMAS COUNTY AND OREGON, 2016-2020.....	34
TABLE 3-3 HOUSING TYPE, CLACKAMAS COUNTY AND OREGON, 2016-2020	34
TABLE 3-4 HOMEOWNERS AND RENTERS PAYING 30% OR MORE OF THEIR INCOME ON HOUSING COST, CLACKAMAS COUNTY AND OREGON, 2016-2020	35
TABLE 3-5 SUMMARY OF NAMED FIRES, CLACKAMAS COUNTY, 2002-2023	41
TABLE 4-1 CLACKAMAS COUNTY FIREWISE COMMUNITIES	53
TABLE 6-1 SUPPLEMENTAL MAPS AVAILABLE IN APPENDIX E: MAPS.....	58
TABLE 6-2 LOCAL COMMUNITIES AT RISK IN CLACKAMAS COUNTY.....	59
TABLE 6-3 PRIORITY AREA CLASSIFICATIONS	64
TABLE 8-1 STRIKE TEAM ROSTER, ROLES AND RESPONSIBILITIES, AND COMPENSATION.....	70
TABLE 9-1 AURORA FIRE DISTRICT LOCAL COMMUNITIES AT RISK.....	77
TABLE 9-2 AURORA FIRE DISTRICT ACTION PLAN.....	78
TABLE 9-3 CANBY FIRE LOCAL COMMUNITIES AT RISK	85
TABLE 9-4 CANBY FIRE ACTION PLAN.....	87
TABLE 9-5 CLACKAMAS FIRE DISTRICT LOCAL COMMUNITIES AT RISK	94
TABLE 9-6 CLACKAMAS FIRE DISTRICT ACTION PLAN.....	97
TABLE 9-7 COLTON FIRE LOCAL COMMUNITIES AT RISK	105
TABLE 9-8 COLTON FIRE ACTION PLAN.....	107
TABLE 9-9 ESTACADA FIRE LOCAL COMMUNITIES AT RISK	113
TABLE 9-10 ESTACADA FIRE ACTION PLAN	116
TABLE 9-11 GLADSTONE FIRE DEPARTMENT LOCAL COMMUNITIES AT RISK.....	122
TABLE 9-12 GLADSTONE FIRE DEPARTMENT ACTION PLAN	124
TABLE 9-13 HOODLAND FIRE LOCAL COMMUNITIES AT RISK.....	128
TABLE 9-14 HOODLAND FIRE ACTION PLAN	131
TABLE 9-15 LAKE OSWEGO FIRE LOCAL COMMUNITIES AT RISK	137
TABLE 9-16 LAKE OSWEGO FIRE ACTION PLAN	140
TABLE 9-17 MOLALLA FIRE LOCAL COMMUNITIES AT RISK	145
TABLE 9-18 MOLALLA FIRE ACTION PLAN.....	147
TABLE 9-19 MONITOR FIRE ACTION PLAN	152
TABLE 9-20 SANDY FIRE DISTRICT #72 LOCAL COMMUNITIES AT RISK.....	157
TABLE 9-21 SANDY FIRE DISTRICT ACTION PLAN	159
TABLE 9-22 SILVERTON FIRE LOCAL COMMUNITIES AT RISK.....	165
TABLE 9-23 SILVERTON FIRE ACTION PLAN	167
TABLE 9-24 TVF&R ACTION PLAN.....	172
TABLE 9-25 USFS PROTECTION BOUNDARY LOCAL COMMUNITIES AT RISK.....	177
TABLE 9-26 ODF PROTECTION BOUNDARY LOCAL COMMUNITIES AT RISK.....	179
TABLE 9-27 WILDLAND AGENCIES (ODF AND USFS) ACTION PLAN	181
TABLE 9-28 WILDLAND AGENCIES (ODF AND USFS) LOCAL COMMUNITIES AT RISK ACTION PLAN.....	183
TABLE 10-1 FUNDING RESOURCES FOR POST-FIRE RECOVERY EFFORTS, 2023.....	186
TABLE A-1 STATE AND FEDERAL FUNDING SOURCES FOR WILDFIRE MITIGATION	A-1
TABLE B-1 THIRTY MOST COMMON REPORTED ZIP CODES, CLACKAMAS COUNTY, 2022- Q4	B-9
TABLE B-2 RESPONDENT’S ACTIONS TAKEN TO REDUCE STRUCTURAL IGNITABILITY	B-12
TABLE B-3 RESPONDENTS LEVEL OF CONCERN ABOUT WILDFIRE IMPACTING CLACKAMAS COUNTY, THEIR PROPERTY, THEIR NEIGHBORHOOD, AND THEIR COMMUNITY	B-13

TABLE B-4 RESPONDENT FAMILIARITY WITH EVACUATION LEVELS (N=487), CLACKAMAS COUNTY, 2022.....	B-15
TABLE B-5 PERCENT OF PARTICIPANTS INDICATING THEIR DEFENSIBLE SPACE.....	B-16
TABLE B-6 WOODLAND OWNER RESPONSES ABOUT WATER SOURCES AND DEVELOPED ROAD SYSTEM ON THEIR PROPERTY	B-18
TABLE B-7 WOODLAND OWNERS PREFERRED LEARNING OPPORTUNITIES FOR MANAGING THEIR WOODLANDS.....	B-19
TABLE B-8 RESPONDENTS PREFERRED METHODS FOR RECEIVING NEWS ABOUT COMMUNITY INFORMATION	B-20
TABLE C-1 LAND AND FIRE MANAGER RECOMMENDATIONS, CLACKAMAS COUNTY, 2022	C-3
TABLE C-2 LOCAL GOVERNMENT AND CIVIL SERVANT RECOMMENDATIONS, CLACKAMAS COUNTY, 2022.....	C-4
TABLE C-3 COMMUNITY LEADERS AND COMMUNITY ORGANIZATION RECOMMENDATIONS, CLACKAMAS COUNTY, 2022	C-5
TABLE C-4 STAKEHOLDER IDENTIFIED RISK AREAS, CLACKAMAS COUNTY, 2022	C-6
TABLE C-5 LIST OF COMMUNITY FORUM PARTICIPANTS BY GEOGRAPHIC SCALE	C-8
TABLE C-6 WILDFIRE IMPACT CONCERNS BY CATEGORY, CLACKAMAS COUNTY, 2022.....	C-9
TABLE C-7 IDENTIFIED GAPS AFTER THE 2020 WILDFIRE SEASON BY CATEGORY, CLACKAMAS COUNTY, 2022.....	C-10
TABLE D-1 ANNUAL REVIEW TABLE TEMPLATE.....	D-1

List of Figures

FIGURE 2-1 THE ADAPTIVE WILDFIRE CYCLE.....	25
FIGURE 3-2 RACE AND ETHNICITY AS A PERCENTAGE OF TOTAL POPULATION, CLACKAMAS COUNTY, 2020	33
FIGURE 3-3 AGE DISTRIBUTION OF CLACKAMAS COUNTY AS A PERCENT OF TOTAL POPULATION, CLACKAMAS COUNTY AND OREGON, 2016-2020	33
FIGURE 3-4 AGE OF HOMES, CLACKAMAS COUNTY AND OREGON, 2016-2020	35
FIGURE 3-5 HOUSEHOLD INCOME, CLACKAMAS COUNTY AND OREGON, 2016-2020.....	36
FIGURE 3-6 MEDIAN HOUSEHOLD INCOME BY RACE/ETHNICITY, CLACKAMAS COUNTY AND OREGON, 2016-2020	37
FIGURE 3-7 OBSERVED AND FORECAST AVERAGE ANNUAL TEMPERATURES IN CLACKAMAS COUNTY, 1960-3000	42
FIGURE 3-8 OBSERVED AVERAGE ANNUAL PRECIPITATION AND PROJECTED AVERAGE ANNUAL PRECIPITATION I N CLACKAMAS COUNTY, 1950-3000.....	43
FIGURE 3-9 ANNUAL BURNED ACRES IN OREGON, 1984-2018.....	44
FIGURE B-1 AGE OF RESPONDENTS.....	B-3
FIGURE B-2 RACE/ETHNICITY OF RESPONDENTS.....	B-4
FIGURE B-3 EDUCATIONAL ATTAINMENT FOR RESPONDENTS	B-5
FIGURE B-4 RESPONDENTS TOTAL ANNUAL HOUSEHOLD INCOME	B-6
FIGURE B-5 PERCENT OF PARTICIPANTS WHO INDICATED THEY SPOKE ENGLISH AS A SECOND LANGUAGE	B-6
FIGURE B-6 DIFFICULTY SPEAKING AND READING ENGLISH FOR DAY-TO-DAY ACTIVITIES OF RESPONDENTS	B-7
FIGURE B-7 RESPONDENTS OR MEMBERS OF THEIR HOUSEHOLD SUSCEPTIBILITY TO SMOKE AND MOBILITY ISSUES	B-8
FIGURE B-8 RESPONDENTS EXPERIENCE WITH WILDFIRE	B-8
FIGURE B-9 RESPONDENTS PRIMARY RESIDENCE ZIP CODE.....	B-9
FIGURE B-10 RESPONDENTS HOUSING TENURE	B-10
FIGURE B-11 RESPONDENTS' HOUSING TYPE.....	B-11
FIGURE B-12 NUMBER OF VEHICLES AVAILABLE TO MEMBERS OF A HOUSEHOLD	B-11
FIGURE B-13 PERCENTAGE OF RESPONDENTS SIGNED UP FOR CLACKCO PUBLIC ALERT SYSTEM.....	B-14
FIGURE B-14 PERCENTAGE OF RESPONDENTS WHO LIVE WITH A DISABILITY OR OTHER CONDITION THAT REQUIRES ASSISTANCE DURING AN EVACUATION	B-14
FIGURE B-15 RESPONDENTS PREPAREDNESS FOR EVACUATION	B-16
FIGURE B-16 NUMBER OF ACRES OF WOODLAND OWNED BY RESPONDENTS	B-17
FIGURE B-17 WOODLAND OWNERS' RESPONSES TO LAND MANAGEMENT PRACTICES ON THEIR PROPERTIES.....	B-18
FIGURE B-18 RESPONDENTS' INTEREST AND PREFERRED TYPE OF WILDFIRE INFORMATIONAL SESSION	B-21
FIGURE B-19 PARTICIPANTS' ABILITY TO CLEAN OR PURIFY THE AIR IN THEIR HOME AS A FUNCTION OF AGE	B-22
FIGURE B-20 PERCENTAGE OF PARTICIPANTS THAT LIVE WITH A DISABILITY AND INCOME VERSE PARTICIPANTS WHO DO NOT LIVE WITH A DISABILITY AND INCOME	B-23
FIGURE B-21 PARTICIPANTS LEVEL OF CONCERN ABOUT WILDFIRE IMPACTING THEIR PROPERTIES WITH AND WITHOUT DENSE VEGETATION AROUND THEIR HOMES	B-24

List of Maps

MAP 3-1 CLACKAMAS COUNTY CITIES AND CENSUS DESIGNATED PLACES	32
MAP 9-1 AURORA FIRE DISTRICT WILDFIRE RISK AND SOCIAL VULNERABILITY.....	75
MAP 9-2 CANBY FIRE DISTRICT WILDFIRE RISK AND SOCIAL VULNERABILITY	82
MAP 9-3 CLACKAMAS FIRE DISTRICT (INCLUDING GLADSTONE FIRE DEPARTMENT AND SANDY FIRE DISTRICT #72) WILDFIRE RISK AND SOCIAL VULNERABILITY	91
MAP 9-4 COLTON RURAL FIRE DISTRICT WILDFIRE RISK AND SOCIAL VULNERABILITY	102
MAP 9-5 ESTACADA FIRE DISTRICT WILDFIRE RISK AND SOCIAL VULNERABILITY	110
MAP 9-6 GLADSTONE FIRE DEPARTMENT (INCLUDING CLACKAMAS FIRE DISTRICT AND SANDY FIRE DISTRICT #72) WILDFIRE RISK AND SOCIAL VULNERABILITY	120
MAP 9-7 HOODLAND FIRE DISTRICT #74 WILDFIRE RISK AND SOCIAL VULNERABILITY.....	126
MAP 9-8 LAKE OSWEGO FIRE DEPARTMENT WILDFIRE RISK AND SOCIAL VULNERABILITY.....	135
MAP 9-9 MOLALLA RURAL FIRE PROTECTION DISTRICT #73 WILDFIRE RISK AND SOCIAL VULNERABILITY.....	142
MAP 9-10 MONITOR RURAL FIRE PROTECTION DISTRICT WILDFIRE RISK AND SOCIAL VULNERABILITY	150
MAP 9-11 SANDY FIRE DISTRICT #72 (INCLUDING CLACKAMAS FIRE DISTRICT AND GLADSTONE FIRE DEPARTMENT) WILDFIRE RISK AND SOCIAL VULNERABILITY	155
MAP 9-12 SILVERTON FIRE DISTRICT #2 WILDFIRE RISK AND SOCIAL VULNERABILITY.....	163
MAP 9-13 TUALATIN VALLEY FIRE & RESCUE WILDFIRE RISK AND SOCIAL VULNERABILITY	170
MAP E-1 BASE MAP WITH LAND MANAGEMENT, ROAD NETWORKS, AND HYDROLOGY.....	E-2
MAP E-2 FIRE PROTECTION DISTRICTS.....	E-3
MAP E-3 SOCIAL VULNERABILITY.....	E-4
MAP E-4 WILDFIRE RISK AND FIRE HISTORY	E-5
MAP E-5 WILDFIRE RISK.....	E-6
MAP E-6 FIRE HISTORY	E-7
MAP E-7 PRIORITY WILDFIRE MITIGATION AREAS	E-8
MAP E-8 INTEGRATED CONDITIONAL NET VALUE CHANGE	E-9
MAP E-9 INTEGRATED EXPECTED NET VALUE CHANGE	E-10
MAP E-10 PEOPLE AND PROPERTY CONDITIONAL NET VALUE CHANGE	E-11
MAP E-11 DRINKING WATER CONDITIONAL NET VALUE CHANGE	E-12
MAP E-12 TIMBER CONDITIONAL NET VALUE CHANGE	E-13

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Executive Summary

Clackamas County adopted their first Community Wildfire Protection Plan (CWPP) in 2005. This update, conducted in 2022 and 2023, contains the key elements present in the first CWPP, including a description of the county's key demographics, a countywide wildfire risk assessment, community engagement, the identification of fuels reductions and wildfire mitigation priorities, and the development of action plans for local and state fire and forestry agencies to mitigate wildfire risk throughout the county. Through quantitative and qualitative analysis, the updated Community Wildfire Protection Plan (CWPP) will allow for greater accessibility to pre- and post-fire funding resources and interagency transparency and coordination, while providing general wildfire safety and knowledge to support Clackamas County in becoming a resilient community where everybody can thrive.

The 2023 update includes new functional components that represent a significant advancement in wildfire planning. These components include a county social vulnerability assessment to complement the physical wildfire risk assessment provided through Oregon Wildfire Risk Explorer, a chapter dedicated to post-fire recovery and stabilization, and recommendations for integrating the CWPP and its recommendations with other county plans and policies. Integration of the CWPP with other plans and policies serves to inform land use decisions, support state and federal grant applications, and promote cohesive fire planning across mitigation, response, and recovery actions. The additions to this CWPP reflect the advances in the study of wildfire and community planning efforts as well as the changing legislative environment concerning wildfire. The additions to the document will support the county in pursuing competitive grants for wildfire mitigation projects as well as serve as a comprehensive resource for emergency managers and community leaders in preparing their communities for the impacts of wildfire. This plan aims to promote fire resilient communities across Clackamas County.

Acronym List

This document contains many acronyms for a wide array of activities, agencies, and plans. The following is a non-comprehensive summary of these acronyms, organized alphabetically:

- C-COM = Clackamas County Department of Communications
- CCDM = Clackamas County Disaster Management
- CCFFA = Clackamas County Farm Forestry Association
- CWOOG = Clackamas Wildfire Operations Group
- CWPP = Community Wildfire Protection Plan
- DTD = Clackamas County Department of Transportation and Development
- FDB = Clackamas County Fire Defense Board
- FEMA = U.S. Federal Emergency Management Agency
- ODF = Oregon Department of Forestry
- OSFM = Office of State Fire Marshal (for Oregon)
- SWCD = Clackamas Soil and Water Conservation District
- USFS = U.S. Forest Service

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Chapter 1: Introduction

Purpose

Pursuant to the Healthy Forests Restoration Act of 2003, Public Law 108-148, the purpose of the Clackamas County Community Wildfire Protection Plan (CWPP) is to reduce the risks from wildfire on the Clackamas County community, infrastructure, and watersheds. This plan identifies communities at risk and vulnerable infrastructure, then provides actionable items that reduce risk to communities and infrastructure. In addition, this plan summarizes best practices for increasing the adaptive capacity of the community, and outlines policy, emergency management, and collaborative strategy improvements that create a more equitable, fire adapted Clackamas County.

Using community engagement and outreach, the best available risk assessment methods and data, and current best practices for improving home ignition zones, the 2023 CWPP update provides a road map for Clackamas County to reduce the risk of wildfire to the community.

Introduction

In 2020, wildfires impacted large portions of central and southern Clackamas County. These events increased public awareness of wildfires on the west side of the Cascades. The 2023 update to the CWPP seeks to address the ongoing impacts of the 2020 wildfires by increasing community resilience through expanded community engagement, including interviews, community surveys, and partner forums.

Clackamas County is in northern Oregon and consists of two significant ecotones. Ecotones are transition areas between unique regions; these transition zones indicate changes in environmental pressures that can indicate an increase in wildfire risk. In the west of the county lies a more populated and wet ecosystem, whereas in the eastern part of the county, it is far less populated, and a drier climate persists due to the Cascades. The union of the two ecotones increases the diverse nature of the Clackamas County landscape and can have unexpected consequences related to wildfire in the highly populated areas in the western portion of the county.

Historically, forests regularly burned, reducing the amount of dry woody debris and, in turn, reducing the severity of wildfires. Modern land and forest management practices, pursuing a fire suppression strategy, resulted in the buildup of forest vegetation, such as woody materials from brush and downed trees and limbs. The buildup of forest vegetation increases the intensity and severity of fire risk. This is particularly true in dry forests where fire regimes were historically “high frequency, low severity” but due to fire suppression over the past 150+ years, fuels have built up. Conversely, in wet forests fire is uncommon with long intervals between fire events and when fires do occur, they tend to be severe, like the 2020 Labor Day fires. Fire suppression over the past 150+ years has had less of an impact on fuel build up in wet forests because they are naturally abundant in vegetation and are typically too wet to burn except during extreme weather events. For example, a natural fire rotation for the wet forests of Bull Run, which are extremely wet and productive, was determined to be 350 years and the fire regime is “low frequency, high severity”.¹ Because fires are not common in forests west of the Cascades, less is known about the

¹ Halofsky, J. S., D. C. Donato, J. F. Franklin, J. E. Halofsky, D. L. Peterson, and B. J. Harvey. 2018. “The Nature of the Beast: Examining Climate Adaptation Options in Forests with Stand-Replacing Fire Regimes.” *Ecosphere* 9: e02140. <https://doi.org/10.1002/ecs2.2140>.

effectiveness of dry-forest fuel reduction strategies in wet westside forests.² The Pacific Northwest Quantitative Wildfire Risk Assessment (QWRA) classifies these fuels as a fire risk for nearby communities. Household structures and communities adjacent to or incorporated on public lands have a higher risk of wildfire than households in more urban areas.

As development continues to expand into rural and wooded areas, the cost of fire suppression, risk mitigation, and disaster planning needs to be accounted for and planned. More people are moving into undeveloped areas, thus increasing their risk of wildfire displacement. The updated CWPP accounts for this increased risk and addresses policy recommendations that will support greater funding opportunities for these communities. As communities continue to develop in the high-risk areas of Clackamas County, the cost of fire management and community preparedness will disproportionately put pressure on households living near wildland areas. Therefore, the CWPP update recognizes an imperative need to increase interagency cooperation, promote effective communication between agencies, and create a fire resilient Clackamas County.

CWPP Vision, Mission, Goals, and Actions

The CWPP vision describes what Clackamas County would like to achieve through this plan. The mission statement describes how Clackamas County will achieve the vision. The goals provide general statements of what needs to be accomplished to implement the mission.

CWPP Vision

The strategic vision for the CWPP is to protect Clackamas County communities from the impacts of wildfire and create a fire resilient landscape and community. The vision is guided by a focus on equity, climate resiliency, and collaboration.

CWPP Mission

The mission of the Clackamas County Wildfire Protection Plan is **to provide a consolidated reference documenting wildfire hazards, prevention and response efforts, and resource-sharing information for all participating local, state, and federal fire agencies.**

The 2023 CWPP update improves historical fire planning efforts by providing a more localized and precise approach for identifying wildfire hazards and implementing best practices for wildfire protection in balance with sustainable ecological management and economic activities throughout Clackamas County.

CWPP Goals

A primary goal of the 2023 CWPP update is to include resources for communities and officials during both periods of pre- and post-fire recovery. Detailed call-out sections for recovery services are provided in the post-fire section of the document. The updated CWPP identifies connections and potential partnerships between the American Red Cross, Federal Emergency Management Agency (FEMA), Oregon Department of Forestry, Oregon State Fire Marshal, and other local and national entities to integrate each organization's respective operations into the local recovery process.

Clackamas County's remaining CWPP goals can be organized into five objectives: protect life and property, increase public awareness to wildfire risk, enhance natural systems, form partnerships to support implementation, and engage emergency response systems.

² Agee, J.K. and F. Krusemark. 2001. "Forest Fire Regime of the Bull Run Watershed". Northwest Science, Vol. 75, No.3.

Protect Life and Property

- Develop and implement policies and activities that increase community wildfire resilience, protecting homes, businesses, infrastructure, and critical facilities.
- Ensure new and existing developments meet the requirements set forth in Senate Bill 762 and Senate Bill 80 and the CWPP to create more fire adapted communities.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Provide resources and support to communities beyond fire district services.
- Communicate evacuation procedure information to the public.

Increase Public Awareness

- Improve awareness of evacuations routes and alert systems through language and tools that can be easily accessed by a greater proportion of the population to facilitate a rapid and efficient evacuation during wildfire events.
- Promote outreach programs that educate communities to become more fire resilient – especially in higher risk areas, such as households in the Wildland Urban Interface (WUI).
- Create more community connections among residents.
- Establish networks of technical professionals and community-based organizations.
- Aid woodland owners to prepare and treat their property to be more fire resilient.

Enhance Natural Systems

- Collaborate with public and private sectors to manage wildlands and forested areas in a way that will support a more resilient and fire adapted natural system.
- Plan for wildfire disasters in a way that restores the natural wildfire cycles and recognizes the value of indigenous fire management.

Develop Partnerships and Support Implementation

- Work collaboratively across county lines, and with different agencies and community organizations, to implement policies and actions in this plan.
- Encourage community engagement and participation from public and private sectors to activate and sustain mitigation efforts through funding programs and volunteer operations throughout the county.

Strengthen Emergency Services

- Outline safe and effective evacuation routes for rural communities at high risk.
- Strengthen bilingual emergency systems by having dual language disaster websites and emergency systems.
- Coordinate CWPP to align with the National Hazards Mitigation Plan (NHMP) as well as other emergency plans, when appropriate.

Actions

This CWPP aligns actions with funding opportunities at both the state and federal level to assist Clackamas County communities to acquire the resources necessary to realize its vision.

The 2018 CWPP included an action plan to address the following focus areas: Risk Assessment, Fuels Reduction & Biomass Utilization, Emergency Operations, Education & Outreach and Structural Ignitability.

The CWPP Action Plan has been updated and revised to ensure that actions related to these focus areas are clear, implementable, and relevant (Table 1-1).

Monitoring Progress

Clackamas County Disaster Management will regularly review both the wildfire mitigation actions listed in Table 1-1 and the fire agency-specific action plans listed in Chapter 9: Clackamas County Fire Agencies. Each year, in May, Disaster Management will work with the Clackamas Fire Defense Board to determine what progress has been made, if any, on these activities and will update these action plans accordingly. This process will ensure that the progress made by fire agencies will be recorded annually, for use during the CWPP update that occurs once every five years.

A document to assist Clackamas County Disaster Management, the Clackamas Fire Defense Board, and fire and forestry agencies with their annual reviews can be found in Appendix D: Annual Review Table.

Table 1-1 Wildfire Mitigation and Community Engagement Action Plan, Clackamas County, 2023

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
Risk Assessment								
1.) Maintain and update internal maps and databases for Fuels Reduction priorities and local Communities at Risk.		Clackamas GIS, Clackamas Wildfire Collaborative	ODF, FDB	Annually	High	New Action 2012	This is a work in progress and will be completed for the 2017 update.	Since 2017, the County has not captured fuels reduction data. This action should be covered in the future by CFD1 using their recent OSFM grant for ESRI-based project mapping.
2.) Continue to track structural vulnerability data throughout the County through structural triage assessments.	a.) Work with fire districts to utilize the GPS units for obtaining home locations and structural vulnerability data.	Fire Districts, ODF	Clackamas Wildfire Collaborative	Ongoing	High	ODF has completed structural triage with home locational data for 10,000 homes in the ODF protection boundary. Hoodland completed 375 home assessments.	ODF provides structural triage assessments each year through the Firewise USA program.	Need to identify new GIS resource for wildfire data management.
	b.) Provide local structural triage data and maps to all fire agencies.	Clackamas GIS, Clackamas Wildfire Collaborative	ODF	1 Year	High	New Action 2012	This was completed for the 2012 update but there has been no new data since then, so no new maps have been produced.	Need to identify new GIS resource for wildfire data management.
3.) Update the Overall Wildfire Risk Assessment as new data is available.		Clackamas GIS, Clackamas Wildfire Collaborative	ODF	Long Term	High	New Action 2012	No new data available for the 2017 update.	Need to identify new GIS resource for wildfire data management.
4.) Utilize GPS technology to get accurate spatial and attribute data (e.g., size, access, water source volume, etc.) for fire suppression resources.		ODF, USFS, BLM, Fire Districts	Clackamas GIS, Clackamas Wildfire Collaborative	Ongoing	High	ODF has GPS locations for all water sources. County GIS has data for some fire districts.	ODF continues to utilize GPS technology to update water holes.	Need to identify new GIS resource for wildfire data management.
5.) Work with local fire districts to develop more detailed risk assessments using local and community-derived data.		Fire Districts, ODF	Clackamas GIS, Clackamas Wildfire Collaborative	Ongoing	Low	All county fire agencies identified Communities at Risk and developed localized action plans to address risks. Maps of these areas as well as potential fuels reduction projects were provided to each fire agency.	All county fire agencies updated Communities at Risk.	Need to identify new GIS resource for wildfire data management.

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
Fuels Reduction								
1.) Obtain funding to implement fuels reduction projects.		ODF, USFS, Fire Districts	Clackamas County	Ongoing	High	CWPP Partners have received \$1.7 million to implement fuels reduction projects on public and private land.	ODF no longer receives the Title III grant money which funded most of the fuels reduction projects that have occurred in the last 10 years. At this time there is no new funding in sight, but there remains a high need for fuels reduction.	Clackamas County has resumed receiving Title II funding which has been used to cover the costs of fuels reductions projects in the past. New funding has been made available by state (SB 762) and federal legislation, with grants disbursed by the Oregon State Fire Marshal's office and the Community Wildfire Defense Grant respectively. See Appendix A: Wildfire Mitigation Funding Opportunities for more information.
2.) Develop and maintain a list of potential and successful fuels reduction projects.		ODF, USFS, Fire Districts	FDB	Ongoing	Medium	ODF has made presentations at the CCFFA Tree School, Homeowners Association Meetings, and Community Planning Organization Meetings to gain support for fuels reduction projects. More community presentations are planned in the near future.	ODF continues to encourage fuels reduction projects but cannot offer any assistance at this time without more funding.	Need to identify new funding resource for wildfire data management.
3.) Develop a process to assist landowners with removing woody debris.	a.) Promote community clean-up days and utilize portable sawmills, chippers, etc. to assist landowners in removing hazardous vegetation.	ODF, Fire Districts	Clackamas Wildfire Collaborative, CCFFA	Ongoing	High	Molalla Community Clean Day Spring 2006, 2007; Government Camp and Zig Zag Village Annual Community Clean Up Days	These communities still participate in Annual Community Clean Up Days.	Government Camp and Zig Zag Village still participate in Annual Community Clean Up Days.
4.) Work with natural land managers and watershed managers to protect ecosystems and water quality in high risk natural areas and parks.	a.) Continue discussions on strategic fuels plans for Bull Run Watershed.	ODF, USFS, Portland Water Bureau, Sandy Fire	USFS/Sandy Fire	Ongoing	High	USFS, ODF, Portland Water Bureau, and Portland Fire continue to have annual meetings.	USFS, ODF, Portland Water Bureau, and Portland Fire continue to have annual meetings.	Continue to cooperate on prevention and mitigation practices. Committed to developing a common understanding of west side wildfire science and best practices for climate change resiliency in wet forests of the Western Cascades, like Bull Run.

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
	b.) Work with natural resources managers county-wide to improve forest health and resistance to wildfire in projects in critical watershed areas outside of the Bull Run Watershed.	ODF	County Parks, City Parks, Metro, USFS, BLM	Ongoing	High	The natural resources managers in the County identified fuels reduction projects in and around critical watershed areas for the 2012 Clackamas CWPP Update.	Stewardship foresters promote healthy forests and enforce the Oregon Forest Practices Act, which protects critical watersheds.	Stewardship foresters continue to enforce the Oregon Forest Practices Act.
Completed Fuels Reduction Action Items								
Encourage Stewardship Foresters and Consulting Foresters to integrate fuels reduction into management plans and utilize cost share programs.	a.) Utilize stewardship to assist in being SB 360 compliant.	ODF	ODF	3 Years	High	ODF Stewardship Foresters have begun integrating fuels reduction and defensible space actions into stewardship management plans.	Completed	-
Provide fire agencies and landowners with tools necessary for promoting fuels reduction as a management practice to reduce wildfire hazards and restore ecosystems.	a.) Coordinate a Fuels Reduction Project Tour to educate fire districts and natural resources managers.	ODF, OSU Extension, CFFFA	ODF	Ongoing	Low	ODF provides a class at Tree School to educate landowners about fuels reduction and defensible space. A Guide for fire agencies, natural resources managers, and landowners is needed.	There has been no demand for a tour recently. As ODF is contracted by different resource managers, it develops an appropriate education to fit their needs. ODF also continues to attend prevention events and educate landowners. Combined with the lack of interest, this renders this action item moot.	Completed.
	b.) Provide landowners with a guide that can provide technical assistance in assessing and reducing wildfire hazards on their property.	ODF, OSU Extension	Clackamas Wildfire Collaborative	Ongoing	High		OSU Extension and ODF partnered to put on an event for forest and landowners that educated them on the need for defensible space and the importance of assessing one's own risk to fire.	Completed.
Develop a map of small woodland owners (forest deferral) to identify potential project areas. Overlay harvest polygons for the past 10-15 years to show actively managed lands and those that may benefit from fuels reduction.		ODF, Clackamas GIS, Clackamas Wildfire Collaborative	USFS, BLM, Fire Districts, NRCS, CFFFA, OSU Extension Service	Ongoing	Medium	A timber inventory volume analysis for Clackamas County was completed in 2007 but was not at a scale for identifying specific project areas.	Completed.	-

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
Identify opportunities to assist special needs populations in creating defensible space around homes and communities.		ODF	Social Service Agencies	Ongoing	Medium	ODF uses the Title III crew to assist in creating defensible space for landowners with special needs.	ODF has utilized Crew#58, Coffee Creek Crew, and several statewide cost-share/rebate programs that are available to support ongoing wildfire risk mitigation work for people with special needs.	Completed.
Emergency Operations								
1.) Develop a Communications Work Group to address communications needs and deficiencies.	a.) Create a list of communication needs and resources (radios, repeaters, etc.) and develop a deployment strategy that can be utilized during an event.	CC Fire Agencies, C-COM	Clackamas County	Ongoing	High	New Action 2012	Ongoing	Ongoing; continues to be a gap for immediate communication needs from the federal, to state, to local level for emergency response.
	b.) Identify and pursue funding sources to address communication deficiencies.	CC Fire Agencies	Clackamas County	Ongoing		UASI and other Homeland Security grants have addressed regional communication needs, including Clackamas County. Clackamas County has implemented a reverse 9-11 system called: Clackamas County Emergency Notification System (CCENS)	Ongoing	The County passed a countywide bond to fund the purchase of 800 MHz radios.
2.) Provide exercises and training to build capacity for responding to wildfires.	a.) Conduct a conflagration exercise including dispatching of resources, staging, and coordination with Clackamas County Departments for potential evacuations and EOC activation.	FDB	CC Fire Agencies	5 years	High	No Progress	The last conflagration exercise was conducted in 2013. It turned out to be very helpful with the 36 Pit Fire incident in 2014.	Another conflagration exercise should be conducted before the next Clackamas CWPP update. Limited "conflagration call down" exercises are conducted each spring.
	b.) Clarify EOC/IMT roles and relationships.	FDB	CC Fire Agencies	2 Years		Unified Command has been exercised and utilized regularly during emergencies since 2005.	In 2014, Clackamas County had a conflagration with the 36 Pit Fire and many lessons were learned, including a gap in local IMT capabilities to run an extended incident at a type 3 team level.	The County and fire agencies continue to clarify EOC/IMT roles and work to expand the county's response capacity.

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
	c.) Identify opportunities to provide Live Fire Training for CC Fire Agencies.	FDB	Metro, City/County Parks	Ongoing		NAFT is working on a Western Oregon Wildland School (to supplement Central Oregon Wildland School).	Working with Clackamas Community College Wildland Program as well as NAFT.	Ongoing, specifically via the Metro Advanced Wildfire School (MAWS).
	e.) Work with natural resources managers to determine their role in responding to wildfires in parks and natural areas.	FDB	ODF, Clackamas River Water, CC Forester and Parks			New Action 2012	Pre-season agreements are put in place with natural resource managers to let them know their responsibilities in the event of a fire. There is also an annual operator's dinner in order to promote wildfire training.	Ongoing
3.) Strengthen public education and agency coordination on evacuation procedures.	a.) Invite CCSO to FDB to discuss evacuation authority, limitations, and opportunities to collaborate.	FDB	CC Fire Agencies, Law Enforcement, Disaster Management	Ongoing	High	Disaster Management has an evacuation plan template and is developing an evacuation plan for Mount Hood.	Ongoing	Ongoing
	b.) Clarify roles and responsibilities for evacuation procedures based on different types of incidents (wildland, structural, Haz Mat) and ensure that all participating agencies are aware of roles.						Ongoing	Ongoing
4.) Develop a more efficient system for utilizing intra and intercounty resources.	a.) Work with Washington and Multnomah Counties to determine the best strategy for utilizing resources. Consider alternate dispatch run cards.	FDB, Dispatch Centers	CC Fire Agencies	Ongoing	High	Run cards have been updated; Unified Command is used consistently during incidents; there is a Tri-County Mutual Aid Agreement, but the group needs to develop and refine operational strategies for utilizing resources.	Working with the new CAD system to refine strategies for utilizing resources.	Run cards have been used in several incidents and continue to be revised for improvements.
	b.) Consider creating structural and wildland strike teams for Clackamas County (including resources that are not in the Mob Plan).					New Action 2012	Used ST/RF for the 36 Pit Fire in 2014. Continue to work on strategies for ST/TF in County.	Strike teams proved effective for the Mclver fire and continue to be prepared.

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress		2017 Progress	2023 Progress
5.) Encourage consistent application of and regular review/revision of the Open Burning Policy adopted by the Fire Defense Board (FDB).	a.) FDB Chief will work with ODF to analyze daily conditions using the Fire Severity Rating Matrix to determine open/closed burn days.	FDB Chief, ODF	CC Fire Agencies	Ongoing	High	The Clackamas Fire Defense Board has improved the understanding of burning policies countywide and is working with ODF to determine burn days.		The Clackamas Fire Defense Board continues to improve its understanding of the different burning policies around Clackamas County and working with ODF to determine burn days.	Ongoing
	b.) Continue to refine the Open Burning Policy; Develop consistent definitions for "campfires" and "designated sites."	FDB Chief, ODF		Ongoing		The FDB updated the Open Burning Policy in 2010, and it should be evaluated and reviewed again in 2012-2013.		Updated policy, continued review in 2018-19.	Updated policy, continued review expected before the next Clackamas CWPP update.
	c.) Consider using a single source website (ODF Dispatch) to update Fire Severity Rating and public use restrictions.	FDB, ODF		Ongoing		New Action		ODF updates Fire Severity Ratings and public use restrictions through the main ODF website.	Ongoing
6.) Develop and implement training standards for Fire Operations Center (FOC) positions.	a.) FDB will identify classes/training specific to FOC positions and make recommendations to FDB for FOC training.	CWOG, FDB	CC Disaster Management, Public Works, Fire Districts	Ongoing	High	New Action All Fire Chiefs that staff the EOC are trained at least to the ICS 300 level.		Ongoing	Ongoing
7.) Develop a consolidated document for reporting resource minimums on fire district-, county-, and state-wide levels.	b.) ODF and USFS will provide morning resource status to the FDB via the CFOG website.	CWOG, FDB		CC Fire Agencies	Ongoing	Medium	ODF uses Web EOC. USFS does not.	ODF issues a daily report and reports all fires on Web EOC. USFS does not use Web EOC.	ODF continues to release daily reports; USFS does not.
Completed Emergency Operations Action Items									
Develop 12-hour operational period for Mutual Aid Agreement		FDB	FDB, BIA, Multnomah County	6 months	High	An intracounty Mutual Aid Agreement has been adopted by FDB agencies. An intercounty mutual aid agreement is being developed. An amendment will be made to the 2005 Fire Agreement to clarify that operational periods are 12 hours.		Completed	-

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
Develop a consolidated document for reporting resource minimums on fire district-, county-, and state-wide levels.	a.) The next iteration of the resource minimum document.	CWOG, FDB	CC Fire Agencies	Ongoing	Medium	There is a resource minimum list for the County (but it does not include ODF). ODF can include theirs, but it varies throughout the year due to fire season.	Completed	-
Develop and implement a radio numbering system that reflects geographic area.		Radio Committee	FDB, ODF	Long Term	Low	An attempt to do this was made in 2006 but did not generate adequate regional support. The Regional Fire Operations Group is tasked with this, although it may be a statewide issue.	Completed	-
Encourage consistent resource typing among NIMS, NWCG, and the OSFM.	a.) FDB will provide recommendation to the State Fire Marshal's Office that the equipment and staff typing should be consistent in NIMS, NWCG, and the Mob Guide.	CWOG, FDB	Fire Districts	Long Term	Low	ODF follows the NWCG guidance for resource typing. The OSFM follows NIMS. Some progress has been made to bring NIMS and NWCG into alignment.	Completed	-
Education & Outreach								
1.) Develop a step-by-step process for outreach to Communities at Risk, including Firewise presentations.		ODF	Clackamas Wildfire Collaborative	Ongoing	High	Firewise presentations have been given at 15 Communities at Risk. ODF received grant funds to create two Firewise Communities in 2012.	ODF has remained the lead organization with the Firewise USA program in the county. Although the amount of Firewise communities has fluctuated, ODF continues to develop outreach material and give Firewise presentations.	Ongoing
2.) Develop relationships and incentives for a Fuels Reduction Program.		ODF, USFS, County/City Parks, Metro, SWCD	Fire Districts	Ongoing	High	Collectively, partners were awarded over \$1 million to implement fuels reduction projects in Clackamas County; about half of which was an ODF a cost share program for removing hazardous fuels.	ODF does not have any more funding available to finance a fuels reduction program, but there are still plenty of areas that could benefit.	Local fire agencies continue to carry out fuels reduction programs with funding from OSFM.

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
3.) Update the burning brochure and target areas for mailing based on the Communities at Risk.		Clackamas Wildfire Collaborative	Fire Defense Board	Ongoing	High	Defensible Space and Debris Burning brochures were created and mailed to all WUI residents in 2006	Ongoing	Ongoing; continued need for these brochures to be distributed and made accessible for local fire agencies.
4.) Develop and distribute address signs for homes and potential water sites in the Wildland Urban Interface (WUI).		Clackamas Wildfire Collaborative	Fire Districts	Ongoing	High	ODF received Title III funds to purchase and distribute address signs in the WUI.	Keeping address signage up to date is an ongoing task. ODF has been utilizing GPS to mark waterside locations.	Ongoing; continued need for this information to be made accessible for local fire agencies.
5.) Work with the Public and Government Affairs Department to create a disaster communication plan.		CCDM	Clackamas County Public and Government Affairs Department	1 Year	High			New in 2023.
6.) Educate County Departments and partners on the basic principles of trauma-informed care and apply them when creating community engagement processes.		CCDM	Clackamas County	Ongoing	High			New in 2023.
7.) Continue meetings with community partners for the creation of a Clackamas Wildfire Collaborative.		CCDM; FDB	CC Fire Agencies	Ongoing	Medium			New in 2023.
8.) Conduct outreach to additional partners on the federal, state, regional, and local levels for participation in the Clackamas Wildfire Collaborative group.		CCDM; FDB	ODF; OSFM; USFS	Ongoing	Medium			New in 2023.
9.) Create and maintain community partner relationships.		CCDM; FDB	CC Fire Agencies	Ongoing	Medium			New in 2023.
10.) Partner with new/existing partners to create and support events and educational opportunities in the following topics: decreasing structural ignitability and creating defensible space, signing up for ClackCo Public Alerts, creating personal evacuation plans, and small woodland owner management.		CCDM; FDB	ODF; OSFM; CC Fire Agencies	Ongoing	High			New in 2023.
11.) Encourage the creation of new Firewise communities, especially in rural, unincorporated communities, to advance funding opportunities and support community building. Clackamas County should direct communities to local fire districts for assistance.		CCDM; FDB	ODF; OSFM; CC Fire Agencies	Ongoing	High			New in 2023.

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
12.) Encourage all local fire districts to offer CERT training.		CCDM; FDB	ODF; OSFM; CC Fire Agencies	Ongoing	Medium			New in 2023.
13.) Require cities to update municipal building codes to include fire-safe standards in accordance with Senate Bill 762. The fire-safe building standards should apply to all new construction in low, medium, and high-risk fire areas.		ODF; OSFM	Clackamas County; Fire Defense Board	3 Years	High			New in 2023.
14.) Hire a Community Engagement Coordinator for the Disaster Management Department equivalent to 1 FTE. The person will be responsible will be responsible for pre and post disaster communication and implementing community engagement initiatives.		CCDM	Fire Defense Board	1 Year	High			New in 2023.
Structural Ignitability								
1.) Continue to enhance coordination between Clackamas Fire Districts and County DTD.	a.) Identify a DTD representative to serve on the Wildfire Planning Executive Committee.	CCEM	FDB	Ongoing	High	FDB will identify a liaison for DTD.	Representatives will be Planning and Zoning Director and Deputy Building Codes Administrator, or their designees.	Ongoing
2.) Support Building Officials in their requirements to maximize fire resistiveness.	Building Codes have limited the ability of the fire service to require or approve any fire resistive measures or systems as it relates to structures. The Fire Service must work with Building Officials by supporting and collaborating with them during plan review to include the best practices for survivability and risk reduction.	Local FD, CC Building Dept., FDB	OSFM	Ongoing	High	New Action 2017	The local fire service providers have been made aware of the limitations on their ability to provide input and make requirements of structures in the State of Oregon. Authority for the structure itself lies solely with the Building Official. Partnership, communication, and collaboration are necessary to help ensure the structure meets roofing, roofing assembly, building materials, and set-back standards that promote survivability.	No Progress. Clackamas County does not currently have a Building Official.

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
3.) Encourage use of fire-resistant construction materials, compliance with access requirements, adequate water supply, and incorporation of fuel breaks in the Wildland Urban Interface.	a.) Consider flagging the lots that are in the designated WUI and send the applicant an educational packet that includes suggestions for fire-safe construction materials, access, water supply, and fuel breaks.	County DTD	County GIS, DTD Comp. Users Group; OSFM, Clackamas Wildfire Collaborative	1-2 years	High	No Progress	County GIS will coordinate with Building Codes and Planning on possible use of WUI layers for flagging in Plan Map program.	Ongoing; agencies are expected to receive information from OSFM as part of statewide legislation (including SB 762).
	b.) Utilize Section R324 of the Residential Specialty Code "Wildfire Hazard Mitigation," which requires at least Type-C roofing for homes in the WUI.	County DTD, ODF, Fire Districts	FDB	1-2 years	High	New Action 2012	Building Codes cannot require the use of such materials as outlined in Section 327 of the Oregon Residential Specialty Code because Clackamas County has not adopted zoning provisions requiring compliance. Planning and Zoning may consider ZDO updates for future Work Plans.	Ongoing; building codes are expected to come from OSFM as part of statewide legislation (including SB 762).
4.) Enhance structural protection in unprotected areas and comply with the Governor's policy in unprotected areas to be eligible for conflagration resources.	a.) Support ODF in working with the County Tax Assessor to change the language on property tax statements for ODF assessment from "fire protection" to ODF "non-structural fire suppression" so homeowners and insurers are not led to believe they have structural fire protection.	ODF, County Tax Assessor	ODF	1 Year	Medium	No Progress	No Progress	No Progress

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
	b.) Inform homeowners in unprotected areas of their unprotected status (using mailings) and provide them with information about options for enhancing structural protection.	ODF, USFS	Clackamas Wildfire Collaborative, Adjacent Landowners	Ongoing	Medium	No Progress	ODF and USFS sends out mailers to communities at risk to inform them of their status and to educate them on different strategies to mitigate high fire risk.	Ongoing
	c.) Encourage communities in unprotected areas to develop local community wildfire protection plans and/or become Firewise.	ODF	Wildfire Collaborative	Ongoing	Medium	No Progress	ODF has signed up several new Firewise Communities which includes developing localized CWPPs for each of them.	Ongoing
	d.) Research opportunity to provide disclosure of unprotected status on lots through deed restrictions.	ODF	County	1 Year	Medium	No Progress	No Progress	No Progress
5.) Work with insurance providers to improve their criteria to adequately represent level of structural fire protection in residential structures, especially in high-risk areas.	a.) Ensure that homes in rural settings have adequate access and water supply when considering insurance eligibility; especially homes > 3,600 ft ² .	FDB, OSFM, Insurance Providers	Regional Fire Operations Group	Ongoing	Medium	Western States Fire Chiefs are currently working with ISO to recognize reduced fire risk through prevention activates and develop incentives for promoting creation and maintenance of defensible space.	ISO has completed a regrading matrix that includes prevention and defensible space credits.	Ongoing; the County continues to carry out these items as part of access and water supply sign offs from local fire agencies for building permits.
	b.) Expand criteria used by insurance providers to include fire breaks, fuels reduction, and fire prevention activities.			Ongoing	Medium			

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
	c.) Provide an educational component to developers/builders regarding fire insurance considerations of homes built without adequate access and water supply.			Ongoing	Medium			
	b.) Work with insurance providers to encourage homeowners to be proactive in maintaining fire safe vegetation and reducing hazardous fuels.			Ongoing	Medium			
Completed Structural Ignitability Items								
Continue to enhance coordination between Clackamas Fire Districts and County DTD.	b.) Develop and provide a residential construction checklist to identify those projects with access and water supply challenges.	Structural Ignitability Committee	DTD	1 Year	High	The checklist is complete and will be provided by DTD during the permit application process.	This was completed and is being used, but the last checkbox cannot be used because the WUI has not been loaded into Plan Map.	Completed.
Improve upon current procedures for integrating fire codes into the regulatory process.	b.) Continue to make improvements on the Permits Plus Program to ensure that conditions for fire code compliance are translated from land use planning to building permitting.	County DTD	County Engineering, IS	November '04	Low	Significant improvements have been made to the Plan Map system to ensure that all input given during the land use reviews is available to building officials.	Permits Plus was replaced by Accela Automation effective September 2013. We all use the Automation database to share information currently.	Completed.
Enhance structural protection in unprotected areas and comply with the Governor's policy in unprotected areas to be eligible for conflagration resources.	e.) Consider flagging lots in unprotected areas to educate property owners about the lack of structural protection and options to increase protection.	County DTD	County	Ongoing	Medium	The County currently requires any new lot of record to have structural fire protection.	Completed.	-

Action Item	Details	Lead	Partners	Time	Priority	2012 Progress	2017 Progress	2023 Progress
Continue to enhance coordination between Clackamas Fire Districts and County DTD.	b.) Promote an open dialogue between County DTD and fire agencies by utilizing the DTD website, monthly emails, and the Velocity Hall System.	FDB	OSFM	Ongoing	High	Continues to be effective in most areas. Rural Fire Districts need Velocity Hall training and are not currently receiving monthly emails.	The County DTD does not currently participate on this committee. Velocity Hall no longer exists in the form it was previously and has been replaced with different kinds of access portals.	
Work with Clackamas County Engineering to notify Fire Districts of new buildings on existing lots that have >150 ft. driveways.		CC Building Dept	Fire Districts	2 Years	High	New Action 2012 Clackamas County DTD is installing a new system that could facilitate this process.	Fire agencies receive this information regularly. Access and water supply site inspections come at the request of the County or an individual city.	Completed.
Improve upon current procedures for integrating fire codes into the regulatory process.	a.) All county fire agencies should come to consensus on the minimum fire code standards they will be enforcing and gain approval from the jurisdiction in which they serve.	FDB	OSFM	January '05	Low	FDB has adopted the State Fire Marshal's Metro Code Committee Fire Applications Guide. It is currently in the process of being revised to make it more user friendly.	The Code continues to be revised, but each agency now can adopt their own fire codes based on the FDB's recommendations.	Completed.

Source: Clackamas County CWPP Steering Committee, updated 2023.

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Objectives of a Community Wildfire Protection Plan

- Develop a coordinated wildfire plan for the county that builds on the Natural Hazard Mitigation Plan. The CWPP will also provide a foundation from which to build local fire district plans.
- Work with local, state, and federal agencies to ensure the plan meets the criteria for funding opportunities from the National Fire Plan and Healthy Forest Restoration Act of 2003 as well as Oregon Senate Bill 762 and Senate Bill 80.
- Organize and participate in community engagement and education programs that encourage community involvement and incorporate community input into actionable risk reduction outcomes.
- Review County regulatory standards addressing wildfire hazards and provide recommendations for improvement.
- Work with Oregon State University to develop a Communities at Risk Index to identify areas within the county and better understand the areas of concern within the county.
- Establish and agree upon risk reduction priorities and strategic recommendations to reduce structural ignitability.
- Establish a joint understanding of protection and risk reduction priorities across the county.
- Connect with community members, woodland owners, and public officials to collaborate throughout the fire districts and county departments.
- Document potential funding sources and increase eligibility for future grant opportunities by providing a more accurate assessment of risk and a prioritized list of risk-reduction projects.
- Ensure effective coordination between county departments, local fire districts, and state and federal forest and fire agencies.
- Review emergency operations procedures (communications, evacuations, etc.) and provide recommendations for improvement.
- Outline post-fire recovery efforts before a disaster to ensure effective collaboration following a wildfire disaster.
- Identify specific areas of concern for fuels mitigation and other natural resource management.

Context and Problem Definition

The number and intensity of wildfires is increasing in the Pacific Northwest. Until 2020, Clackamas County had largely been spared from the impacts of wildfire. A rapidly warming climate, years of fire suppression, and an accumulation of fuels have contributed to the increased number and intensity of wildfires. Additionally, the number of homes and structures in the Wildland Urban Interface have increased, which has put more people and property at risk and, therefore, increased the strain on our first responders.

Wildfire risk to a community is the combination of likelihood of a wildfire occurring and the intensity of the fire (referred to as hazard), and the exposure and susceptibility of the community to a wildfire (referred to as vulnerability). Wildfire likelihood is established based on fire behavior modeling through thousands of simulations of possible fire seasons. Wildfire intensity is a measure of the amount of energy a wildfire would produce. Wildfire exposure is defined as the spatial coincidence with wildfire likelihood or the areas where structures are located and the likelihood that a fire will occur there (think Wildland Urban Interface). Susceptibility refers to the predisposition of a home or a community to be damaged if a wildfire occurs (think defensible space and structural ignitability).

Wildfire risk is influenced by many physical factors including topography, fuel loads, weather, and soil moisture. As the climate warms, weather and soil moisture are heavily influenced by warmer and drier conditions, leading to more extreme weather conditions (like wind and drought) and drier fuels.

Adding to the complexity of wildfire risk, social factors, such as income level and limited English proficiency, make specific members of the Clackamas County community at an elevated risk to the impacts of wildfire. Many of these socially and economically vulnerable community members live in areas of higher risk and do not have the resources to reduce their structural ignitability, create defensible space, or recover from the impacts of wildfire.

To mitigate the risks of wildfire, the Community Wildfire Protection Plan will address how Clackamas County can restore and maintain landscapes, create fire adapted communities, and improve wildfire response. These strategies are the three pillars of the National Cohesive Wildland Fire Strategy.

Additionally, Oregon Senate Bill 762: The Wildfire Omnibus Bill requires homes in the wildland urban interface, with risk ratings of high and extreme, to be built to new home hardening standards and maintain defensible space. Implementation of this legislation will require a multiagency approach, time, resources, and significant community engagement.

Chapter 2: Planning Process

Wildfire protection planning has a long history in Clackamas County. This chapter provides an overview of the history of the Clackamas County Wildfire Protection Plan (CWPP). It describes the goals of earlier planning projects, as well as the successes achieved through their implementation. It then details the methodology used to update the CWPP, highlighting the changes made to the plan to align it with current community needs and new state and federal requirements.

Clackamas County Wildfire Protection Plan History (2004-2023)

In May of 2004, pursuant to the federal Health Forests Restoration Act of 2003, the Clackamas Board of County Commissioners (BCC) directed county departments to facilitate a collaborative community wildfire planning effort including local, state, and federal agencies as well as community organizations and individuals that have a vested interest in wildfire mitigation and recovery. The group identified fire risks in the county, developed priorities for project funding, and developed action items to reduce the risk of wildfire to residents and communities in Clackamas County.

The first iteration of the Community Wildfire Protection Plan (CWPP) was adopted in 2005. The plan was updated in 2012 and then again five years later to update the assessment of wildfire risk in Clackamas County, document and evaluate progress on implementation actions, and remain eligible for state and federal funding programs. Many grant programs that fund mitigation projects require proposed projects to be listed in a CWPP that was updated within the last five years. Maintaining the accuracy and active compliance of this plan is essential to effective mitigation planning. The most recent update for the Clackamas CWPP was completed in 2018.

The Clackamas 2023 CWPP Update process was developed by the Oregon Partnership for Disaster Resilience (OPDR) team in collaboration with the Clackamas Fire Defense Board and Clackamas County Department of Disaster Management. In September of 2020, the western United States experienced a series of large destructive fires. During this time Clackamas County experienced several fires within their borders including the Beachie Creek Fire and the Riverside Fire, which burned more than 138,000 acres.³ In the wake of these events, the 2023 plan update draws from the lessons learned from the 2020 fires to enhance county wildfire planning efforts.

CWPP Steering Committee

The CWPP Steering Committee, which includes the Clackamas County Fire Defense Board, local fire agencies, local government representatives, and state and federal fire and forestry agencies, is charged with oversight of the CWPP. Although the CWPP Steering Committee continued to meet annually following the last plan update, the roles of the CWPP Steering Committee member agencies were difficult to sustain over the last several years due to staffing and programmatic changes within partner agencies. The 2023 CWPP Update process strengthened the Steering Committee by providing more structure for meetings and creating a more realistic action plan. The Steering Committee is also developing a series of bylaws for consistency in agency representation and participation.

³ Goldberg, Jamie. The Oregonian, 2020, “...fires overrun Clackamas County...”
<https://www.oregonlive.com/news/2020/09/over-200-homes-buildings-damaged-or-destroyed-in-clackamas-county-wildfires-hundreds-more-threatened.html>

Technical Subcommittees

Since 2012, the responsibilities of the technical subcommittees have been transferred to the Clackamas Fire Defense Board (FDB). The FDB meets monthly to discuss issues surrounding fire operations and emergency response. The board consists of rural fire districts, County Disaster Management, wildland fire agencies, and other officials. The FDB also appoints a chairman, who is the point person for the FDB for State Mobilization requests and serves on the State Fire Defense Board.

Emergency Operations

The Clackamas Fire Defense Board is responsible for coordinating fire operations issues and procedures for all fire districts in Clackamas County. The FDB extended its membership to wildland fire agencies to address potential wildfire issues. This also allows for better communication during the wildland fire season, as the rural and wildland agencies often work together. The FDB meets monthly and addresses the different issues surrounding fire operations and emergency response.

Clackamas Wildfire Collaborative

The Clackamas Wildfire Collaborative (CWC) is a consortium of structural and wildland fire agencies and organizations that will begin operating in 2024. The CWC is a division of the Clackamas County Fire Defense Board and will handle all wildfire education, GIS mapping, and mitigation activities throughout the county. The CWC will help all local fire districts meet their CWPP goals, support the Mt. Hood Corridor Partnership (which serves as a model for the CWC), and encourage other vulnerable areas to form similar wildfire partnerships.

The county Fire Defense Board previously operated a Fire Prevention Cooperative that delivered outreach and educational programs (like grade school fire safety programs), home assessments, fuels reduction projects, and essential GIS mapping services. This group ceased meeting in 2017.

Structural Ignitability

To effectively reduce structural ignitability, there must be coordination and communication between fire professionals and regulatory agencies. Since 2005, a great deal of progress has been made to strengthen these relationships, which has resulted in more effective implementation of the Oregon Fire Code. The 2023 CWPP Update process identified additional actions that will continue to enhance coordination and reduce structural ignitability, including implementing Oregon Fire Code and defensible space requirements under SB 762 through the land use code and building codes.⁴

Progress since the 2018 Plan Update

Since 2018, much has occurred in the wildfire landscape, largely due to the 2020 wildfires that impacted most of the state and significant portions of Clackamas County. Chapter 9: Clackamas County Fire Agencies of this update reports on the action items that have been completed since 2018 and ongoing action items from previous years as well as introduces new action items that reflect the changing perception of wildfire in western Oregon.

In addition, Table 2-1 Clackamas County Grant-Funded Projects, 2012-2017 describes all the major grant-funded projects conducted in Clackamas County between 2012 and 2017. These provide an overview of the types of wildfire mitigation actions being conducted in the county on both the state and local levels.

⁴ Office of the State Fire Marshal. *Oregon Defensible Space*. <https://oregondefensiblespace.org/>.

Table 2-1 Clackamas County Grant-Funded Projects, 2012-2017

Grant Name	Funding Amount	Acres Treated	Federal Acres	Accomplishments
Oregon Department of Forestry				
Title III – Firewise (2012-2015)	\$180,020	0	0	ODF received Title III funding to promote the Firewise USA program, with the goal of creating certified communities in high-priority Communities at Risk.
Title III – Fuel Reduction Crew (2012-2013)	\$288,288	82	0	The ODF Fuels Reduction Crew was an eight to twelve-member seasonal crew responsible for implementing fuels reduction projects on public land or in community common areas.
Title III – Wildfire Prevention Plan (2012-2013)	\$67,895	0	0	ODF received Title III funding to facilitate the 2012 Clackamas CWPP update. The Grant Coordinator provided coordination and planning with rural fire districts, County Emergency Management, and other officials in cities and county government.
WSFM – East Clackamas (2012-2018)	\$263,081	170	0	Western States Forest Managers funded an ODF program designed to help forestland owners that have limited budgets for implementing fuels reduction projects.
Title III – Firewise/Coffee Creek (2016)	\$150,383	50	0	ODF received Title III funding to fund the Coffee Creek Fuels Reduction Crew, one designated Firewise community, and other wildfire prevention and Firewise events.
Title III – Firewise/Coffee Creek/Clackamas CWPP (2017)	\$240,186	78	2	ODF again received Title III funding to fund the Coffee Creek Fuels Reduction Crew, one designated Firewise community, and other wildfire prevention and Firewise events.
<i>Total</i>	\$1,189,853	380	2	
Clackamas Fire Department #1				
ODF Water Tank Grant	\$10,000	0	0	CFD received ODF funding for a 30,000-gallon water tank at the Clarkes Station. This site is in the Beaver Creek area and serves as a fill site for both CFD and ODF.
SAFER Grant	\$1,174,390	0	0	CFD used this funding to create six new paid positions, leading to more coverage in the Eagle Creek and Boring areas.
<i>Total</i>	\$1,184,390	0	0	
<i>Grand Total</i>	\$2,374,243	380	2	

Source: Correspondence with ODF and CFD by OPDR Team (October 2023).

Clackamas Community Wildfire Protection Plan 2023 Update

Major Revisions

The 2023 update includes new functional components that represent a significant advancement in wildfire planning. These components include a county social vulnerability assessment to complement the physical wildfire risk assessment provided through Oregon Wildfire Risk Explorer, a chapter dedicated to post-fire recovery and stabilization, and recommendations for integrating the CWPP and its recommendations with other county plans and policies. Integration of the CWPP with other plans and policies serves to inform land use decisions, support state and federal grant applications, and promote cohesive fire planning across mitigation, response, and recovery actions.

The additions to this CWPP reflect the advances in the study of wildfire and community planning efforts as well as the changing legislative environment concerning wildfire. The additions to the document will support the county in pursuing competitive grants for wildfire mitigation projects as well as serve as a comprehensive resource for emergency managers and community leaders in preparing their communities for the impacts of wildfire. This plan aims to promote fire resilient communities across Clackamas County.

Methodology

Clackamas County partnered with the Oregon Partnership for Disaster Resilience (OPDR) to complete the 2023 CWPP update. OPDR is an applied research program within the University of Oregon's Institute for Policy Research and Engagement (IPRE). IPRE utilizes a service-learning model to provide clients additional technical capacity through projects that also function as a professional development experience for graduate students enrolled in the Community and Regional Planning Master's program.

The team includes faculty from OPDR, students from the University of Oregon's Community and Regional Planning Master's program, and staff from the Clackamas County Department for Disaster Management, and a steering committee composed of members of the county Fire Defense Board. The Fire Defense Board is composed of all the local fire service organizations as well as state (e.g., Oregon Department of Forestry), and federal fire and forestry agencies (e.g., US Forest Service), county and city departments, and emergency management and response organizations.

The team identified the need for the county to implement an adaptive and cyclical model for wildfire planning. Wildfire is an ongoing and cyclical process in nature and thus, the approach taken to planning for wildfire must be cyclical and adaptive.⁵ Wildfire planning can be conceptualized in four categories: preparedness, implementation, response, and recovery. Traditionally, CWPPs address preparedness and implementation while emergency management plans address response to fire events. The 2023 update incorporates *recovery* into the plan to assist the county with preparing communities to recover in the short and long-term from fire events, accounting for an existing gap in current wildfire planning processes. The adaptive cycle leverages past experiences to inform current recommendations and practices. Introducing cyclical planning to the 5-year update schedule, Clackamas County will remain aware of county wide wildfire risk and position itself as competitive applicant for federal and state grants (see Figure 2-1 The Adaptive Wildfire Cycle).

⁵ Abrams, J. B., Knapp, M., Paveglio, T.B., Ellison, A., Moseley, C., Nielsen-Pincus, M., & Carroll, M.C. (2015). Re-envisioning community-wildfire relations in the U.S. West as adaptive governance. *Ecology and Society* 20(3):34. <http://dx.doi.org/10.5751/ES-07848-200334>.

Figure 2-1 The Adaptive Wildfire Cycle



Source: Oregon Partnership for Disaster Resilience, 2022.

In compliance with the Healthy Forest Restoration Act of 2003, the methodology for the 2023 update focuses on **collaboration, assessment and mitigation of risk, identification of fuels reduction projects, implementation, post-fire recovery, and planning interconnections.**

Collaboration

Collaboration with county stakeholders was supported through three strategies: interviewing community members, distributing a survey to the broader public, and facilitating a stakeholder forum.

Interviews

In 2022, the team interviewed a total of 20 stakeholders that included land managers, utility providers, local organizations, and community representatives. The interviews were conducted throughout the six (6)-month project period and processed in the following form:

1. Stakeholder interviewees were identified by the project team.
2. Interviews were conducted.
3. Project members prepared summaries of each interview.
4. Interview summaries were separated into groups based on stakeholder background (e.g., land and fire managers; government offices and utility providers; community leaders and community organizations).
5. Each interview group was interviewed for common themes, recommendations, and any identified high-risk areas.
6. The results for each stakeholder group were then cataloged and summarized.

Survey

The project team, in collaboration with Clackamas County, also developed and distributed a survey to community members throughout Clackamas County. The survey contained 42 questions that allowed for broader outreach to county residents to assess the perception of wildfire issues and general preparedness of community members for a wildfire event.

Community Forum

In addition to stakeholder interviews and the community survey, the team organized and facilitated a virtual community partner forum to convene stakeholders for a collaborative discussion about perceptions of risk, post-fire recovery needs, and identifying funding for projects. The forum provided a valuable opportunity for **social learning** between stakeholders. Social learning is the process of gaining new perspectives, information, and behaviors by interacting and engaging in dialogue with others. In the case of wildfire preparedness, social learning allows organizations that would normally not have an opportunity to engage with wildfire planning at this level to share their concerns and, in turn, better understand the perspective of fire managers.

Risk Assessment

The risk assessment section contains two components. The first is a quantitative risk assessment, produced by Oregon State University, updating the Oregon Wildfire Risk Explorer Map, which examines physical risk factors such as topography, groundcover, and fuel load.

The 2023 update also includes a second component, a social vulnerability assessment map, which examines the risk of wildfire to socially vulnerable populations throughout Clackamas County. The definition of socially vulnerable populations comes from the Oregon Senate Bill 762, which describes socially vulnerable as including low income and significant non-English speaking populations.

Both maps described above, along with the overall Wildfire Risk Assessment and the Wildland-Urban Interface, can be found in Appendix E: Maps.

Identification of Projects

Table 2-2 Clackamas Community Wildfire Protection Plan Map Directory

Map Name
Map 3-1 Clackamas County Cities and Census Designated Places
Map 9-1 Aurora Fire District Wildfire Risk and Social Vulnerability
Map 9-2 Canby Fire District Wildfire Risk and Social Vulnerability
Map 9-3 Clackamas Fire District (including Gladstone Fire Department and Sandy Fire District #72) Wildfire Risk and Social Vulnerability
Map 9-4 Colton Rural Fire District Wildfire Risk and Social Vulnerability
Map 9-5 Estacada Fire District Wildfire Risk and Social Vulnerability
Map 9-6 Gladstone Fire Department (including Clackamas Fire District and Sandy Fire District #72) Wildfire Risk and Social Vulnerability
Map 9-7 Hoodland Fire District #74 Wildfire Risk and Social Vulnerability
Map 9-8 Lake Oswego Fire Department Wildfire Risk and Social Vulnerability
Map 9-9 Molalla Rural Fire Protection District #73 Wildfire Risk and Social Vulnerability
Map 9-10 Monitor Rural Fire Protection District Wildfire Risk and Social Vulnerability
Map 9-11 Sandy Fire District #72 (including Clackamas Fire District and Gladstone Fire Department) Wildfire Risk and Social Vulnerability

Map Name

Map 9-12 Silverton Fire District #2 Wildfire Risk and Social Vulnerability
Map 9-13 Tualatin Valley Fire & Rescue Wildfire Risk and Social Vulnerability
Map E-1 Base Map with Land Management, Road Networks, and Hydrology
Map E-2 Fire Protection Districts
Map E-3 Social Vulnerability
Map E-4 Wildfire Risk and Fire History
Map E-5 Wildfire Risk
Map E-6 Fire History
Map E-7 Priority Wildfire Mitigation Areas
Map E-8 Integrated Conditional Net Value Change
Map E-9 Integrated Expected Net Value Change
Map E-10 People and Property Conditional Net Value Change
Map E-11 Drinking Water Conditional Net Value Change
Map E-12 Timber Conditional Net Value Change

Implementation

The implementation chapter catalogs the recommendations and projects identified during the community engagement and risk assessment. Where possible, implementation steps include clear project definitions including location, opportunities, barriers, and both physical and social risk information.

Post-Fire Recovery

Post-fire recovery is a new addition to the CWPP structure. The team determined through stakeholder interviews, the community partner forum, and case studies from other CWPPs that post-fire recovery recommendations and resources were needed to create a wildfire resilient community. The section on post-fire recovery should be revisited during the next update with specific engagement from communities affected by the 2020 fires and the emergency management organizations referenced in the County Emergency Operation Plan to identify needs and concerns for short and long-term recovery.

Interconnection with Other Plans and Legislation

A key component of the 2023 update is the explicit interconnection of the CWPP with other state and county plans. By cross-referencing plans, the County can better justify wildfire mitigation and recovery actions and align the action items outlined in the implementation section with the planning goals and policies of the state and the County. Plan integration can improve cohesion, resulting in better coordination among the activities carried out by multiple county departments. For example, integrating the CWPP with the Clackamas Emergency Operations chapter on wildfire ensures that all stages of the adaptive fire planning cycle are compatible.

Additionally, this update accounts for recent legislation emerging at the state and federal levels that directly affects wildfire planning and mitigation work.

As a result, the 2023 update integrates recommendations with the content of the following plans:

- The Clackamas County Comprehensive Plan
- The Clackamas County Natural Hazard Mitigation Plan
- The Clackamas County Emergency Operations Plan
- The Blueprint for a Healthy Clackamas County

- Oregon Senate Bill 762: The Wildfire Omnibus Bill
- The Infrastructure Investment and Jobs Act (IIJA)⁶

Clackamas County Comprehensive Plan

Currently, wildfire is not explicitly mentioned within the Clackamas County Comprehensive Plan. However, the process of wildfire planning, mitigation, response, and recovery are influenced by the Comprehensive Plan's values. State Planning Goal 1, Citizen Involvement, is included as Chapter 2 of the Clackamas Comprehensive Plan and is identified as a priority throughout the plan. Outreach and engagement with the community has been the focus of the 2023 update to the CWPP as it reflects the goals of the state and county to have plans informed by community members. To accomplish this objective the project team engaged non-traditional stakeholders from around the county as well as distributed a county-wide community survey to better engage and inform the public about fire risk. To best protect life and property the county will continue to engage the public around wildfire issues.

Chapter 4 of the Clackamas Comprehensive Plan – Land Use – does not address wildfire risk or the Wildland Urban Interface (WUI). As the county continues to grow and develop, it will be crucial to guide the process of development in the WUI in a manner that promotes fire resilient communities to better protect lives and property. Development standards, such as mandatory defensible space, fire resistant building materials, and other actions promoting fire resilient structures in high-risk areas of the WUI should be considered.

The Clackamas County Natural Hazard Mitigation Plan

The Natural Hazard Mitigation Plan (NHMP) for Clackamas County mainly examines the risk and probability of wildfire in relation to other possible hazards. The NHMP outlines mitigation actions such as encouraging landowners to create defensible space around their property. The chapter discussing wildfire in the NHMP lists the CWPP as the main planning document for wildfire and an executive summary of the CWPP is inserted.

As the CWPP executive summary functions as the wildfire chapter of the NHMP, the CWPP serves as the comprehensive wildfire mitigation planning document for the county. It is critical that this updated CWPP address all stages of adaptive fire planning and interconnect with hazard prevention and emergency management plans.

The Clackamas County Emergency Operations Plan

The Clackamas County CWPP does not include planning for emergency operations during wildfire events. Emergency operations during active fires falls under the purview of individual fire districts and fire managers at Oregon Department of Forestry and the US Forest Service.

The county's Emergency Operation Plan discusses emergency incident management and collaboration across departments. Emergency Support Function (ESF) Annex 4 discusses firefighting for urban, rural, and wildland areas. The document is aimed at providing a framework and protocol for cohesive collaboration between agencies and community partners in the event of an extraordinary emergency or natural disaster. ESF 4 describes the activities and roles each county agency plays in the detection, suppression, and management of a fire event. It identifies the primary agency as the county Fire Defense Board, many members of which serve on the steering committee for the CWPP update process.

⁶ The Infrastructure Investment and Jobs Act is commonly called the Bipartisan Infrastructure Bill passed by in 2021 Congress under the Biden Administration.

The supporting organizations for fire response in ESF 4 are the county disaster management office, Health, Housing, and Human Services, the county Sheriff's office, Public and Government Affairs, Transportation and Development, and Clackamas County Communication.

As these agencies are listed as supporting fire emergency response, they should be included in planning for short- and long-term fire recovery efforts. Additionally, the CWPP should be referenced within the ESF 4 section on preparedness to direct fire managers and community partners to the mitigation actions identified in the implementation chapter of the CWPP.

The Blueprint for Healthy Clackamas County

The Blueprint for Healthy Clackamas County is the county's Community Healthy Improvement Plan that outlines priorities and partnerships that improve the health and quality of life for area residents.

Health equity zones were created to provide a deeper local assessment of community needs. The health equity zones match school district boundaries. Each zone is grounded in racial and health equity, trauma-informed care, health across lifespan, and climate conscious strategies. Within this range of concerns, there is an obvious opportunity for cross collaboration between public health and wildfire resiliency.

Understanding trauma and mental health, providing smoke refugee centers, and indoor air purification systems are all examples of cross planning. Additionally, in post-fire recovery, public health is one of the many responders. By working together and being informed of their work, the CWPP can become a stronger, holistic plan.

The National Cohesive Wildland Fire Management Strategy

The National Cohesive Wildland Fire Management Strategy is a strategic objective aimed at increasing collaboration among all stakeholders and across all landscapes, using science, to make progress toward three specific goals:

1. Resilient Landscapes
2. Fire Adapted Communities
3. Safe and Effective Wildfire Response

The vision is *"To safely and effectively extinguish fire when needed; use fire when allowable; manage our natural resources; and as a nation, to live with wildland fire".*⁷

This strategy explores four broad challenges to meet the before mentioned goals:

1. Managing vegetation and fuels;
2. Protecting homes, communities, and other values at risk;
3. Managing human-caused ignitions; and
4. Effectively and efficiently responding to wildfire.

The OPDR Team used the National Cohesive Strategy as a reference document when updating the CWPP. We assessed risk within Clackamas County, based on its three main goals.

Infrastructure Investment and Jobs Act

The federal Infrastructure Investment and Jobs Act created multiple new funding programs and opportunities for communities and forest managers to engage in collaborative wildfire mitigation. The most applicable section to a CWPP and wildfire mitigation funding more broadly is Title 8, Section 40803: *Wildfire Risk Reduction*, Subsection f: *Community Wildfire Defense Grant Program*.

⁷ U.S. Department of Agriculture, n.d. *The National Strategy: The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy*. <https://www.forestsandrangelands.gov/strategy/thestrategy.shtml>.

This grant program’s purpose is to assist communities in funding original drafting or revisions to their CWPPs while providing larger grants for executing fuel reduction and mitigation projects identified within existing CWPPs. Grants of up to \$10 million will be available for mitigation projects identified in the CWPP. Specific priority for this grant money is given to low-income communities with the possibility of waiving the match requirements for grants for underserved communities.

These prioritization criteria are important to our project in Clackamas County as we will be including social vulnerability within the CWPP risk assessment. This creates opportunities to make Clackamas County mitigation projects more competitive when applying for national grants.

A key aspect of this grant program is its eligibility requirement, which states that the United States Department of Agriculture will not approve a grant to a community on the continental US that has not adopted an ordinance or regulation that requires the construction of new roofs on buildings to adhere to standards that are like or more stringent than standards of National Fire Protection Association or code established by applicable model building code by International Code Council.

These criteria should be taken into consideration by the county when they next update their building codes.

Senate Bill 762 – The Oregon Wildfire Omnibus Bill

Another key piece of recent legislation related to wildfire is Oregon Senate Bill 762 (SB 762), known as the Wildfire Omnibus Bill. The bill directs state agencies to make dramatic changes to the way they assess and mitigate wildfire risk, as well as creates advisory boards, appropriates funding, and creates grant programs.

SB 762 emphasizes including a wider range of stakeholders in the wildfire planning process such as the Department of Human Services, the Department of Environmental Quality, the County Planning Department, forest landowners, and electric utility providers.

Key programs within SB 762 include Section 13, Health Systems for Smoke, which creates a grant program for local governments to create smoke shelters and retrofit existing public facilities with air filtration systems as well as directs the State Fire Marshal to prioritize funds for defensible space around socially vulnerable communities.

The 2023 update is informed by the directions of SB 762 and its ongoing rulemaking.

Chapter 3: Community Profile

This chapter provides an overview of Clackamas County’s demographic, geographic, and climatic characteristics. The distribution, age, and race of the county’s population is compared to its housing, economy, and climate. This provides context for the region’s fire history.

Population Demographics

Understanding the demographics in Clackamas County will give officials an understanding of where populations live, what groups suffer from income disparity, housing tenure and types, and which areas are disproportionately at risk of a wildfire disaster. Demographics data for this section comes from the 2020 US Census Bureau Preliminary Decennial Census data, the 2020 American Community Survey (ACS) 5-year estimates, and Portland State University’s Population Research Center (PSU). County demographics can determine whether a specific region is eligible to receive state or federal funding for wildfire mitigation. See Appendix A: Wildfire Mitigation Funding Opportunities for more information.

Spatial Characteristics

The U.S. Census delineates areas of settled population concentrations that are identifiable by name but are not legally incorporated as Census Designated Places (CDPs). There are 16 cities and nine CDPs that are completely inside Clackamas County or that have a part of the city within the county (Table 3-1).

Table 3-1 Clackamas County Cities and Census Designated Places

Incorporated Cities		Unincorporated Census Designated Places
Barlow	Molalla	Beavercreek
Canby	Oregon City	Boring
Estacada	Portland (part)*	Damascus
Gladstone	Rivergrove (part)	Government Camp
Happy Valley	Sandy	Jennings Lodge
Johnson City	Tualatin (part)*	Mount Hood Village
Lake Oswego (part)	West Linn	Mulino
Milwaukie	Wilsonville (part)	Oak Grove
		Oatfield
		Rhododendron
		Stafford

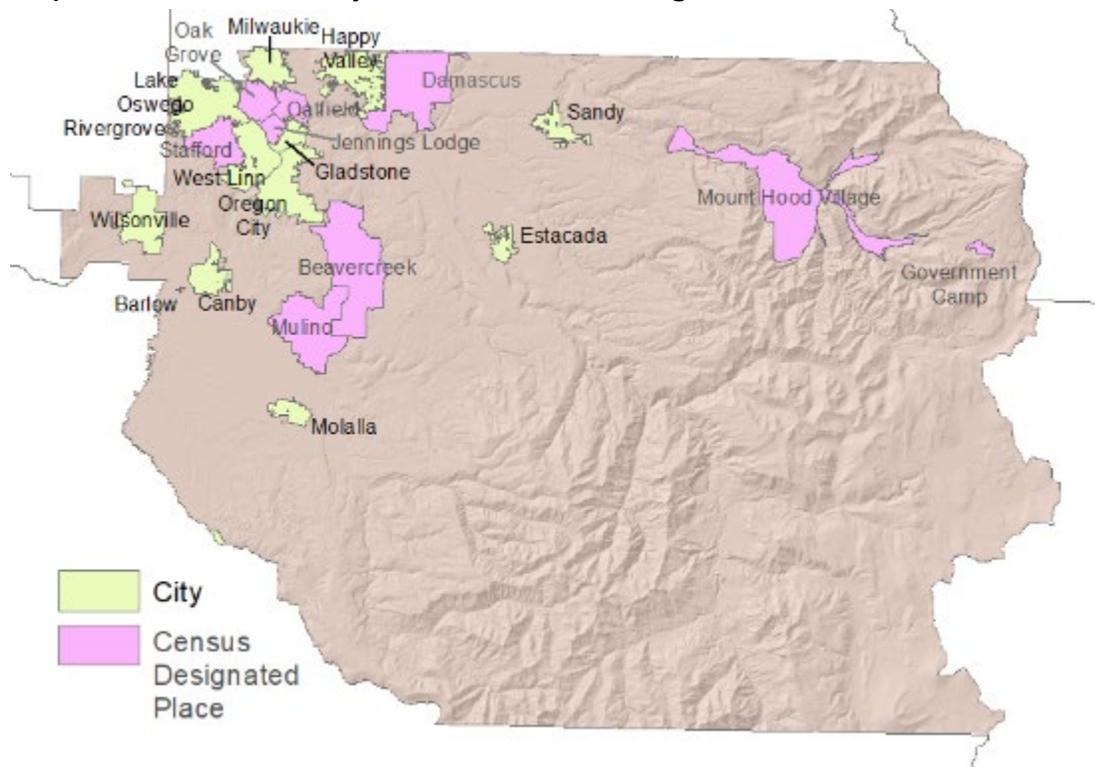
Source: Portland State University Population Research Center, US Census, Tiger Lines Files.

Notes: *The majority of the Portland and Tualatin populations are outside of Clackamas County and are not profiled in this plan.

**Mount Hood Village CDP is noted elsewhere in this report as The Villages at Mt. Hood.

Clackamas County has a population of 425,316 and is expected to grow 21% to 505,622 by 2040.⁸ Clackamas County’s major population centers are generally located in the urban northwest portion of the county (Map 3-1). Lake Oswego (40,801) and Oregon City (37,737) are the largest cities in the county.⁹ The unincorporated parts of the county account for about 44% (185,860) of the overall population. The eastern side of Clackamas County is rural and less populated. Much of the eastern side is owned by the United States Forest Service (Map E-1) and is managed as resource lands for timber harvest and wilderness.

Map 3-1 Clackamas County Cities and Census Designated Places



Source: OPDR, 2018, US Census Bureau. Tiger Lines Files

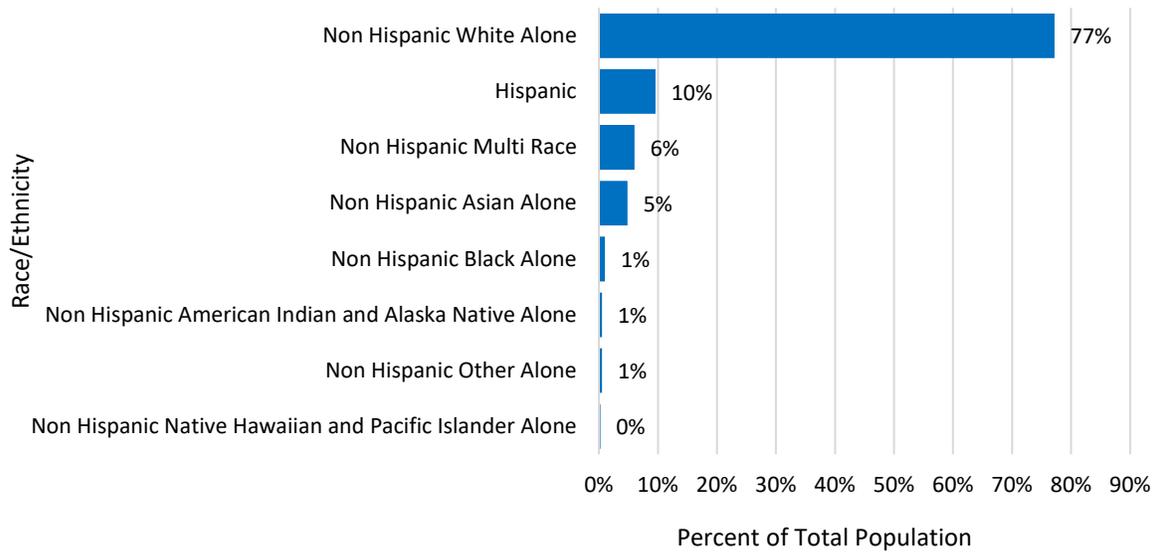
Population by Race/Ethnicity

Clackamas County is predominantly white (77%). Approximately 10% of the total population identifies as Hispanic, 6% identifies as multi-race, and 5% identifies as Asian. Figure 3-2 shows the race/ethnicity of individuals living in Clackamas County as a percentage of the total population.

⁸ Portland State University. Population Research Center, "Annual Population Estimates" (2021) and "Current Forecast Summaries for all areas" (2020). Accessed December 1, 2022. <https://www.pdx.edu/population-research/>.

⁹ Ibid.

Figure 3-2 Race and Ethnicity as a Percentage of Total Population, Clackamas County, 2020

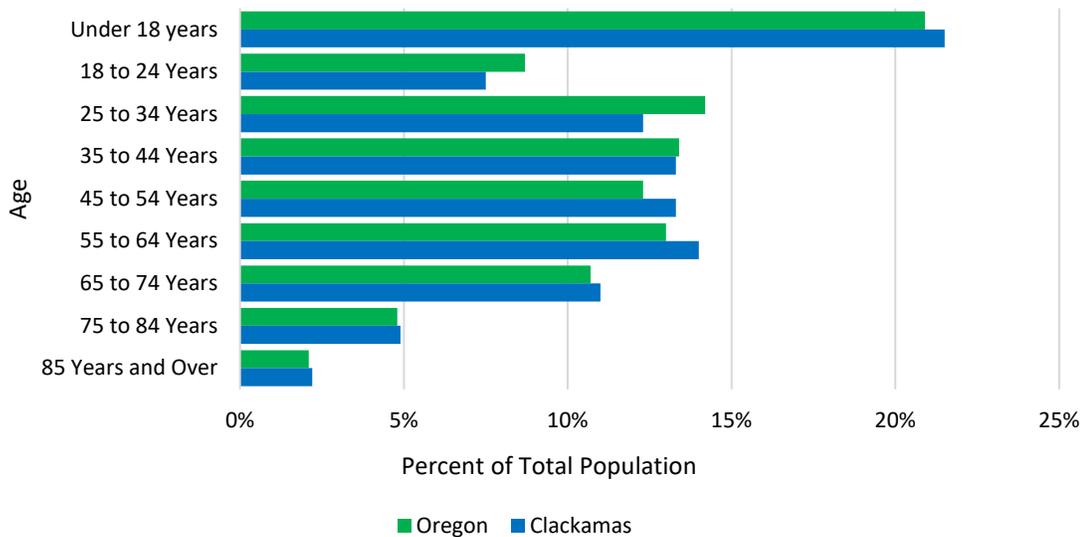


Source: Social Explorer Tables (SE), Census 2020 - Preliminary Data, SE: T003, Analysis by OPDR.

Age

Age distribution (Figure 3-3) in Clackamas County is similar to the rest of Oregon. No significant differences were observed in the data between Clackamas County and Oregon.

Figure 3-3 Age Distribution of Clackamas County as a Percent of Total Population, Clackamas County and Oregon, 2016-2020



Source: Social Explorer Tables: ACS 2020 (5-Year Estimates) (SE), ACS 2020 (5-Year Estimates), Social Explorer SE:A01001 Age; US Census Bureau US Census Bureau, Analysis by OPDR.

Housing Tenure

More individuals own a home in Clackamas County compared to the state (about 8% more owner occupied homes).

Table 3-2 shows the housing tenure for Clackamas County and Oregon in 2020.

Table 3-2 Housing Tenure, Clackamas County and Oregon, 2016-2020

Tenure	Percent of Total Households	
	Oregon	Clackamas County
Owner Occupied	63%	71%
Renter Occupied	37%	29%

Source: Social Explorer Tables: ACS 2020 (5-Year Estimates) (SE), ACS 2020 (5-Year Estimates), Social Explorer; US Census Bureau, SE: A10060 Tenure, Analysis by OPDR.

Housing Type

Clackamas County contains mostly detached, single-family homes (69% of total homes). Clackamas County also has a greater amount (about 5%) of single-family homes than Oregon as a percent of the total housing type composition. Table 6 shows the housing types for Clackamas County and Oregon.

Table 3-3 Housing Type, Clackamas County and Oregon, 2016-2020

Housing Units	Percent of Total Housing Units	
	Oregon	Clackamas County
1 Unit:	68%	73%
1, Detached	63%	69%
1, Attached	5%	5%
2	3%	1%
3 or 4	4%	3%
5 to 9	4%	4%
10 to 19	4%	4%
20 to 49	3%	3%
50 or More	6%	6%
Mobile Home	8%	6%
Boat, RV, Van, etc.	<1%	<1%

Source: Social Explorer Tables: ACS 2020 (5-Year Estimates) (SE), ACS 2020 (5-Year Estimates), Social Explorer; US Census Bureau, SE:A10032. Housing Units in Structure, Analysis by OPDR.

Housing Cost to Income

About 34% of homeowners and 48% of renters in Clackamas County spent 30% or more of their total income on housing costs from 2016-2020. This percentage is comparable to Oregon. Table 3-4 shows the number and percentage of people who pay 30% or more of their income for their housing costs.

Table 3-4 Homeowners and Renters Paying 30% or More of Their Income on Housing Cost, Clackamas County and Oregon, 2016-2020

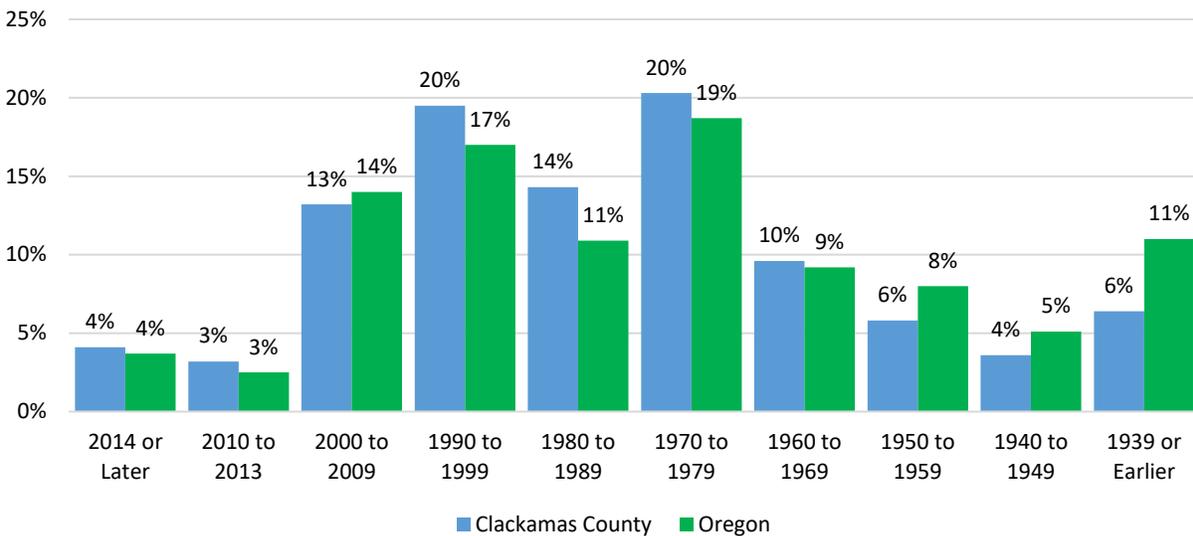
Tenure	Oregon		Clackamas County	
Owner-Occupied Housing Units	1,031,006		113,015	
Homeowners Paying at Least 30% of Income for Ownership Costs	252,607	25%	27,727	25%
Homeowners Paying at Least 50% of Income for Ownership Costs	98,110	10%	10,849	10%
Renter-Occupied Housing Units	611,573		46,315	
30 to 49 Percent	147,000	24%	11,041	24%
50 Percent or More	144,535	24%	11,400	25%

Source: Social Explorer Tables: ACS 2020 (5-Year Estimates) (SE), ACS 2020 (5-Year Estimates), Social Explorer; US Census Bureau US Census Bureau, B10040 and B18002, Analysis by OPDR.

Age of Homes

About 40% of the homes in Clackamas County were built during two decades: the 1970s and the 1990s. This trend is comparable to the age of homes throughout Oregon. Figure 3 shows the distribution of when homes were built in Oregon and Clackamas County.

Figure 3-4 Age of Homes, Clackamas County and Oregon, 2016-2020

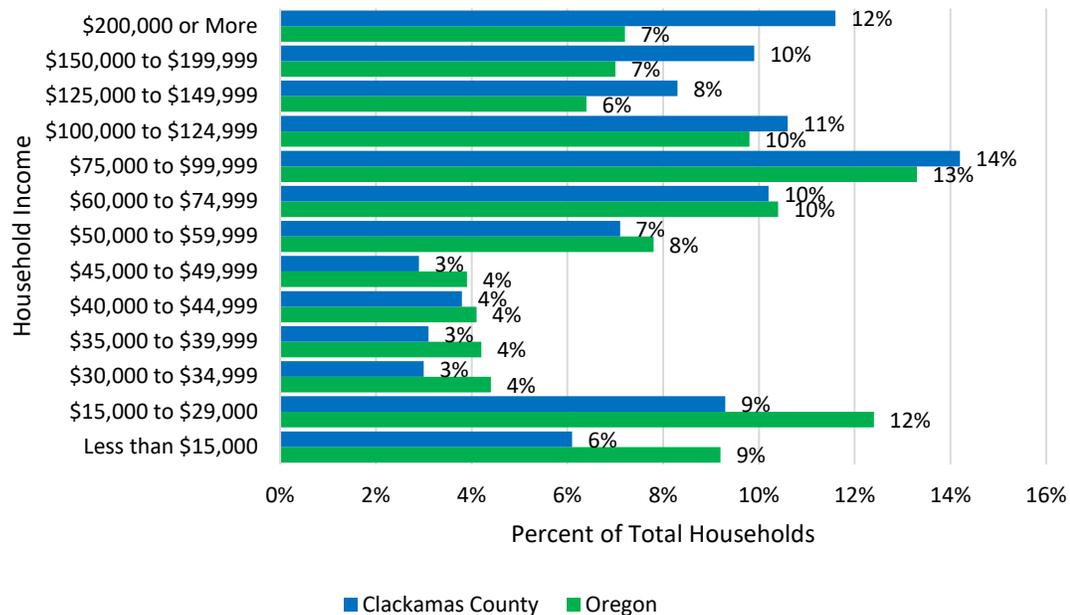


Source: Social Explorer Tables: ACS 2020 (5-Year Estimates) (SE), ACS 2020 (5-Year Estimates), Social Explorer; US Census Bureau US Census Bureau, A10055, Analysis by OPDR .

Income

Clackamas County’s population is comparatively wealthier than Oregon. Nearly 11% of residents in Clackamas County earn more than \$200,000 per year; compared to the 6.5% of Oregon residents that earn over \$200,000. Clackamas County also has fewer (29.3%) residents that earn less than \$50,000 per year compared to Oregon (40.3%). Figure 3-5 shows the income of Clackamas County and Oregon as a percent of the total population.

Figure 3-5 Household Income, Clackamas County and Oregon, 2016-2020

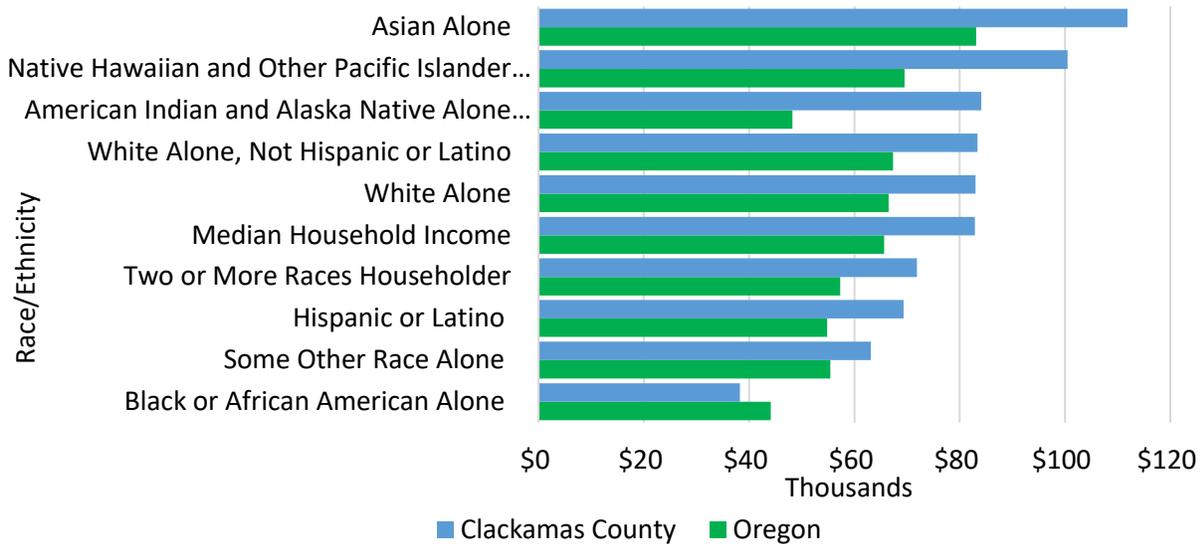


Source: Social Explorer Tables: ACS 2020 (5-Year Estimates) (SE), ACS 2020 (5-Year Estimates), Social Explorer; US Census Bureau US Census Bureau, A14001, Analysis by OPDR

Median Household Income by Race/Ethnicity

In Clackamas County, median household income is highest for individuals that identify as Asian and Native Hawaiian and Pacific Islander (about \$111,461 and \$100,461 respectively). African American households earn the least of all demographic racial groups in Clackamas County and earn less than other African American households in Oregon. Hispanic and Latino households’ median income is about \$13,000 less than white households. Figure 3-6 shows the median annual income for Oregon and Clackamas County in 2016-2020.

Figure 3-6 Median Household Income by Race/Ethnicity, Clackamas County and Oregon, 2016-2020



Source: Social Explorer Tables: ACS 2019 (5-Year Estimates) (SE), ACS 2020 (5-Year Estimates), Social Explorer; US Census Bureau US Census Bureau, A14001, Analysis by OPDR

Geography and Environment

Clackamas County has an area of 1,879 square miles and is located along the Willamette River in Northwestern Oregon. About one-eighth of the land area in Clackamas County is incorporated, while a majority is unincorporated. More than three-fourths of the county’s area lies within the lower Willamette River basin. The Clackamas, Molalla, Pudding, and Tualatin rivers are major tributaries that flow into the Willamette. The remaining one-fourth of the county is within the Lower-Columbia-Sandy River basin, a tributary of the Columbia River.

Elevations in the county range from a high of 11,235-feet at the peak of Mount Hood (the highest point in the state) to a low of 55-feet in Oregon City along the shores of the Willamette River. There are a variety of complex eco-regions, including high-altitude forests, foothills, lowlands and valleys, prairie terraces, and riparian forest.

Clackamas County has two major physiographic regions that should be considered in planning for natural hazards: the Willamette River Valley and the Cascade Range Mountains. The Willamette Valley, in western Clackamas County, is the most heavily populated portion and is characterized by flat or gently hilly topography. The Cascade Range, in eastern and southern Clackamas County, has a relatively small population and is characterized by heavily forested slopes.

Clackamas County has a long growing season and mild temperatures, which lead to a wide range of agricultural activities. Seasonal flooding, high ground water levels, and soil erosion cause most of the non-urban drainage problems in the county. When maintained in their natural state, Clackamas County’s wetlands control runoff and decrease soil erosion and water pollution while reducing potential damage from flooding and helping to recharge water supplies.

Cascade Mountains

As Oregon’s tallest peak, Mount Hood borders the eastern edge of Clackamas County and rises to 11,235 feet. Nearby volcanic neighbors along the Cascade Range include Mount St. Helens, Mount Adams, and Mount Jefferson. Mount Hood has had at least four major eruptive periods in the past 15,000 years, with the most recent one taking place around 1805, shortly before the arrivals of Lewis and Clark. These eruptions produced deposits that were primarily distributed along the Sandy and Zigzag rivers in Clackamas County. As one of the major volcanoes in the Cascade Range, it contributes to valuable water, scenic, and recreational resources that help to sustain agricultural and tourist segments throughout the region. When Mount Hood erupts again, volcanic ash is expected to fall and severely affect areas on its flanks as well as downstream in the major river valleys that lie in the path of the volcano.¹⁰

Willamette River

The Willamette River Basin covers 11,500 square miles, encompassing 16,000 miles of streams and is ranked 12th among US rivers in volume.¹¹ The river is about 187 miles long and is unique because it flows from the south to the north, originating in the mountains of west central Oregon, passing through Oregon City and over Willamette Falls, passing through the City of Portland and then emptying out into the Columbia River.¹² The Willamette River is a vital, multi-purpose waterway that touches the lives of millions of people along its banks throughout the Pacific Northwest. It has generated economic growth and promoted quality of life for the past 150 years while acting as a source of power, irrigation, forestry, agriculture, and recreation.

Clackamas River

Located west of the Cascade Range, the Clackamas River flows through a steep-walled canyon lined with dense forest and basalt crags as it heads towards its confluence with the Willamette River near Gladstone and Oregon City. This river was added to the Federal Wild and Scenic River System in 1988 and qualifies as “outstandingly remarkable” in five categories—recreation, fish, wildlife, historic, and vegetation.

The Clackamas River Basin is largely forested but has large areas of pasture used for grazing. More than 400,000 people depend on the Clackamas River for their drinking water. Parts of three streams/ivers within the watershed are listed as “water-quality limited” on the state’s 303(d) list, mostly for high water temperatures in the summer. These include the: lower Clackamas River (river mouth to River Mill Dam), Fish Creek (mouth to headwaters), and Eagle Creek (mouth to wilderness boundary).

The Clackamas River and its tributaries provide numerous spawning and rearing areas for steelhead, as well as Coho and Chinook salmon. However, the Endangered Species Act listed the river’s steelhead as “threatened” on March 13th, 1998. The watershed is home to two wilderness areas: the Salmon-Huckleberry Wilderness and the Bull of the Woods Wilderness. More than 72 percent of land in the watershed is publicly owned, predominantly by the US Forest Service.

Sandy River

The Sandy River originates high on the slopes of Mount Hood, about 50 miles east of Portland. The headwaters are beneath Reid and Sandy Glaciers at 6,000 feet in elevation. From there the river flows due west through the Hoodland Corridor, past the communities of Welches, Brightwood, and Sandy, before turning north to enter the Columbia River near Troutdale, 10 miles east of Portland. Two separate

¹⁰ U.S. Geological Survey, The Cascade Range, “Description: Mount Hood Volcano”.

¹¹ Portland Bureau of Environmental Services. “Willamette Watershed.”

¹² Willamette River Water Coalition. “About the Willamette River.”

sections of the Sandy River have been designated Federal Wild and Scenic Waterways. Riverside trails offer spectacular scenery, easily observed geologic features, unique plant communities, and other wilderness experiences. Just outside Portland, the lower Sandy flows through a deep, winding, forested gorge known for its anadromous fish runs, botanical diversity, recreational boating, and beautiful parks.

Climate

Situated in the northern portion of the Willamette Valley, Clackamas County experiences a relatively mild climate with cool, wet winters and warm, dry summers. Temperatures in the valley may exceed 90°F in the summer or drop below 30°F in the winter but are generally more moderate than temperatures at higher elevations. Average temperatures in the summer range from the low 80s down to the low 50s, while average temperatures in the winter range from the mid-40s to the low 30s. Because of these mild temperatures, the average growing season in Clackamas County generally lasts for 150-180 days in the lower valley and for 110-130 days in the foothills (i.e., roughly above 800–feet in elevation).

The most important determinant of precipitation is elevation. Because Clackamas County widely spans from the valley floor of Oregon City at 55 feet to the top of Mount Hood at 11,235 feet, there is considerable variation of precipitation totals in the form of rain and snow throughout the county.

The monthly and annual averages of snowfall show that the valley floor experiences a mild winter with annual averages of 1-10 inches of snow per year, while the communities in the lower Cascades surrounding Mount Hood, such as Government Camp, are covered with snow for most of the winter months (annual average of 250 inches).

Total precipitation in the Pacific Northwest region may remain similar to historic levels but climate projections indicate the likelihood of increased winter precipitation and decreased summer precipitation.

Increasing temperatures affects hydrology in the region. Spring snowpack has substantially decreased throughout the western part of the United States, particularly in areas with milder winter temperatures, such as the Cascade Mountains. In other areas of the West, such as east of the Cascades Mountains, snowfall is affected less by the increasing temperature because the temperatures are already cold and more by precipitation patterns.

Ownership and Land Cover

More than half of the land in Clackamas County is federally owned by either the BLM (6%) or the US Forest Service (45%). Another 46% is privately owned, while 1% is owned by the state.¹³

The eastern portion of the county is mostly rural and is where most of the US Forest Service owns their land. On the contrary, the western portion of the county is more urbanized with a higher percentage of privately owned land. The western portion also includes zoning for agriculture, forest, rural exception, and the urban growth boundary; a vast majority of this portion of the county is either included in an Urban Growth Boundary or is designated as rural reserve.

According to the *Willamette Valley Land Use/Land Cover Map Informational Report*, most of the land cover that includes farmland used for production of tree fruits, vineyards, berries, Christmas trees, and nursery stock can be found in Clackamas County.¹⁴ The report goes on to discuss that the valley portion of the county can be characterized by row crops in the bottomland along the Willamette, Pudding, and

¹³ Loy, W. G., ed. 2001. *Atlas of Oregon*, 2nd Edition. Eugene, OR: University of Oregon Press.

¹⁴ *Willamette Valley Land Use/Land Cover Map Informational Report*. 1998.
<https://digital.osl.state.or.us/islandora/object/osl%3A18785/datastream/OBJ/view>.

Molalla Rivers, with its upland areas characterized by a combination of all the agricultural cover types.¹⁵ Because this area is interlaced with all types and sizes of creeks and swales, the land drains better here than the rest of the Willamette Valley.¹⁶ The foothill areas leading into the Cascade Range can be characterized by rural non-farm small parcels that are agriculture lands with little or no management, as well as large parcels that are being, or have been, broken to make smaller ranches for single-family dwellings.¹⁷ The foothill area in the Cascade Range has also seen a conversion from all types of forested areas to Christmas tree plantations and solid Douglas Fir Forest.¹⁸

Forest Conditions

Forests in Clackamas County range from Douglas fir forests to bottomland hardwood, white oak woodlands, and ash swales. They are managed for recreation, conservation, and timber harvest. Most forest lands in Clackamas County have a Moderate to High Severity Fire Regime in Condition Class 1.

Oregon is already experiencing the impacts of a changing climate, as most recently observed during the 2020 wildfire season. The loss of winter snowpack and summer precipitation has led to more intense and prolonged wildfire seasons. Before 2020, Clackamas had largely been spared from the impacts of wildfire but that changed in 2020. As the climate continues to warm, wildfire impacts are predicted to increase throughout Oregon and the Pacific Northwest.

Acknowledging the history of Clackamas County will encourage better stewardship and respect for the land. For the indigenous Clackamas people, rivers were a way of life. Residing along the Clackamas and Willamette Rivers, these communities and their way of life were sustained by salmon runs. The Clackamas and Milwaukie were the first humans to inhabit this area, stewarding the land for centuries. How indigenous peoples managed their land shaped the relationship of natural resources in the area – specifically fire. We acknowledge the indigenous people who first inhabited the area and honor their connections to the land and how they brought balance of the area's ecosystem.

Historically, fire was a significant driver in native systems to manage food resources and production for the people who lived on this land. Controlled burns were widespread and frequent to ensure dense forests would not encroach on the desired land. Using fire as a land management tool has been reduced, or in some cases eliminated, since tribal land managers were forcibly removed. The result is a forest that is unrecognizable from 100 years ago. Fire was harshly discouraged by the first settlers, and open prairies started to change into forests and woodlands by the mid-nineteenth century. As a result of fire removal and the lack of prescribed burns, forests have become overgrown and dense – increasing the fire risk. Planning for wildfire is now an ever-present risk, forcing managers to adapt to the changing climate.

Fire History

Between 2002 and 2023, a total of 32 named fires burned 578,805 acres in or near Clackamas County (Table 3-5).

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

Table 3-5 Summary of Named Fires, Clackamas County, 2002-2023

Year	Name	Acres
2002	Bowl	264
2006	Blister	501
2008	Lake Lenore	406
2010	Battle Creek 2	1,225
2010	Bull of the Woods	2,811
2010	Fly Lake	1,211
2010	Lemiti	40
2010	Spot	454
2011	Bagby	8
2011	Granite	31
2012	Devils Ridge	33
2014	36 Pit	5,530
2014	488	11
2014	Ester Creek	98
2014	High Rock	13
2014	Skyline Road	116
2017	Jazz	58
2017	Spring Creek	19
2018	Collawash	22
2018	Drum	26
2020	Beachie Creek	193,565
2020	Dowty Road	1,509
2020	Graves Creek	46
2020	Lionshead	204,588
2020	Riverside	138,151
2020	Unger Road	497
2020	Whilhoit Road	532
2021	Janus	24,894
2022	Mclver	30
2023	Forest Park	30
2023	224	31
2023	Camp Creek	2,055
	Total	578,805

Source: Oregon Wildfire Risk Explorer, Oregon Wildfire Risk Map, https://tools.oregonexplorer.info/OE_HTMLViewer/index.html?viewer=wildfire, analysis by OPDR.

Between 2010 and 2019, 84% of ignitions were caused by humans and the remaining 16% of ignitions were from lightning.¹⁹ Until the Riverside Fire in 2020, Clackamas County had largely escaped large fires. The Riverside Fire burned approximately 138,151 acres driven by strong and erratic, easterly winds with very low humidity.²⁰ The Riverside Fire was first detected on September 8, 2020, and grew to 112,000 acres by September 9, 2020. During the fire, crews reported extreme fire behavior, including running crown fire, torching, and long-range spotting. In addition to the Riverside Fire, four other fires started on the same day in Clackamas County: the Dowty, Unger, Graves Creek, and Wilhoit fires. In many ways, the 2020 Labor Day fires showed the influence that a warming climate, fuel buildup, and fire suppression activities can have on wildfire activity.

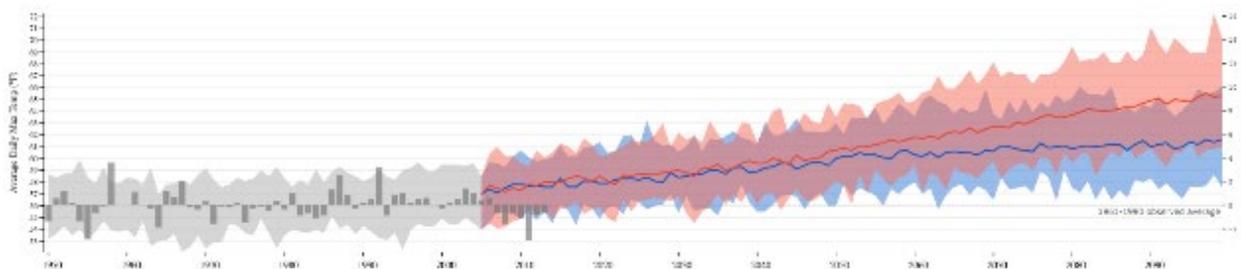
Climate Change

The Fifth Oregon Climate Assessment, released in January 2021 by Oregon State University, documents how Oregon’s climate has changed and projects what future climate conditions will be like if greenhouse gas emissions continue at their current rate. Wildfire occurrence and severity is heavily influenced by climatic conditions like drought, heat, and severe weather. The Fifth Oregon Climate Assessment helps to inform what Clackamas County can expect for increased wildfire occurrence and severity.

Average annual temperature in Oregon has increased by about 2.2°F per century since 1895.²¹ If current greenhouse emissions remain unchanged, average annual temperatures in Oregon are projected to increase by 5°F by 2050 and 8.2°F by 2080.

Figure 3-7 shows observed and projected temperatures in Clackamas County from 1960 to 3000 using two different modeling method for higher emissions (red) and lower emissions (blue). The number of heat events (temperatures above 90°F) have been increasing and that trend is forecast to continue through the century.

Figure 3-7 Observed and Forecast Average Annual Temperatures in Clackamas County, 1960-3000



Source: National Oceanographic and Atmospheric Administration, Climate Explorer Tool, https://crt-climate-explorer.nemac.org/climate_graphs/?city=Clackamas%2BCounty%2C+OR&county=Clackamas%2BCounty&area-id=41005&fips=41005&zoom=7&lat=45.2023855&lon=-122.1188945, Accessed August 18, 2022.

¹⁹ Oregon Wildfire Risk Explorer, 2020, County Summary Report, https://tools.oregonexplorer.info/OE_HtmlViewer/index.html?viewer=wildfire. Primary data Source: USDA Forest Service Pacific Northwest Qualitative Wildfire Risk Assessment (2018).

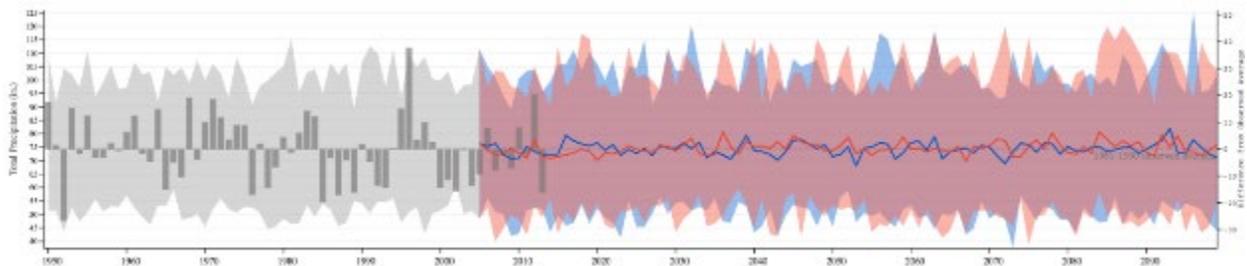
²⁰ FEMA, 2020, Riverside Fire: Erosion Threat Assessment/Reduction Team (ETART) Extended Report, <https://gscdn.govshare.site/1aa8ace4addf06592a8d7dcb775413bf10fd1ec6/ETARTReport-RiversideFire.pdf>.

²¹ Dalton, M. & Fleishman, E., editors. (2021). *Fifth Oregon Climate Assessment*. Oregon Climate Change Research Institute, Oregon State University, Corvallis, Oregon. <https://blogs.oregonstate.edu/occri/oregon-climate-assessments/>.

Precipitation in Oregon is projected to increase in winter months and decrease in summer months.²² The number and intensity of storms is projected to increase in the winter months and primarily fall as rain, leading to a decline in snowpack. The decline in snowpack coupled with warmer average temperatures is projected to shift runoff events earlier in the season and lead to lower streamflow during the summer months and more flooding events during the winter.

Figure 3-8 shows observed annual precipitation for Clackamas County from 1950 to present and projected average annual precipitation for the 20th century. It is important to note that average annual precipitation amounts will not change; the type of precipitation and its timing are projected to change. Drought intensity and occurrence have been increasing and that trend is forecast to continue through the 20th century.

Figure 3-8 Observed Average Annual Precipitation and Projected Average Annual Precipitation in Clackamas County, 1950-3000



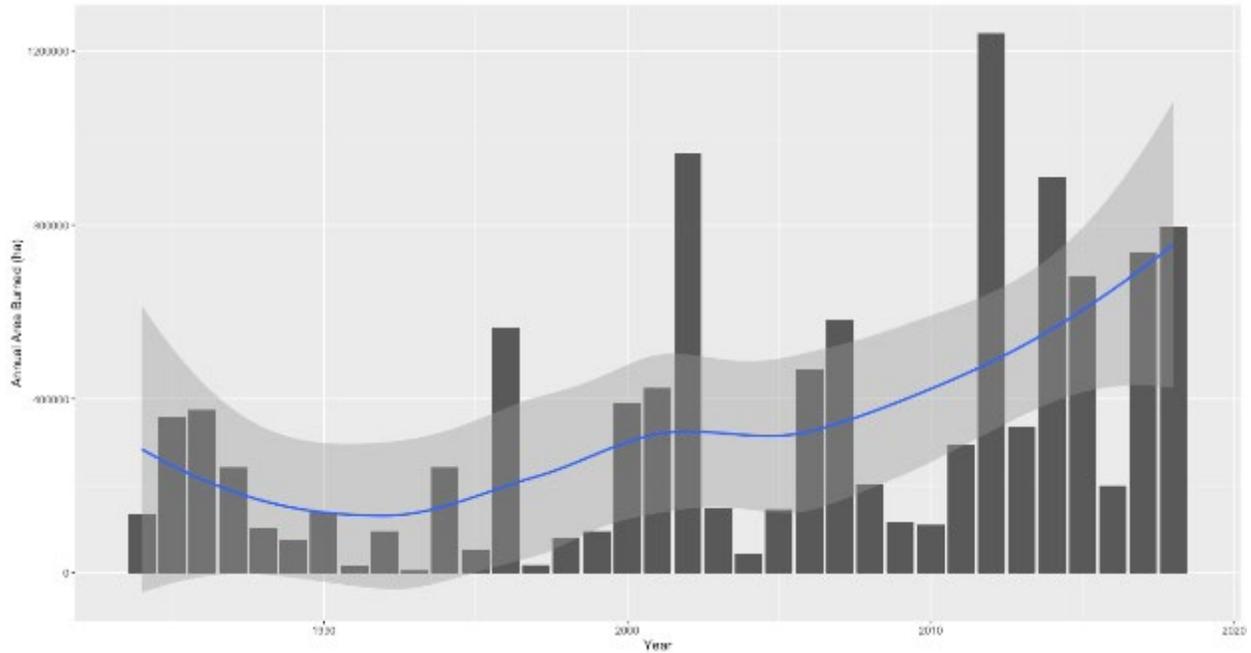
Source: National Oceanographic and Atmospheric Administration, Climate Explorer Tool. https://crt-climate-explorer.nemac.org/climate_graphs/?city=Clackamas%2BCounty%2C+OR&county=Clackamas%2BCounty&area-id=41005&fips=41005&zoom=7&lat=45.2023855&lon=-122.1188945. Accessed August 18, 2022.

The changes to the climate in Oregon have already led to increased intensity and occurrence of wildfire.²³ This trend is projected to continue, first on the east side of the Cascade Range, then shift to the west side of the Cascades. Figure 3-9 shows the annual acres burned in Oregon from 1984 to 2018.

²² Ibid.

²³ Ibid.

Figure 3-9 Annual Burned Acres in Oregon, 1984-2018



Source: Dalton, M., and E. Fleishman, editors. 2021. Fifth Oregon Climate Assessment. Oregon Climate Change Research Institute, Oregon State University, Corvallis, Oregon. <https://blogs.oregonstate.edu/ocri/oregon-climate-assessments>

Chapter 4: Community Education, Engagement, and Outreach

This chapter outlines why community engagement is important to wildfire planning and what the planning team did for engagement during the process and provides recommendations for ongoing engagement and education.

Background

Research indicates that community engagement in wildfire planning is the most effective way to enhance their adaptive capacity to a changing wildfire landscape.²⁴ Collaboration, social learning, and shared understanding improve a community's social capacity and therefore their adaptive capacity to wildfire.²⁵ To improve the community's adaptive capacity, extensive public engagement was made foundational to the development of this Community Wildfire Protection Plan.

As set forth in the Healthy Forest Restoration Act of 2003 (HFRA), a Community Wildfire Protection Plan (CWPP) must be collaboratively developed by local and state government representatives, in consultation with federal agencies and other interested parties.²⁶

In addition to the requirements of the HFRA, citizen involvement is also a requirement of Oregon's statewide land use planning program. Goal 1 calls for "the opportunity for [residents] to be involved in all phases of the planning process."²⁷

Although collaboration is a requirement, thoughtful community engagement allows Clackamas County to better understand community needs and better inform policies and action items. The process of

²⁴ Edgeley, C. M., Paveglio, T. B., & Williams, D. R. (2020). Support for regulatory and voluntary approaches to wildfire adaptation among unincorporated wildland-urban interface communities. *Land Use Policy*, 91. <https://doi.org/10.1016/j.landusepol.2019.104394>.

Meléndez, J. W., & Parker, B. (2019). Learning in Participatory Planning Processes: Taking Advantage of Concepts and Theories Across Disciplines. *Planning Theory & Practice*, 20(1), 137–144. <https://doi.org/10.1080/14649357.2018.1558748>.

Palsa, E., Bauer, M., Evers, C., Hamilton, M., & Nielsen-Pincus, M. (2022). Engagement in local and collaborative wildfire risk mitigation planning across the western U.S.—Evaluating participation and diversity in Community Wildfire Protection Plans. *PLOS ONE*, 17(2), e0263757. <https://doi.org/10.1371/journal.pone.0263757>.

Paveglio, T. B., Carroll, M. S., Stasiewicz, A. M., Williams, D. R., & Becker, D. R. (2018). Incorporating Social Diversity into Wildfire Management: Proposing "Pathways" for Fire Adaptation. *Forest Science*, 64(5), 515–532. <https://doi.org/10.1093/forsci/fxy005>.

²⁵ Brummel, R., Nelson, K., Souter, S., Stephanie, J., Jakes, P., & Williams, D. (2010). Social learning in policy-mandated collaboration: community wildfire protection planning in the eastern United States. *Journal of Environmental Planning and Management*, 53(6), 681–699. <https://doi.org/10.1080/09640568.2010.488090>.

²⁶ Society of American Foresters. (2004). Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities. <https://www.forestsandrangelands.gov/documents/resources/communities/cwpphandbook.pdf>.

²⁷ State of Oregon. (2022). Goal 1: Citizen Involvement, Oregon Department of Land Conservation and Development. <https://www.oregon.gov/lcd/OP/Pages/Goal-1.aspx>.

developing a CWPP can help a community “clarify and refine priorities to protect life, property, infrastructure, and valued resources.”²⁸

Community engagement is an ongoing process that does not end once the CWPP has been adopted. The CWPP provides direction for fire officials, but ongoing education and engagement enhances the effectiveness of the plan for the entire community. Clackamas County will continue to raise awareness of wildfire prevention and resiliency through continuing education campaigns and community programs.

The combination of ongoing engagement and executing the action items within the CWPP will help Clackamas County to realize the full potential of becoming a fire resilient community.

Engagement Methodology

Throughout the CWPP update process, the Oregon Partnership for Disaster Resiliency (OPDR) team executed four strategies for community collaboration – stakeholder interviews, a community partner forum, a community survey, and fire manager survey. Each methodology provided a different route for community response and informed the update of this CWPP.

To build social capacity within Clackamas County, an ongoing community engagement process, supported by a new full time staff member, should continue after plan adoption. An ongoing process can take various forms, such as partnering with local organizations to offer educational programming, convening monthly community partner meetings, and implementing a variety of place-based programs and policies.

Stakeholder Interviews

The project team conducted 20 stakeholder interviews between January and April 2022. These interviews informed the project team about the community’s reception of wildfire risk and areas of concern. Engagement included both traditional and non-traditional stakeholders.

Traditional stakeholders are individuals who appear to have a direct connection to wildfire work. Examples include local fire district chiefs, Oregon Department Forestry (ODF), and the US Forest Service (USFS).

Non-traditional stakeholders are individuals or organizations who may be historically absent from discussions about wildfire but work in a field that relates to the risks posed by wildfires. Examples include watershed councils, community planning organizations (CPOs), school boards, and land trusts.

Examples of stakeholder groups included:

- Clackamas County Public Health
- Clackamas Water Council
- Todos Juntos
- Oregon State University Extension Service
- Oregon Department of Forestry
- Community Planning Organizations (CPOs)

²⁸Society of American Foresters. (2008). *Community Guide to Preparing and Implementing a Community Wildfire Protection Plan*. https://files.dnr.state.mn.us/assistance/backyard/firewise/cwpp_Report_Aug2008.pdf.

The following are key takeaways from our stakeholder interviews. (For an in-depth explanation of this methodology, refer to Section 5-1.)

- There is a need for **enhanced communication channels** between community leaders, county officials, and fire managers. The need for better communication was noted for all stages of fire planning across all interview groups.
- **Public engagement and education** in both rural and urban areas is seen as the most effective mitigation action. Education should be centered around understanding the region's fire regime and the factors contributing to risk.
- There is a need for a **Clackamas County Fire Collaborative** to help with further communication and collaboration on mitigation and recovery projects between a variety of groups.
- A clear need was identified for planning efforts to **include recovery** from fire events in both the short term and long term. Post-fire planning needs to be incorporated into county operations.

Community Survey

The project team created and distributed an online community survey. The questions were developed to provide insight about how aware constituents were regarding wildfire prevention practices or managing fuels on their property. An English version remained open for ten weeks while a Spanish version remained open for eight weeks.

Below is a list of key findings from the community survey analysis. For an in-depth explanation of the survey construction and analysis methodology, refer to Appendix B.

- Survey participants generally had similar demographic characteristics to the broader Clackamas County Community when compared to the 2020 US Decennial Census and the 2019 American Community Survey (5-year estimates).
- Most participants indicated that they were **concerned about wildfire impacting their personal property, neighborhoods, communities, and Clackamas County**.
- Most participants had experience with the “Ready, Set, Go!” program for evacuations, but **few had created evacuation plans or had defensible space around their homes**.
- Some participants indicated that they had **difficulty speaking or reading English** for day-to-day activities or that they lived with a **disability that required assistance** during evacuations.
- Comments received from participants generally reflected their concern about how evacuations went during the 2020 Labor Day Fires and the desire for there to be **clearer evacuation protocols for the community** with extra care taken for community members who live with a disability or other condition that would require assistance during an evacuation.

Community Partner Forum

The project team held a community partner forum on May 17th, 2022. A variety of partners were invited to attend, including some individuals that were previously interviewed. The purpose of the forum was to provide a space for social learning, strengthen community relations, and identify actions for achieving wildfire resiliency.

The forum also served as a possible foundation for continued engagement after the CWPP adoption. By bringing together a group of traditional and nontraditional partners, Clackamas County can facilitate productive dialogue to encourage robust and innovative wildfire resiliency actions and priorities.

Below is a list of key findings from the community partner forum. For an in-depth explanation of this methodology, refer to Section 5.4.

- **Gaps in communication** is one of the biggest issues facing Clackamas County. Community partners identified the need for clear, centralized information before and after a disaster. There is also a need for understanding organizational roles in disaster response.
- There is a **lack of funding and staff capacity** at many community partner organizations. This is a barrier to implementing wildfire mitigation work.
- Clackamas County should **build upon their ongoing Wildfire Collaborative group** to share resources and build relationships.

Fire District and Agency Outreach

The Oregon Partnership for Disaster Resilience Team held several steering committee meetings with fire district and agency staff from around Clackamas County in 2022 (see Appendix C).

Fire Manager Survey

To better understand how the Clackamas County Community Wildfire Protection Plan (CWPP) was used by local fire districts and agencies, the OPDR Team created a six-question survey, administered digitally using Qualtrics' Digital Survey Platform. This section summarizes the key-takeaways from the "Fire Manager Survey."

Not all fire departments and agencies responded to the survey. Twelve out of 16 fire departments and agencies responded. Districts and agencies that did not complete the survey were:

- Gladstone Fire Department
- Monitor Rural Fire Protection District
- Silverton Rural Fire Protection District
- Oregon Department of Forestry

Seventy-seven percent of fire departments and agencies in Clackamas County were very familiar or moderately familiar with the Clackamas County CWPP. One department indicated that they were not familiar at all with the CWPP.

Most fire departments and agencies had integrated elements of the 2018 CWPP into their work plans. Some departments and agencies had not integrated the CWPP with their work plan and cited staff turnover and the COVID-19 pandemic as barriers to integration.

Fire departments and agencies need updated, clearly defined projects, and relevant information to be successful implementing the CWPP. To clearly define projects and include relevant information, some responses indicated the need for open dialog with fire district personnel and indicated that in-person meetings would be the best way to have this dialog.

The most cited challenge for wildfire planning in the past five years was lack of capacity and resources. Additionally, a few responses indicated that the changing climate and increased wildfires were a particular challenge facing their department or agency.

Department and agency priorities were diverse, but the most indicated priority was community wildfire risk reduction in areas of high-risk. Additional priorities of note were aligning department and agency priorities with SB 762, Oregon Department of Forestry's Forest Action Plan.

Community Education Strategies

This section outlines opportunities for improving education of the community about their role in wildfire risk mitigation. It contains methods, concepts, and lessons from other areas.

Community Engagement

Community engagement has long been viewed as a tool to inform the community. While engagement does lend itself well to informing, opportunities for dialog and collaboration must be built into the engagement. The project team recommends creating a robust, year-round engagement strategy that both informs and engages the community.

Continuing engagement after the adoption of the CWPP will foster the development of social capital.²⁹ Creating and enhancing social capital will promote cooperation, shared learning, and understanding.³⁰ Through cooperation, a cross-jurisdictional approach will streamline wildfire prevention, response, and recovery. Shared learning provides local knowledge of the land and community culture that will better inform prevention, response, and recovery efforts. Additionally, shared learning helps to generate consensus and lead to local buy-in of recommended actions and best practices.

Topics such as defensible space, emergency preparedness, evacuation planning, and structural ignitability are examples of topics that Clackamas County will explore in future engagement.

Priorities for Future Engagement

For the CWPP to be the most successful, Clackamas County should prioritize community engagement as an ongoing process. Before starting on any new process, Clackamas County should answer the following questions.

- What is the purpose of this participation process?
- What is the outcome?
- How will decisions be made / feedback be used?
- Who is the community?

Answering these questions will allow Clackamas County to communicate clearly with the public and ensure transparency in the process. This form of participation will build public trust and increase active participation in the process.

Engagement Considerations

Timeline

Typically, from November-March, when there is snow and rain, wildfire conditions are not visibly present to the community, creating a temporary disconnect between the topic of wildfire risk and motivating individuals to act. During the summer, when smoke is visible, constituents are more likely to engage in wildfire-related material, making it an opportune time to conduct high priority engagement. Specific programming should be planned for these months to reinforce the importance of acting year-round to prepare for wildfire season.

²⁹ Social capital is the value that comes from social networks, or groupings of people, which allows individuals to achieve things they couldn't on their own. See <https://www.socialcapitalresearch.com/literature/definition/> for more information.

³⁰ Palsa, E., Bauer, M., Evers, E., Hamilton, M., Nielson-Pincus, M., 2022. Engagement in local and collaborative wildfire risk mitigation planning across the western U.S. – Evaluating participation and diversity in Community Wildfire Protection Plans. *PLoS One* 17(2): e0263757. <https://doi.org/10.1371/journal.pone.0263757>.

Fire district staff are often unavailable for engagement efforts during wildfire season, however. The project team believes that a community wildfire coordinator would create the opportunity for year-round engagement and shift the responsibility for community engagement away from fire district personnel.

Trauma Informed Care

Before beginning a community engagement effort, Clackamas County should make use of trauma informed principles. Trauma is associated with the “impact of chronic adversity across a community from factors such as structural violence and community violence, or the threat of or loss from community violence.”³¹ At the community level, trauma can manifest itself as symptoms in the sociocultural environment, the physical/built environment, and the economic environment.

In the context of the CWPP, natural disasters, like wildfire, can be a traumatizing event. After a natural disaster, “the two most common adverse mental health outcomes are depression and post-traumatic stress disorder.”³² The scale of trauma is dependent on the degree of disaster exposure and pre-existing vulnerabilities.

During the 2020 wildfire season, Clackamas County in its entirety was placed on varying evacuation levels, with thousands on a level three, “Go.”³³ Even residents for who did not have to evacuate, wildfire smoke was prevalent, in some places reaching over 500 AQI and going beyond the upper threshold for hazardous air.³⁴ During the 2020 wildfire season, hundreds of structures were lost, resulting in the loss of home, security, and wealth, leaving a lasting impact on Clackamas County.

It is important for Clackamas County to recognize the collective trauma everyone in the county has undergone and be aware of county communication. To be successful, Clackamas County must “understand the ongoing impact of trauma on community members’ lives...and aim to appropriately address their specific needs and avoid re-traumatization.”³⁵ Clackamas County Disaster Management does not need to step into the role of mental health provider, but rather focus on communication and actions that do not re-traumatize the community.

Clackamas County Wildfire Collaborative

As a continuation of the community partner forum held on May 17th, 2022, Clackamas County should continue these meetings on a quarterly basis. The primary function of these meetings would be to provide space for each organization to share an update on their work. They also will provide the space for collaboration and ideation, keep everyone in contact, and make Clackamas County eligible for additional funding. Clackamas County will serve as the convener and provide materials in advance of these ongoing meetings.

³¹ Prevention Institute. (2017). *Minimizing the Impact of Adverse Childhood Experiences through a Focus on Adverse Community Experiences*.

<https://www.preventioninstitute.org/sites/default/files/publications/Minimizing%20the%20Impact%20of%20Adverse%20Childhood%20Experiences%20through%20a%20Focus%20on%20Adverse%20Community%20Experiences.pdf>.

³² Silveira, S., et. al. 2021. Chronic Mental Health Sequelae of Climate Change Extremes: A Case Study of the Deadliest Californian Wildfire. *Int. J. Environ. Res. Public Health* 18: 1487. <https://doi.org/10.3390/ijerph18041487>.

³³ KATU Staff. (2020). *All Clackamas County residents put on notice as Level 3 evacuations expand*. KOMO News. <https://komonews.com/all-clackamas-county-residents-put-on-notice-as-four-major-wildfires-rage>.

³⁴ Samayoa, M. (2020). *Oregon’s air is so hazardous it’s breaking records*. Oregon Public Broadcast. <https://www.opb.org/article/2020/09/15/oregons-air-is-so-hazardous-its-breaking-records/>.

³⁵ Organizing Engagement. (2022). *Trauma Informed Community Building Model*. Organizing Engagement. <https://organizingengagement.org/models/trauma-informed-community-building-model/>.

The project team recommends creating a shared Google Document to house a live agenda, allowing participants to fill in their updates in advance. This will save time, provide structure to the meeting, and serve as a communal resource.

Some meetings may be held in person to enhance community learning. For example, the group should take a tour of the Bull Run Watershed, which is the main source of drinking water for the Portland metropolitan area (City of Portland). A fire disaster to the Bull Run Watershed would cause a multi-year water emergency for the Portland metropolitan area, as well as Oregon. More meaningful connections can be made by viewing these places in person, enhancing partner buy-in.

Partner with Community Benefit Organizations (CBO) or other stakeholders to collaborate on workshops and events.

There are a variety of community benefit organizations operating within the county that could serve as partners. Working with other organizations allows Clackamas County to reach more constituents and have a larger impact across the county.

Possible Education Topics

Based on the results of the community survey, Clackamas County should prioritize the following education topics. Although not exhaustive, each topic contains a list of potential partners.

- Decreasing structural ignitability and creating defensible space
 - Clackamas County Planning and Zoning, local fire districts
- How to sign up for ClackCo Public Alerts
 - Clackamas County Disaster Management, local fire districts
- Creating personal evacuation plans
 - Clackamas County Disaster Management, local fire districts, Local CBO's
- Small woodland owner education
 - Clackamas County, Oregon Small Woodlands Association, Oregon State University Extension Service, local fire districts

Other topics that not addressed in the survey that could be covered are:

- Managing wildfire smoke;
- Recreating responsibly; and
- Retrofitting homes to become more wildfire resistant.

Community Partner Example

There are many opportunities for Clackamas County to partner with various organizations throughout the county. Listed below is one example of how existing community partner work can be used to help Clackamas County better address community resiliency and wildfire mitigation.

Oregon State University Extension Service – referred to as “OSU Extension” or “Extension”

OSU Extension Service serves as a resource base for all Oregon communities to provide educational workshops, activities, and services tailored to the unique industries, natural resources, and people in the communities. More specifically to wildfire awareness, OSU Extension has programming around resilient and productive forests and natural ecosystems. There is also a Fire Program branch of Extension with regional fire specialists. The Clackamas County division of OSU Extension has an office in Oregon City.

Extension provides webinars, in-person events, videos, infographic sheets, and more. Examples of webinars include the importance of prescribe fire, wildfire smoke, and home hardening. Within Clackamas County, OSU Extension supports the Hopkins Demonstration Forest, which is a 140 acre privately owned forest. Hopkins Demonstration Forest serves as an educational center, showing how to manage a forest, and a recreational center with walking trails. With as many as 25,000 visitors per year and 5,000-7,000 youth visits, the Demonstration Forest serves as a unique educational partner on the connection between forest management and wildfire.

OSU Extension also offers a Master Woodland Manager training, which is a high-level course for private landowners who are interested in an intensive forest management training. After completion of the program, Master Woodland Manager volunteers work within their communities to educate other woodland owners, which helps facilitate a sense of community and confidence. Within the state, 80% of all course participants remain active past their required volunteer service, providing an opportunity to expand social capital within Clackamas County (Oregon State University).

By working with community partners, Clackamas County can leverage their network to reach more constituents. Partnering for events also allows the county to be more accessible and distribute information through additional channels.

Place-Based Programming

In addition, to community education, Clackamas County should implement a variety of place-based programs to aid in wildfire resiliency. This section will detail each program and explain their relevancy.

Firewise Communities

The national Firewise recognition program, administered by the National Fire Protection Association, provides a collaborative framework to help neighborhoods in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community and to reduce wildfire risks at the local level (National Fire Protection Association). It is a place-based program that is organized and executed by neighbors. Any community with a minimum of eight dwelling units to a maximum of 2,500 dwelling units can apply (National Fire Protection Association).

As of 2023, a total of eight Firewise communities exist in Clackamas County (National Fire Protection Association). These are shown in Table 4-1.

Table 4-1 Clackamas County Firewise Communities

West Linn	Happy Valley	Oregon City	Government Camp
Barrington Heights	Deerfield Park 1 & 2	Hunter Heights Community	Wapanitia
Savanna Oaks	Happy Valley Heights HOA		
Skyline Ridge Neighborhood			
Sunburst II			

Source: National Fire Protection Association, 2023, Firewise USA Sites, <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA>. Analysis by OPDR.

To become a Firewise community, communities must complete a community wildfire risk assessment that identifies areas of success and improvement. They then create a three-year action plan stating actions neighbors can complete. Firewise communities must complete wildfire risk reduction actions to remain in the program.

Firewise serves as another avenue for generating social capital as neighbors collaborate and act together. For the program to be the most impactful, Clackamas County needs a county-wide effort.

An example of success: Southern Oregon – Jackson and Josephine Counties

As of 2022, Jackson County has 63 Firewise communities and Josephine County has 18 (National Fire Protection Association). Oregon Department of Forestry awarded \$5 million in funding to various communities throughout Oregon for wildfire protection. Of that, \$800,000 went to 20 active Firewise USA communities in good standing and outside of the urban-growth boundaries. Individual awards were up to \$75,000 per community. 20 Firewise Communities in Jackson and Josephine County were awarded funding, which resulted in the treatment of 11,849 acres. Many of these communities are not within a rural fire protection district; these funds offered these small, rural communities the opportunity and funding to do mitigation work.

Community Emergency Response Team (CERT)

CERT is a community-based program that educates volunteers about disaster preparedness and trains them in basic disaster response skills. The trainings include fire safety, light search and rescue, team organization, and disaster medical operations. Establishing a CERT program allows community members to assist in a disaster response while allowing professional responders to focus on more complex tasks. CERT is administered through FEMA. CERT volunteers have been used to manage emergency shelters, evacuate residents during wildfires, and more.

CERT is not offered at a county level and must be deployed through local fire districts. Six fire districts within Clackamas County currently offer CERT training (Clackamas County).

Fire-Safe Building and Development Codes

A land-and structure-based approach to addressing wildfire resiliency is best accomplished by incorporating fire-safe standards into municipal and county code. Senate Bill 762 (SB762), passed in 2021, requires homeowners in the wildland-urban interface, in high or extreme risk areas, to have defensible space and build to new building code standards.

Defensible space is a natural or human-made area in which material capable of supporting the spread of fire has been treated, cleared, or modified to slow the rate and intensity for advancing wildfire and allow space for fire suppression operations to occur. Research shows that “investment in defensible space in private property is the most promising approach to reduce wildfire damage and suppression costs in WUI communities.”³⁶ For example, by creating defensible space and fuel breaks before the Buffalo Fire in Colorado, the United States Forest Service estimates that \$913 million worth of homes and infrastructure was spared in 2018.³⁷

To help landowners understand these new requirements, Clackamas County could integrate the new requirements into their development and building codes.

Disaster Management Community Engagement Staff

Wildfire work within Clackamas County is housed under the Disaster Management Department, while community engagement activities are housed under the Public and Government Affairs Office. A key finding from the community partner forum was the lack of clear communication from the county.

As many community partners also have a lack of capacity and staff to advance wildfire mitigation work, Clackamas County should hire one full time employee whose role is focused on community engagement for natural disasters. This employee can be responsible for pre-fire engagement, such as education and outreach, and post-fire engagement, such as coordination and logistical updates.

As demonstrated in the Fire Adapted Ashland example, having a specific community engagement position provides a channel for successful implementation of the work.

An example of success: Fire Adapted Ashland

Fire Adapted Ashland is the community engagement branch of Ashland Fire and Rescue that is designed to help community members prepare and recover from wildfire. The program is staffed by a Fire Adapted Communities Coordinator. The Coordinator works with a variety of local, regional, and national partners to help advance their work. With this additional capacity, the branch offers free, one-hour, one-on-one home wildfire risk assessments that outline what risk reduction activities homeowners should be taking and how to prioritize them. Fire Adapted Ashland completes 120-170 assessments annually. This program has been immensely successful, creating a backlog of requests. Fire Adapted Ashland also has their own website housing an innumerable amount of community resources.

³⁶ Taylor, C. L. & Rollins, K. (2019). Targeting Policy to Promote Defensible Space in the Wildland-Urban Interface: Evidence from Homeowners in Nevada. *Land Economics*, 95(4), 531–556. <https://doi.org/10.3368/le.95.4.531>.

³⁷ Krake, H. (2018). *Proactive Fuel Breaks Protect Nearly \$1 Billion in Homes, Infrastructure During Colorado Wildfire*. US Forest Service. <https://www.fs.usda.gov/features/proactive-fuel-breaks-protect-nearly-1-billion-homes-infrastructure-during-colorado-wildfire>.

Chapter 5. Emergency Operations

This chapter reviews the structure of Emergency operations management in Clackamas County, and the objectives of the Fire Defense Board.

Fire Defense Board

Prior to the 2018 plan, the responsibilities of the technical subcommittees were transferred to the Clackamas Fire Defense Board (FDB). The FDB meets monthly to discuss issues regarding fire operations and emergency response. The board consists of rural fire districts, city fire departments, County Disaster Management, wildland fire agencies, and other officials. The FDB also appoints a chief who is the point person for the FDB for State Mobilization requests and serves on the State Fire Defense Board.

Emergency Operations Objectives

The Clackamas FDB is committed to the following objectives for this planning cycle:

1. Enhance interoperability of fire districts, USFS, ODF, and neighboring jurisdictions.
2. Improve upon the current system for utilizing fire resources within the county and neighboring jurisdictions.
3. Clarify and exercise policies and procedures from the Fire Operations Center (FOC) and Emergency Operations Center (EOC).

The following Objective was completed prior to the 2018 CWPP and thereby removed from the list because the Incident Command System (ICS) is now integrated pragmatically into training standards.

Strengthen Incident Command Systems and improve efficiency in wildfire response efforts by setting and implementing consistent, all-hazard training standards.

Emergency Operations Accomplishments

Many of the action items pertaining to integration of the National Incident Management System and ICS revised training standards into training programs have been accomplished. In addition, both the Department of Public Safety Standards and Training (DPSST) and National Wildland Coordinating Group (NWCG) have made progress in aligning national training standards for wildland and structural firefighters. In addition, the Clackamas FDB held a conflagration exercise in 2013 and then put that practice to use in 2014 during the 36 Pit fire.

Emergency Operations Actions

The Clackamas County Emergency Operations Action Plan has been updated since 2018 to ensure that the action plan remains relevant to current issues. Chapter 9: Clackamas County Fire Agencies includes these high priority items for each fire and forestry stakeholder within the County. These include the need to develop an FDB Communications Work Group and the desire to conduct a countywide Conflagration Exercise.

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Chapter 6: Risk Assessment

Wildfire risk to forest lands and homes is inseparable. Forest fires can endanger and burn homes. Fires that start as structural fires can quickly spread to the forest. Although the threat of wildfire is not as great in Clackamas County as in other parts of the state, wildfire officials are cognizant of the growing potential. One of the core elements of the Clackamas Community Wildfire Protection Plan is developing an understanding of the risk and potential losses to life, property, and natural resources during a wildfire to identify and implement the most effective strategies for preventing losses from fire, while allowing natural fires to take their course in shaping a more healthy and sustainable forest.

The Healthy Forests Restoration Act, the National Fire Plan, FEMA's Disaster Mitigation Act of 2000, the National Association of State Foresters, and Oregon Department of Forestry provide guidance on conducting hazard and risk assessment for wildfire. The CWPP's wildfire risk assessment followed the methodology of the Oregon Department of Forestry's QWRE (Qualitative Wildfire Risk Evaluation).

Geographic Information Systems (GIS) was used to analyze and integrate the spatial layers of information for fire hazard, risk, location of values, and protection capabilities. Structural vulnerability should be the final piece of this risk assessment but could not be adequately mapped at a county-wide level and was to be assessed at the local plan level. The hazard layer was comprised of several additional layers including fuels, slope, and weather.

Risk Assessment Objectives

- Develop and conduct a wildfire risk assessment to accurately portray vulnerable populations, property, and infrastructure.
- Utilize fire district boundaries to identify Communities-at-Risk (CARs) and encourage the identification of more detailed CARs during local planning processes.
- Coordinate with fire districts to determine the risk level of highly vulnerable areas.
- Develop a risk assessment at a level detailed enough to use in prioritizing fuels treatment and other fire prevention projects, but broad enough to encompass entire county.
- Develop a risk assessment that can be adapted to reflect changing forest conditions.
- Develop an appropriate point distribution system for risk assessment (protection capability, structural vulnerability, values, etc.) consistent with fire district priorities.
- Utilize state, county, and local data to create a seamless risk assessment that can be used as a foundation for fire districts to build their own more localized risk assessments for their community fire plans.

Risk Assessment Accomplishments

The primary Risk Assessment Actions on which progress has been made include:

- Improved the understanding of local wildfire risks.
- Determined Local Communities at Risk and encouraged the creation of Firewise Communities.
- Refined Wildland Urban Interface boundaries.
- Improved structural location data.
- GPS units were used to capture structure locations in the vulnerable Wildland Urban Interface.

Risk Assessment Priority Actions

The Risk Assessment Action Plan has been updated since 2018 to reflect accomplishments and ensure that the action plan remains relevant to current issues (see Table 1-1 Clackamas CWPP Action Plan).

The high priority risk assessment actions to be addressed by the wildfire planning team are:

1. Maintain and update the Fuels Reduction maps and local Communities at Risk database.
2. Continue tracking structural vulnerability in the County via structural triage assessments.
3. Update the Overall Wildfire Risk Assessment as new data becomes available.

Supplemental Maps

In addition to maps on social vulnerability, wildfire risk, and fire history, Appendix E: Maps includes five additional maps as shown in Table 6-1:

Table 6-1 Supplemental Maps Available in Appendix E: Maps

Map Number	Map Name
Map E-8	Integrated Conditional Net Value Change
Map E-9	Integrated Expected Net Value Change
Map E-10	People and Property Conditional Net Value Change
Map E-11	Drinking Water Conditional Net Value Change
Map E-12	Timber Conditional Net Value Change

Source: Clackamas County, 2023, Clackamas Community Wildfire Protection Plan.

Communities at Risk

Different scales of Communities at Risk (CAR) are necessary to direct large-scale state and federal planning efforts as well as local outreach projects. The Clackamas CWPP addresses wildfire hazards county-wide (not just those areas near state or federal lands), including local CARs within each district.

Local Communities at Risk/Strategic Planning Area

Clackamas CWPP partners also acknowledge that there are locally recognized Communities at Risk (CARs) that have unique wildfire hazards that must be addressed on the local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed within each local fire district's profile in Chapter 9: Clackamas County Fire Agencies. CARs are also listed and summarized in Table 6-2.

Fire professionals considered the following factors to determine the local CARs:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach/awareness.
- Communication issues.

Table 6-2 Local Communities at Risk in Clackamas County

Fire District*	Local Communities at Risk	
Aurora Rural Fire Protection District #63	<ul style="list-style-type: none"> • Eilers Road/Myley Road (near Charbonneau) • Brownsdale Farm Road • Glass and Beck Roads 	<ul style="list-style-type: none"> • Butteville Road • Whiskey Hill/Meridian Road • Cedarbrook Lane
Canby Rural Fire Protection District #62	<ul style="list-style-type: none"> • Adkins Circle • Sundowner • Dutch Vista/Madrona • Public Works Infrastructure 	<ul style="list-style-type: none"> • North Side Molalla River Bluff • South End • Molalla River State Park
Clackamas Fire District	<ul style="list-style-type: none"> • Forest Park • Leisure Woods • Diane Drive Shelly Road • Redland Road • Fishers Mill Area • Logan Road 	<ul style="list-style-type: none"> • Clarkes/Beavercreek • Beaver Lake • Canemah Bluffs • Scouters Mountain • Mount Talbert • Three Creeks • Holcomb
Colton Rural Fire Protection District #70	<ul style="list-style-type: none"> • Deardorf • Boomer Springs/Schieffer • Walton/Tiffany • Fernwood/Young Road Area 	<ul style="list-style-type: none"> • Dhooghe • Hult Road • Hunter Road • Elwood Community
Estacada Rural Fire Protection District #69	<ul style="list-style-type: none"> • George Community <ul style="list-style-type: none"> ○ Garfield/Porter Community ○ Eagle Creek Youth Camp • Dodge-Hillock Burn Area <ul style="list-style-type: none"> ○ Frog Pond ○ Paradise Park ○ Twin Island ○ Star Road • Spring Water North <ul style="list-style-type: none"> ○ Mclver Park ○ Parkview/Riverlake Community 	<ul style="list-style-type: none"> • Viola <ul style="list-style-type: none"> ○ Redland Road Area ○ Fellows Road • Spring Water South <ul style="list-style-type: none"> ○ Metzler Park • City of Estacada <ul style="list-style-type: none"> ○ Ranger Woods • Tumala <ul style="list-style-type: none"> ○ Clackamas River RV Park (USFS)
Gladstone Fire Department	<ul style="list-style-type: none"> • Parkway Woods • Billy Goat Island • Dahl Beach 	<ul style="list-style-type: none"> • Risley Wetlands • Meldrum Bar Park

Fire District*	Local Communities at Risk	
Hoodland Fire District #74	<ul style="list-style-type: none"> • US Forest Service Summer Homes • Rhododendron/Zig Zag/Woodland • Lolo Pass • Marmot • Cherryville/Alder Creek • Summit Meadows 	<ul style="list-style-type: none"> • Government Camp Area • Welches/Wemme • Barlow Trail (Timberline Rim Division 1-4) • Brightwood/Sleepy Hollow (Timberline Rim Division 5)
Lake Oswego Fire Department	<ul style="list-style-type: none"> • Iron Mountain Bluff • Palisades • Cooks Butte Park • Mountain Park • Tryon Creek State Park 	<ul style="list-style-type: none"> • Luscher Farm Park • Spring Brook Park • Waluga Park • George Rodgers Park
Molalla Rural Fire Protection District #73	<ul style="list-style-type: none"> • Rosewood • Alder Creek • Sawtell Trout Creek • Lebo/Novak/Hardy • Maplegrove Road • Dickey Prairie Road 	<ul style="list-style-type: none"> • Molalla Heights • Fernwood Road Area • Ramsby/Munson/Callahan • Blue Road • Big Rock Loop • Salo Royal Oaks
Sandy Fire District #72	<ul style="list-style-type: none"> • Wildcat Mountain • Hope Lake • Cedar Creek/Sandy Rim 	<ul style="list-style-type: none"> • Firwood • Bull Run Area
Silverton Fire District #2	<ul style="list-style-type: none"> • Boy Scout Camp • South Butte Creek Road • South Maple Grove Road Area 	<ul style="list-style-type: none"> • South Wildcat Road • Marquam Circle Area • Groshong Road Area • Prospect
Wildland Agency (US Forest Service)	<ul style="list-style-type: none"> • Ripplebrook Guard Station • Timothy Lake • Timberlake Job Corps 	<ul style="list-style-type: none"> • 3 Lynx • Joe Graham/Clackamas Lake Guard Station
Wildland Agency (Oregon Department of Forestry)	<ul style="list-style-type: none"> • Elk Prairie • Upper Sawtell (Structurally Unprotected) • East Highland • Lower Highland 	<ul style="list-style-type: none"> • Ramsby Road Area (Structurally Unprotected) • Wapinitia • Lais Road • Butte Creek (Structurally Unprotected)

Source: Clackamas County, 2023, Clackamas Community Wildfire Protection Plan.

*Note: Two local fire agencies in Clackamas County did not identify local CARs. These districts are Monitor Rural Fire Protection District #73 and Tualatin Valley Fire & Rescue.

Defining Communities at Risk

The Healthy Forests Restoration Act (HFRA) of 2003 is the primary piece of federal legislation that guides the development and implementation of Community Wildfire Protection Plans (CWPPs). One of the items defined by the HFRA is an at-risk community, referred to within this CWPP as a Community at Risk (CAR). The HFRA defines an at-risk community as the following:³⁸

a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to Federal land in which conditions are conducive to a large-scale wildland fire disturbance event and for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

For the purposes of this document, the OPDR team relied upon the HFRA definition, the input of local fire agencies (districts and departments) within Clackamas County as detailed in the bullet points in the previous section, and, in some communities, the Oregon Department of Forestry's statewide assessment of CARs.³⁹ This assessment, last issued in 2020, utilizes a one-home-per-40-acre density threshold to identify homes at high risk of wildfire. A CAR is generally under a common fire-protection jurisdiction, government, or tribal trust or allotment for which there is a significant threat of wildfire.

Wildland Urban Interface

The Oregon Partnership for Disaster Resilience Team created a Wildland-Urban Interface (WUI) map using data from Oregon Wildfire Risk Explorer. This data was updated in 2023 using the new WUI definition found in Oregon Administrative Rule (OAR) 629-044-1011:

1. The WUI is a geographic area comprised of tax lots, or portions of tax lots that includes an average density of one structure or other human development per 40 acres and either:
 - a. Meets with wildland or vegetative fuels; or
 - b. Intermingles with wildland or vegetative fuels; or
 - c. Is an occluded geographical area.
2. The WUI also includes:
 - a. Lands identified within an urban growth boundary or unincorporated community boundary by local comprehensive plans that meet the criteria in (1)(a); or
 - b. A planned development, within the urban growth boundary or unincorporated communities, that is not identified in 1(a) but that is approved for development that meets the criteria 1(a)
3. If multiple structures or other human developments are located on a single tax lot, then the totality will be considered a single structure or other human development.
4. Each tax lot in the State of Oregon shall be assigned a wildfire risk classification in accordance with 629-044-1020.

This map layer can be found in several of the figures in Appendix E: Maps, specifically Map E-7 Priority Wildfire Mitigation Areas.

³⁸ Healthy Forests Restoration Act of 2003, 16 U.S.C. § 6511 (2003). <https://www.govinfo.gov/content/pkg/COMPS-1123/pdf/COMPS-1123.pdf>.

³⁹ Trentadue, J. & Alcock, T.Z. (2020). *2020 Communities at Risk*. Oregon Department of Forestry. <https://www.oregon.gov/osp/Docs/Communities-at-risk-report.pdf>.

Mapping Methods

The following sections detail how the maps throughout this plan and especially in Appendix E: Maps were developed. This includes overall wildfire risk, social vulnerability, priority areas for mitigation, and risk to highly valued resources and assets (HVRA). These methods were developed by Michael Coughlan from the Institute for Resilient Organizations, Communities, and Environments at the University of Oregon.

Overall Wildfire Risk

To map the overall wildfire risk for the county, we used an Oregon statewide wildfire risk map created by Oregon State University.⁴⁰ This wildfire risk map combines annual burn probability with a susceptibility response function based on a spatially explicit model of wildfire intensity (conditional flame length and vegetation type). This means that the data considers both the probability that a fire will occur in a given year and then, if a fire ignites in a given location, how intense we can expect that fire to be based on the vegetation present in that location. Burn probabilities were modeled using FSim⁴¹, which considers regional climate patterns, vegetation types, land use and previous ignition patterns. The wildfire intensity modeling process used FlamMap⁴² and is based on 2022 landscape conditions. The resulting wildfire risk value is called expected net value change (eNVC) and can be interpreted as providing the wildfire risk to buildings or structures in any given location. Further, since the risk model assumes that a structure is always present, eNVC is more accurately described as *risk to potential structures*. The concept of risk to potential structures provides added benefit for planning since it can inform risk for planned construction.

Social Vulnerability

The overall vulnerability of people and property to wildfire is conventionally estimated using spatial distribution of the probability of exposure to wildfire hazard. The concept of social vulnerability adds depth to this estimate by additionally accounting for how and why some people are at a disadvantage in comparison to others due to personal, social, economic, or cultural characteristics which make them more vulnerable to harm from specific types of hazards such as wildfires.⁴³

For this CWPP, we created a composite social vulnerability index (SVI) that combined (1) the Oregon State University/Oregon Wildfire Risk Explorer 2020 Social Vulnerability Index (OSU SVI) data for Census County Sub-Divisions, Tracts, and Block Groups⁴⁴ with (2) free and reduced meal eligibility statistics for elementary schools within Clackamas County. The OSU SVI was created as part of the Oregon's omnibus wildfire bill (Senate Bill 762) wildfire risk assessment and followed the SVI methodologies developed by Flanagan et al. (2011)⁴⁵ for disaster risk management and has been previously used by the Centers for Disease Control and the Agency for Toxic Substances and Disease Registry to assess social vulnerability at the national level.

⁴⁰ Dunn, Christopher J. (2022). *Risk to Potential Structures in Oregon*. Unpublished data. Oregon State University.

⁴¹ Missoula Fire Sciences Laboratory (2023). *FSim-Wildfire Risk Simulation Software*. U.S. Forest Service. <https://www.firelab.org/project/fsim-wildfire-risk-simulation-software>

⁴² Missoula Fire Sciences Laboratory (2023). *FlamMap*. U.S. Forest Service. <https://www.firelab.org/project/flammap>

⁴³ Coughlan, M. R., Ellison, A., & Cavanaugh, A. (2019). *Social Vulnerability and Wildfire in the Wildland- Urban Interface*. https://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/WP_96.pdf.

⁴⁴ Reilley, C. & Crandall, M. (2022). *Social Vulnerability for the State of Oregon [Data set]*. Oregon State University. <https://doi.org/10.7267/z890s265n>.

⁴⁵ Flanagan, B. E., Gregory, E. W., Hallisey, E. J., Heitgerd, J. L., & Lewis, B. (2011). A Social Vulnerability Index for Disaster Management. *Journal of Homeland Security and Emergency Management*, 8(1). <https://doi.org/10.2202/1547-7355.1792>.

We chose to modify the OSU SVI due to reliability issues inherent in the American Community Survey data used to construct the index. Because the American Community Survey variables are estimates, each variable has an associated standard error that can be used to calculate the coefficient of variation (CV) as a proxy for the reliability of the variables for each given unit of analysis (e.g. county sub-divisions, tracts, and block groups). Tabular versions of the OSU SVI data contain a reliability classification based on CV thresholds defined by McKay (2018):⁴⁶ Low reliability (unreliable) are CV values over 40 percent indicating that the sampling error is large relative to the estimate, Medium reliability (use with caution) are CV values between 12 and 40 percent, and High reliability (estimate is reliable) are small CVs less than or equal to 12 percent. However, rather than presenting the reliability analysis for each variable used to calculate the SVI, the OSU SVI reliability classification reports the percentage of total indicators in the SVI that are at or above the three reliability thresholds (Low, Medium, High). A fourth reliability class accounts for situations where valid CVs could not be calculated.

For our modified SVI, we selected block groups, tracts, and county sub-divisions with SVI values where 50 percent or greater of the contributing indicators were in the OSU SVI High or Medium reliability category. We considered sample units with fewer than 50% of indicators at high or medium reliability to be too unreliable to include in the SVI. Thus, our reliability classification eliminated sample units with SVI values that were mostly unreliable. To preserve the highest data resolution, we intersected the sample units with high and medium reliability such that we retained the SVI value of the smallest, reliable sample unit (block group, followed by tract, followed by county sub-division). The resulting layer is thus composed of all three sample units and further contains areas with no reliable SVI.

To fill in the spatial gaps, we intersected the modified OSU SVI with elementary school data on free and reduced-price meal eligibility (F&R). This data provides the percentage of total student enrollment eligible for F&R and thus serves as a proxy for low-income households (with school-aged children) within the school attendance catchment. While it is not as holistic as the OSU SVI which is informed by a variety of other parameters, it does provide a relatively reliable proxy for economically disadvantaged households. In order to provide a standardized metric comparable with the OSU SVI, we calculated the percentile rank of each elementary school catchment's percent F&R for the entire county.

As a final step, for each polygon created from the intersection of the modified OSU SVI and the elementary school catchments, we compared the OSU SVI with school F&R percentile rank and assigned the greater of the two values to the new composite SVI. We then classified the SVI into four categories (low, low-moderate, moderate-high, high) as displayed on the Oregon Wildfire Risk Explorer.

Priority Areas for Mitigation

Prospective priority areas for the county were mapped using a conditional classification method involving three layers: (1) Overall wildfire risk, (2) Wildland-Urban Interface (WUI) status (based on current official State of Oregon definition⁴⁷), and (3) Social Vulnerability. Priority rankings were developed based on coincident classifications within these three layers (Table 1), resampled at 200m² resolution. For example, priority ranking "1" included 200m² pixels with high or extreme wildfire risk, inside the WUI, and with moderate-high to high social vulnerability. At the other end of the spectrum, priority rank "12" consisted of pixels with low wildfire risk, outside of the WUI, with low to low-moderate social vulnerability. Priority rankings were further classified to provide a 5-tier priority classification (highest, high, moderate, low, lowest). See Table 6-3 for more information on this tiered classification system.

⁴⁶ McKay, G. (2018). *The American Community Survey: An ESRI Whitepaper*. ESRI.

<http://www.esri.com/library/whitepapers/pdfs/the-american-community-survey.pdf>.

⁴⁷ OSU Wildfire Risk Mapping (2023). *What is a Wildland-Urban Interface*. Oregon State University.

<https://osuwildfireriskmap.forestry.oregonstate.edu/mapping-wildland-urban-interface>.

Table 6-3 Priority Area Classifications

Priority Class	Priority Rank	Wildfire Risk	WUI	Social Vulnerability
Highest	1	High	Inside	Moderate-High, High
High	2	High	Inside	Low, Low-Moderate
High	3	Moderate	Inside	Moderate-High, High
Moderate	4	High	Outside	Moderate-High, High
Moderate	5	Moderate	Inside	Low, Low-Moderate
Moderate	6	High	Outside	Low, Low-Moderate
Moderate	7	Moderate	Outside	Moderate-High, High
Low	8	Moderate	Outside	Low, Low-Moderate
Low	9	Low	Inside	Moderate-High, High
Lowest	10	Low	Outside	Moderate-High, High
Lowest	11	Low	Inside	Low, Low-Moderate
Lowest	12	Low	Outside	Low, Low-Moderate

Source: Internal classifications developed by Michael Coughlan from the Institute for Resilient Organizations, Communities, and Environments at the University of Oregon.

Risk to Highly Valued Resources and Assets (HVRA)

In order to map specific risk to highly valued resources and assets (HVRA), we relied on the 2023 update to the Quantitative Wildfire Risk Assessment (QWRA) for the Pacific Northwest.⁴⁸ Burn probabilities and wildfire severity were modelled for the 2023 QWRA using processes similar to the Overall Wildfire Risk map outlined above. These models are then applied to HVRA to map HVRA-specific risks. Conditional net value change maps show the estimated change in a resource’s value if a wildfire were to occur. Thus, conditional net value change can show high loss even if the actual risk of a wildfire igniting is low. Both negative and positive effects are mapped. Expected net value change shows estimated change in the resource’s value if a wildfire were to occur weighted by the probability of a fire occurring (the burn probability). Thus, even if the conditional net value change is high, expected net value change can be low, if the probability of wildfire occurring is low.

The following integrated maps are included in Appendix E.

- Conditional net value change integrated across all HVRA (Map E-8)
- Expected net value change integrated across all HVRA (Map E-9)
- Conditional net value change for Drinking water (Map E-11)
- Conditional net value change for People and property (Map E-10)
- Conditional net value change for Timber (Map E-12)

HVRAs included in the integrated maps in Appendix E: Maps include the following:

- People and Property
- Infrastructure
- Timber
- Drinking Water
- Agriculture
- Recreation Infrastructure
- Ecological Integrity
- Wildlife Habitat

⁴⁸ Full documentation of methods for the 2023 update to the Pacific Northwest QWRA is forthcoming. For more information, see <https://storymaps.arcgis.com/stories/b4cd7ed4acf24eb592256bbba5eb7ba5>.

Chapter 7: Structural Ignitability Policies and Programs

This chapter covers objectives and implementing programs related to reducing structural ignitability within Clackamas County. It includes a list of action items designed to address concerns related to personal and property safety in Clackamas County.

Structural Ignitability Policies and Programs

Structural Ignitability deals with the home itself and its immediate surroundings, which is also known as the “Home Ignition Zone.” The Home Ignition Zone includes the home and an area surrounding the home within 100-200 feet. Important factors that either deter or promote Structural Ignitability include:

- **The Structure Itself:** roofing, roofing assembly, building materials, and setbacks on slopes.
- **Defensible Space:** Distances 30-100 feet or more of fire-resistant vegetation around homes.
- **Fire Access:** Road, driveway and bridge width and condition.

Structural Ignitability Objectives

1. Review rules/laws/guidance pertaining to wildfire planning, prevention, protection, and develop recommendations for improvements.
2. Coordinate and facilitate communication between County Planning and Building and fire districts.
3. Identify incentives for property owners to participate in fire prevention activities, including maintenance of defensible space, use of fire-resistant building materials, etc.
4. Inform the public about codes and ordinances related to wildfire prevention and solicit feedback from the public regarding recommended improvements.

Oregon Senate Bill 762

In 2021, Oregon Senate Bill 762 (SB762) directed the Oregon Department of Consumer and Business Services and the Oregon State Fire Marshal (OSFM) to update building codes and defensible space requirements for structures located in the Wildland Urban Interface (WUI) rated in high and extreme risk areas. As statewide regulations are put in place to implement this legislation, Clackamas County should implement these updated requirements through their building and land use codes. Updated building, land use, and defensible space codes from the OSFM were completed in December 2022 and went into effect in 2023.⁴⁹

⁴⁹ Office of the State Fire Marshal. *Oregon Defensible Space*. <https://oregondefensiblespace.org/>.

Clackamas County Zoning Code

To reduce structural ignitability and help landowners understand the new requirements for defensible space in the WUI, amending the Clackamas County zoning code will ensure that all new and existing developments create defensible space. As of fall 2023, Clackamas County Zoning Code 1003.05 Standards for Fire Hazard Areas does not reflect the defensible space requirements from SB 762.

Clackamas County Building Code

The 2021 Clackamas County Building code should be updated to reflect the new statewide structural hardening requirements from SB 762. New building code requirements are in Oregon Residential Specialty Building Code R327.

R327.1 Application. *On or after April 1, 2023, newly constructed dwellings, their accessory structures, and new additions to existing dwellings and their accessory structures, located in high or extreme wildfire risk classes in the wildland urban interface as determined by the Oregon Wildfire Risk Explorer and indicated on the Oregon Geographic Design Tool.... Shall be protected against wildfire in accordance with this section. Where existing exterior elements which fall within the scope of this section are replaced on dwellings and accessory structures located in high or extreme wildfire risk classes in the wildland urban interface, the replacement shall be made in accordance with the provisions of this section.*

Structural Ignitability Action Items

To effectively reduce structural ignitability, there must be coordination and communication between fire professionals and regulatory agencies including the State Fire Marshal's Office, the Clackamas County Land Use Planning Division, and the Clackamas County Building Division. The 2018 CWPP included a series of Structural Ignitability Action Items designed to provide direction and facilitate improved coordination among these agencies. Since 2018, a great deal of progress has been made to strengthen these relationships, which has resulted in more effective implementation of the Oregon Fire Code. For a complete listing of progress made since 2018, please see Table 1-1. The 2023 CWPP Update process identified the following priorities for implementation:

1. Update the Clackamas County Zoning Code to reflect new defensible space requirements for existing and new developments in the WUI.
2. Update Clackamas County Building Code to reflect the new requirements for home hardening.
3. Identify a DTD representative for the FDB.
4. Improve coordination with Rural Fire Agencies.
5. Integrate WUI into Plan Map and include a public outreach strategy.

Data Collection and Assessment of Structural Ignitability

In 2005, ODF used Title III funds to purchase Global Positioning System (GPS) units equipped with structural triage software to improve the mapping of structures and other features important for wildland firefighting within the ODF Protection District. Over 10,000 homes have been assessed. In 2016, ODF acquired new GPS units and continues the ongoing effort of improving structural triage data. This is identified as an action item in most fire agency CWPP action plans.

Chapter 8: Implementation, Monitoring, and Evaluation

This chapter outlines how to implement the actions outlined in this Community Wildfire Protection Plan (CWPP). The strategy tracks progress and ensures regular updates to the CWPP. The action plan provides a list of actions that address wildfire risk and associated concerns in Clackamas County.

Implementation Strategy

The ultimate success of implementing the CWPP depends on ongoing collaboration by all stakeholders, particularly those identified in this CWPP and community partners. Clackamas County Disaster Management should act as the CWPP coordinator and work to ensure that action items are completed.

Tracking and Monitoring

Tracking and monitoring of action items ensures that implementation occurs and allows strategies to adapt to the rapidly changing fire landscape. The Steering Committee should meet on a quarterly basis to report on completed or ongoing projects and projects not yet started. This information is then shared with decision-makers as a metric for measuring progress and leveraged for future funding opportunities.

Metrics for reporting on progress should be decided on by the Steering Committee and need to be quantifiable. They should include but are not limited to:

1. Vegetation structure information that can support fuel modeling and long-term habitat and watershed monitoring.
 - a. Measurable habitat improvement based on vegetation structure change.
 - b. Measurable change in fire behavior potential based on fuel structure change.
 - c. Measurable change in fire suppression success based on fuel structure change.
2. Cost-effectiveness information for future budget forecasting and planning.
3. Data on overall fuel treatment effectiveness.
4. Data on the number of community members engaged in educational opportunities and/or the Firewise program.

For example, fuel treatment projects could be measured in acres treated that achieve flame lengths not to exceed four feet on an 80th percentile day with no crowning. Recording progress is particularly important to increase competitiveness for funding opportunities.

CWPP Coordinator

For the CWPP to be effective, it should be managed by a 0.75 to 1.0 FTE full-time employee. Currently, the CWPP update process is managed by Clackamas County Disaster Management. Fire districts in Clackamas County are responsible for engagement, education, and implementing the CWPP. Under the 2003 Healthy Forest Restoration Act (HFRA), a key component to qualify for funding is collaboration between local government, fire agencies, State agencies, interested parties, and federal land management agencies. The CWPP Coordinator should manage the approach for implementing the plan countywide, apply for funding opportunities, and develop consistent and open communication lines.

Community Engagement

Central to implementing the CWPP is community engagement. Studies show that “one-size-fits-all” approaches to wildfire management that do not consider localized perspectives, histories, and community functionality may stifle local adaptation efforts.⁵⁰

Every community in Clackamas County has its own character, and therefore needs, making a one size-fits-all approach to risk mitigation relatively ineffective. Engaging each community within Clackamas County is the most effective path to designing action plans for mitigating risk to life and property from wildfires. While this approach demands additional resources, it creates the social capital needed to effectively reduce risk.

In early 2021, Clackamas County meaningfully engaged its community through the Clackamas County Multicultural Outreach for Middle Housing – Zoning Code Amendments project. This project sought to:

- Understand the community’s priorities and concerns.
- Advance socioeconomic, racial, and transportation equity.
- Lay the groundwork for updating applicable polices and regulations associated with implementation of House Bill 2001.
- Provide the necessary foundation for the code amendments to help ensure successful passage through the adoption process.

By working with a consultant, Clackamas County was able to engage underserved and underrepresented communities using focus groups that lifted their voice.

Communities of color, non-English speaking, and low-income communities are at an elevated risk to the impacts of wildfire compared to white, affluent communities.⁵¹ Prioritizing their voice through a community engagement process, which is similar to the Multicultural Outreach for Middle Housing, will help to implement mitigation projects that achieve risk reduction for vulnerable communities.

Funding for Clackamas County’s Multicultural Outreach for Middle Housing – Zoning Code Amendments project was provided by the Department of Land Conservation and Development.

⁵⁰ Edgeley, C. M., Pavaglio, T. B., & Williams, D. R. (2020). Support for regulatory and voluntary approaches to wildfire adaptation among unincorporated wildland-urban interface communities. *Land Use Policy*, 91. <https://doi.org/10.1016/j.landusepol.2019.104394>.

Palsa, E., Bauer, M., Evers, C., Hamilton, M., & Nielsen-Pincus, M. (2022). Engagement in local and collaborative wildfire risk mitigation planning across the western U.S.—Evaluating participation and diversity in Community Wildfire Protection Plans. *PLOS ONE*, 17(2), e0263757. <https://doi.org/10.1371/journal.pone.0263757>.

Pavaglio, T. B., Carroll, M. S., Stasiewicz, A. M., Williams, D. R., & Becker, D. R. (2018). Incorporating Social Diversity into Wildfire Management: Proposing “Pathways” for Fire Adaptation. *Forest Science*, 64(5), 515–532. <https://doi.org/10.1093/forsci/fxy005>

Pavaglio, T. B., Stasiewicz, A. M., & Edgeley, C. M. (2021). Understanding support for regulatory approaches to wildfire management and performance of property mitigations on private lands—ScienceDirect. *Land Use Policy*, 100(104893). <https://doi.org/10.1016/j.landusepol.2020.104893>.

⁵¹ Davies, I. P., Haugo, R. D., Robertson, J. C., & Levin, P. S. (2018). The unequal vulnerability of communities of color to wildfire. *PLOS ONE*, 13(11), e0205825. <https://doi.org/10.1371/journal.pone.0205825>.

Gabbe, C. J., Pierce, G., & Oxlaj, E. (2020). Subsidized Households and Wildfire Hazards in California. *Environmental Management*, 66(5), 873–883. <https://doi.org/10.1007/s00267-020-01340-2>.

Masri, S., Scaduto, E., Jin, Y., & Wu, J. (2021). Disproportionate Impacts of Wildfires among Elderly and Low-Income Communities in California from 2000–2020. *International Journal of Environmental Research and Public Health*, 18(8), 3921. <https://doi.org/10.3390/ijerph18083921>.

Community Partner Committee

The OPDR team held its first community partner forum in May of 2022. Participants in the forum represented municipalities, law enforcement, watershed councils, drinking water providers, a community benefit organization, Oregon Emergency Management, Federal Emergency Management Agency, National Resource Conservation Service, a Community Planning Organization, and the Portland Water Bureau. The participants' experience with the 2020 wildfires contributed a lot of local stories and knowledge to the CWPP update. The OPDR team recommends forming this group into a committee and including them in the CWPP update throughout the remainder of the planning process. This collaborative approach helps bring community into the CWPP and may help identify additional funding opportunities.

Strategic Prioritization of CWPP Projects

Wildfire risk mitigation projects are located throughout Clackamas County in both urban and rural settings. Historically, project prioritization has been based on high burn probability and highly valued resources and assets (HVRA). The Oregon Partnership for Disaster Resilience team, based on research and interviews, decided to include socially vulnerable communities, critical infrastructure, watersheds, and wildlife habitat in the HVRA definition. All strategic prioritizations should also be informed by a robust community engagement process. Implementing projects that the community has expressed concern over will help to build agency support within the community, and therefore increase its adaptive capacity.

Timeline for CWPP Updates

The CWPP is a living document that should be reviewed annually and formally updated every five years. This effort should be coordinated by the CWPP Coordinator. As the fire landscape changes, prioritization of projects should change to meet the needs of the community; this may occur on the five-year planning horizon or may change more quickly depending on drought intensity, weather, and/or fire occurrence. Additionally, new funding opportunities may call for adjustments to be made within the plan to meet the requirements of the funding opportunity. When such an effort is underway, the CWPP Coordinator may solicit guidance from the steering committee and community.

Communities in the Wildland Urban Interface

The number of homes in the wildland urban interface (WUI) grew by 41% in the United States between 1990 and 2010.⁵² The OPDR team recommends that defensible space be required for all new developments in the WUI with risk ratings of moderate, high, and very high. This requirement should be included in the zoning code in all zones that permit or conditionally permit a residence. By requiring developers to create defensible space, Clackamas County will protect first responders, life, and property.

Economies of Scale Application

Conducting landscape-scale application of fire planning allows for an economy-of-scale effort. Creation of a localized "strike-team" approach will maximize cost-benefit ratios and create local jobs. This approach will rely heavily on the CWPP Coordinator to assemble the team, implement the CWPP's strategically prioritized mitigation projects, and coordinate efforts across jurisdictional boundaries. Key to the strike team approach is to minimize cost by having specialists like an arborist focus only on hazard tree removal and the less expensive brush crew doing the clean-up. An example of a fuels mitigation strike team, their roles/responsibilities, and compensation types are shown in Table 8-1.

⁵² Radeloff, V. C., Helmers, D. P., Kramer, H. A., Mockrin, M. H., Alexandre, P. M., Bar-Massada, A., Butsic, V., Hawbaker, T. J., Martinuzzi, S., Syphard, A. D., & Stewart, S. I. (2018). Rapid growth of the US wildland-urban interface raises wildfire risk. *Proceedings of the National Academy of Sciences*, 115(13), 3314–3319. <https://doi.org/10.1073/pnas.1718850115>.

Table 8-1 Strike Team Roster, Roles and Responsibilities, and Compensation

Roster	Roles and Responsibilities	Compensation
CWPP Coordinator	Coordinates team, schedules projects, identifies landowners, and coordinates across jurisdictional boundaries	Market Rate
Forester	Coordinates team, manages projects, and ensures ecological connection	Market Rate/retainer
Brush Crew	Removes brush, haul/deck usable timber, and cleans up project	Market Rate
Arborist	Limbs trees, falls hazard trees, and cuts usable timber to length	Market Rate
Logging Company	Removes usable timber	Usable timber
County Partners	Provides access and allows decking	N/A
State Partners	Provides access and allows decking	N/A
Federal Partners	Provides access and allows decking	N/A

Treatment Prescription

What does Clackamas County consider treated? Fuels treatments need to meet an agreed upon standard provided by the steering committee. Projects that do not meet or maintain that standard should remain on the action plan until they can be treated to that standard. The OPDR team recommends a treatment standard that on an 80th percentile day, if an ember were to land in a treated area, the resulting fire would not produce a flame length over four feet and no crowning would occur.

Strategic Fuel Breaks

Fuel loads within Clackamas County are severe and will unlikely be thinned enough to prevent future catastrophic loss of life and property to wildfire. Placing strategic fuel breaks between historically observed high-ignition occurrence locations and HVRAs will give fire responders a chance to protect HVRAs. Placement of the fuel breaks must take into consideration 90th percentile days with an east wind.

Public Educational Campaigns

Comprehensive outreach and educational campaigns will help mitigate and prevent future wildfire ignitions in Clackamas County. These campaigns should come from local, regional, and statewide partners and target both visitors to and residents of Clackamas County.

We recommend collaborating with Portland Metro, Multnomah County, Oregon Department of Transportation, and Portland International Airport to educate visitors to Clackamas County about the dangers of wildfire. In a 2018 Mount Hood Visitor Survey conducted by Travel Oregon, 83% of respondents traveled to Mount Hood in a personal vehicle.⁵³ Utilizing billboards and message signs along Highway 26 and 35 to inform visitors of high wildfire danger will help prevent wildfire. During 90th percentile days, placing fire crews on these highly traveled routes with their lights flashing and temporary signs warning about the high risk of starting a wildfire may also reduce ignitions.

⁵³ Travel Oregon. (2018). *Mt. Hood Area Visitor Survey Final Results*. <https://industry.traveloregon.com/wp-content/uploads/2019/08/Mt-Hood-Area-Visitor-Study-Final-Report-1.pdf>

Additionally, information obtained from the Community Wildfire Survey indicates that educational opportunities are needed for the Clackamas County community. Respondents generally indicated that their homes were not fire hardened. About one-third of respondents were not signed up or unsure if they were signed up for the ClackCo Public Alert System, about 45% of respondents did not have an evacuation plan, and 60% of woodland owners had not created fuel-breaks on their properties. Based on this feedback, public educational messaging directed to Clackamas County residents should address structural ignitability, defensible space, emergency preparedness, and evacuation planning.

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Chapter 9: Clackamas County Fire Agencies

Introduction

There were 13 local structural fire agencies and two wildland fire agencies in Clackamas County identified as local Communities at Risk (CARs) in the 2012 CWPP. These organizations provide essential public services in the communities they serve, and their duties go beyond extinguishing fires. Most also provide emergency medical services (EMS), search and rescue, and fire prevention education.

Wildfire prevention and response efforts are most effective at the local level. One of the primary goals of the 2018 CWPP update was to create the foundation and build capacity for local fire agencies to create Community Wildfire Protection Plans that reflect the localized hazards, needs, and mitigation strategies. However, most fire agencies have not had the time or resources to invest towards this effort.

The 2023 CWPP Update therefore continues to focus on a localized approach to wildfire planning by creating plans for each fire agency. Agencies were interviewed about wildfire hazards, emergency operations, structural ignitability, community outreach, and education and fuels reduction priorities. Agencies were also asked to identify local CARs, areas that are particularly vulnerable to wildfires.

Local CWPP Content

Each section throughout this chapter includes a brief description of the issues identified during fire agency interviews and are replete with action plans to address wildfire issues specific to the agency and the Local Communities at Risk. Maps illustrating the locations of the Local Communities at Risk and Fuels Reduction priorities have been included as well.

The goal is to provide a guide for fire agencies to address wildfire hazards as staff and funding are available. The information within the following pages can also be used to identify commonalities and discrepancies between fire agencies, which can help direct wildfire mitigation efforts at the county level.

Each section contains the following items:

- Fire Agency Description
- WUI Description & Map
- Hazard Assessment
- Description of Wildfire Issues: Emergency Operations, Structural Ignitability, Community Outreach and Education, and Fuels Reduction Priorities
- Local Communities at Risk Description
- CWPP Action Plan

Maintenance and Monitoring

To have a comprehensive and effective wildfire plan, it is critical to address county-wide and local issues simultaneously. Fire agencies will provide updates to the Clackamas FDB as projects are completed to ensure that efforts are being coordinated and that partners are aware of opportunities for collaboration.

9.1. Community at Risk: Aurora Rural Fire Protection District #63

The Aurora Fire District has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

The Aurora Fire District service area is in both Clackamas and Marion counties. For information on the service area within Marion County, see the [Marion County CWPP](#).

Aurora Fire District Description

The Aurora Rural Fire Protection District #63 is a full-service fire and rescue agency with a force of eight career employees, 20 volunteer firefighters and six resident student firefighters who serve the District's 6,000 residents from two fire stations. The District organized on May 4, 1948, with 26 volunteer firefighters. It is a special service district that serves an area of 64 square miles in both Marion County and Clackamas County and is governed by a board of five publicly elected officials (see Map 9-1).

Wildland Urban Interface (WUI)

The Aurora Fire District has areas that are excellent examples of the Wildland Urban Interface (WUI). These areas are characterized by residential homes surrounded by heavy fuels and steep slopes. In addition, many of the neighborhoods have only one way in and one way out with narrow, steep driveways and poor address signage. Heavy and continuous fuels dominate these areas, so fires that begin on public land or on smaller private residential lots can quickly threaten the communities and natural resources that thrive in the Aurora Fire District.

Aurora Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Aurora Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-1 illustrates the overall wildfire hazard risk in the Aurora Fire District and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

Aurora Fire promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. However, the District is not always given the opportunity to provide input to cities, the county, and the state regarding access and water supply for new development. Using the State Fire Code as a regulatory tool in establishing adequate access and water supply is critical to reducing structural ignitability. The need for the District to increase capacity for participating in land use reviews regarding new development is identified as an action item in the Aurora Fire Action Plan.

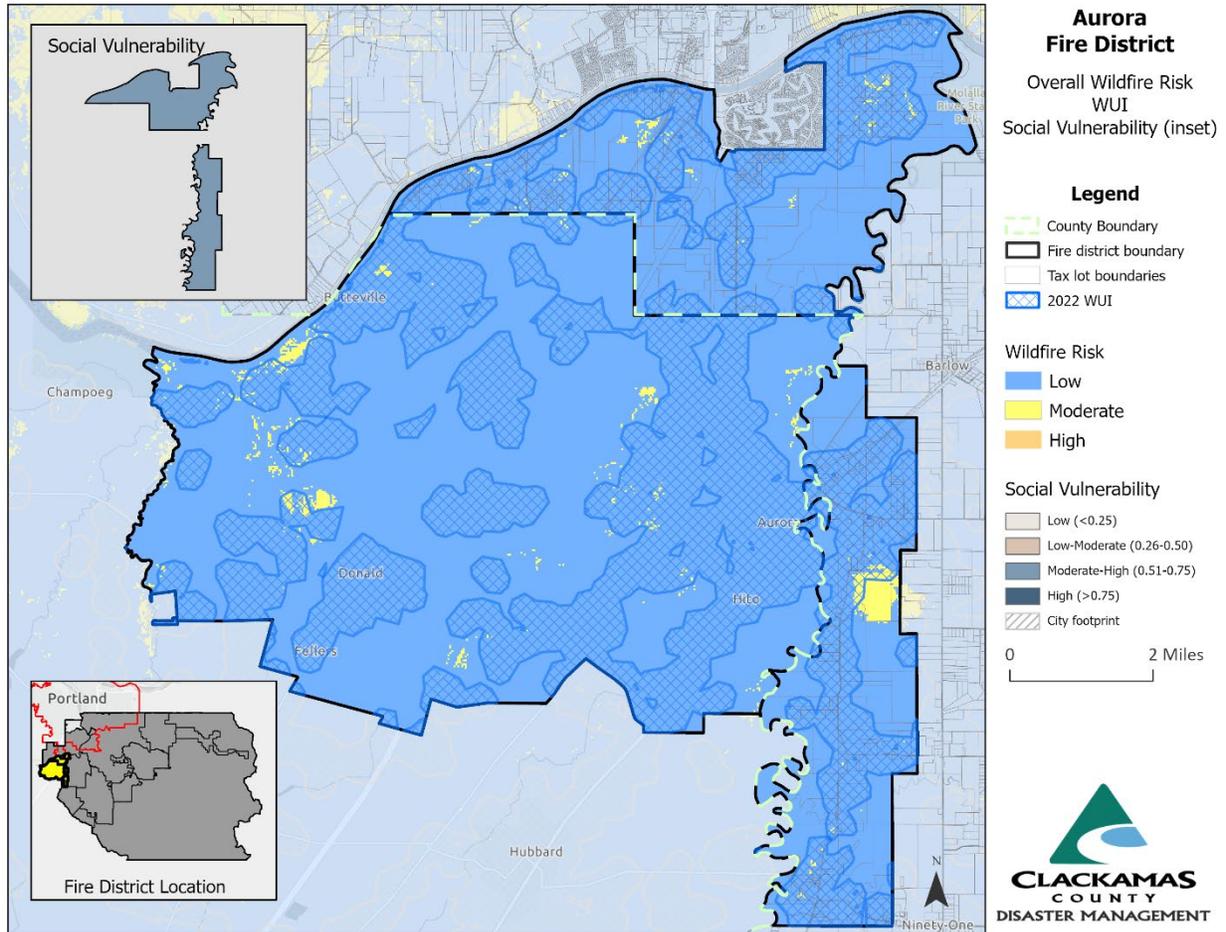
Emergency Response

A major wildland urban interface fire in Aurora would quickly exceed the resources and capabilities of the District. For this reason, Aurora Fire has Mutual Aid agreements in place that allow for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire. Aurora Fire employees and volunteers receive somewhat regular wildfire training. The District would like to work with ODF to support regular S-130 and S-190 training.

In the event of a large wildland fire, evacuations may be necessary. Evacuating this rural area safely presents some access and safety challenges due to the large number of one way in and one way out roads and bridges.

Burning of agricultural waste and yard debris is a very common occurrence in this area that is dominated by agriculture. District residents would benefit from periodic reminders of safe burning practices and techniques to ensure that debris burns do not escape to cause wildfires. This is identified as an action item in the Aurora Fire Local Communities at Risk Action Plan.

Map 9-1 Aurora Fire District Wildfire Risk and Social Vulnerability



Community Outreach & Education

Aurora Fire is dedicated to fire prevention and uses a variety of forums to promote residential fire safety, defensible space, and safe burning practices. The community is very supportive of the Fire District and participates in activities throughout the year, some of which include smoke detector, fire prevention, and other programs.

Local Communities at Risk (Strategic Planning Areas)

Aurora Fire recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at the more local level. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-1.

Aurora Fire professionals considered the following factors to determine the local CARs:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).

- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Effective fuels reduction projects include the creation of defensible space around homes as well as vegetation treatments (shaded fuels breaks, thinning, liming) onto adjacent forested land and natural areas. To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk (CARs) identified by Aurora Fire.

Fuels Reduction Priorities:

- Champoeg State Park Campground Area
- Eilers Road Area
- Cedarbrook Lane
- Whiskey Hill
- Butteville Road

Aurora Fire District Action Plan

Aurora Fire has developed a list of actions to build capacity at the Department scale and has identified actions that can help to make the local CARs more resilient to potential wildfires. The action plan for Aurora Fire and the Local CARs therein is provided in Table 9-2..

Progress since 2018

The District has made significant strides on WUI training and preparedness, with all firefighters trained to at least be a wildland firefighter type 2, with several at the a type 1 level. The District has also purchased proper wildland firefighter PPE and two new type 6 engines. As a result of this increased experience and improved equipment, the District has been able to participate in fighting more state conflagrations and with intercounty mutual aid since 2018.

Additionally, the District recently received a grant from the OSFM to purchase a woodchipper and start a sustainable chipper program to process vegetation and debris collected during fuels reduction projects. This grant is also funding improved home addressing in rural areas and within the WUI.

The District has completed the following action items from the 2018 CWPP:

- **2018 Action Item:** Increase capacity for communicating with other fire agencies by obtaining 3-4 portable 800 MHz radios.
- **2018 Action Item:** Work with Marion County to update map numbers.
- **2018 Action Item:** Conduct Community Meetings to educate the community and solicit feedback on wildfire prevention projects that the community would support.

Table 9-1 Aurora Fire District Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Eilers Road/Myley Road (near Charbonneau)													This community is characterized by many homes surrounded by heavy timber, with poor access and limited water supply. Brownsdale Farm Road and Mylee Road are difficult for emergency service vehicles to access. This area needs to be targeted for address signs. The District has conducted tactical training regarding fires in this area with Tualatin Valley Fire & Rescue.
Brownsdale Farm Road	H	X	X	X						X		X	
Glass and Beck Roads													
Butteville Road	H	X		X						X		X	This is a new community that has a high concentration of homes adjacent to heavy timber and steep slopes. Access is good, but water supplies are limited. Defensible space is needed.
Whiskey Hill/Meridian Road	H	X	X	X						X		X	Whiskey Hill and Meridian Road are high priority CARs because there are homes adjacent to heavy timber, there are steep slopes, little water and access is extremely limited.
Cedarbrook Lane	H	X		X						X		X	Cedarbrook Lane is in a gully, which means that a fire here can carry upslope very quickly. Although access is good, address signs are needed here. Water supplies are also limited.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-2 Aurora Fire District Action Plan

ID	Action Item	Timeframe	Partners		Status
Aurora Fire Action Plan					
1.1	Develop relationships with Clackamas County Sheriff’s Office for potential evacuations.	1 Year	CCSO; CCEM		Ongoing
1.2	Work with Clackamas County Land Use Planning and Building Departments to provide input on access and water requirements in new developments.	Ongoing	CCDTD		Ongoing
1.3	Partner with ODF to assist in training staff and volunteers in wildland fire initial attack (S-130 and S-190).	Ongoing	ODF		Ongoing
1.4	Develop sustainable woodchipper program for debris collected during fuels reductions projects using funding from OSFM.	3 Years	OSFM		New
ID	Action Item	Timeframe	Partners	CAR	Status
Aurora Fire Local Communities at Risk Action Plan					
2.1	Complete home addressing in CARs using grant funding from OSFM.	Ongoing	ODF; OSFM; Clackamas Wildfire Collaborative	Eilers Road; Meridian Road	Ongoing
2.2	Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	Ongoing	Clackamas Wildfire Collaborative	All CARs	Ongoing
2.3	Promote legal, safe, and responsible debris burning through public outreach and education.	Ongoing	ODF; DEQ; Clackamas Wildfire Collaborative	All CARs	Ongoing
2.4	Reduce hazardous fuels in the ROW of potential evacuation routes. Engage residents adjacent to primary evacuation routes to extend treatments onto private land.	Ongoing	ODOT; CCDTD	All CARs	Ongoing
2.5	Obtain structural ignitability data by conducting structural triage assessments (including GPS points) for homes in CARs.	Ongoing	ODF	All CARs	Ongoing

ID	Action Item	Timeframe	Partners	CAR	Status
2.6	Develop a community-driven pre-disaster plan, including evacuation routes, telephone call down trees, and other strategies for strengthening community response.	Ongoing	CCEM; CCFDB	All CARs	Ongoing
2.7	Implement road addressing (including length of driveways) and other signage for emergency response.	Ongoing	ODF; OSFM	All CARs	Ongoing
2.8	Seek grant funding to support fuels reduction and the creation of defensible space around homes.	Ongoing	ODF; OSFM	All CARs	Ongoing
2.9	Conduct community clean-up days to reduce hazardous fuels. Identify opportunities to recycle or compose vegetative material instead of burning it.	Ongoing	ODF	All CARs	Ongoing

Note: CAR=Community at Risk.

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9.2. Community at Risk: Canby Rural Fire Protection District #62

The Canby Fire District has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

Canby Fire District Description

The Canby Fire District is a special service district that provides fire, rescue, and prevention services to the Cities of Canby and Barlow as well as the rural areas around those cities. Canby Fire is also the ambulance service provider for the service area, providing emergency advanced life support transport to its residents. Over 30,000 people live within the 54 square miles that the District serves. Currently the Fire District has 50 members who consist of 24 career, 20 volunteer, and two administrative personnel. The District passed a new levy in 2023 that funded the addition of new staff, increasing administrative capacity and improving the District's ability to respond to emergencies.

Wildland Urban Interface (WUI)

Some areas in the Canby Fire District are excellent examples of the Wildland Urban Interface (WUI). These areas are characterized by residential homes surrounded by heavy fuels and steep slopes. In addition, many of the neighborhoods have only one way in and one way out with narrow, steep driveways and poor address signage. Canby has a heavy agricultural influence, so there is a great deal of controlled field burning, but there is not a significant history of large wildfires.

Canby Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Canby Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-2 illustrates the overall wildfire hazard risk in the Canby Fire District and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

Canby Fire promotes adequate access and water supply, the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. Although the City of Canby has a Planning Department, it now contracts with Clackamas County for land use planning and building permit services. Canby Fire has an excellent working relationship with Clackamas County and integrates fire-safety concepts at the regulatory level by participating in land use reviews for new developments to provide input on access and water supply.

Emergency Response

A major wildland urban interface fire in Canby would quickly exceed the resources and capabilities of the District, as the District's priority for service is in transport (i.e., ambulances and other similar response) and not large-scale firefighting. For this reason, Canby Fire has mutual aid agreements in place that allow for the sharing of resources across the county during a large-scale disaster such as a wildfire.

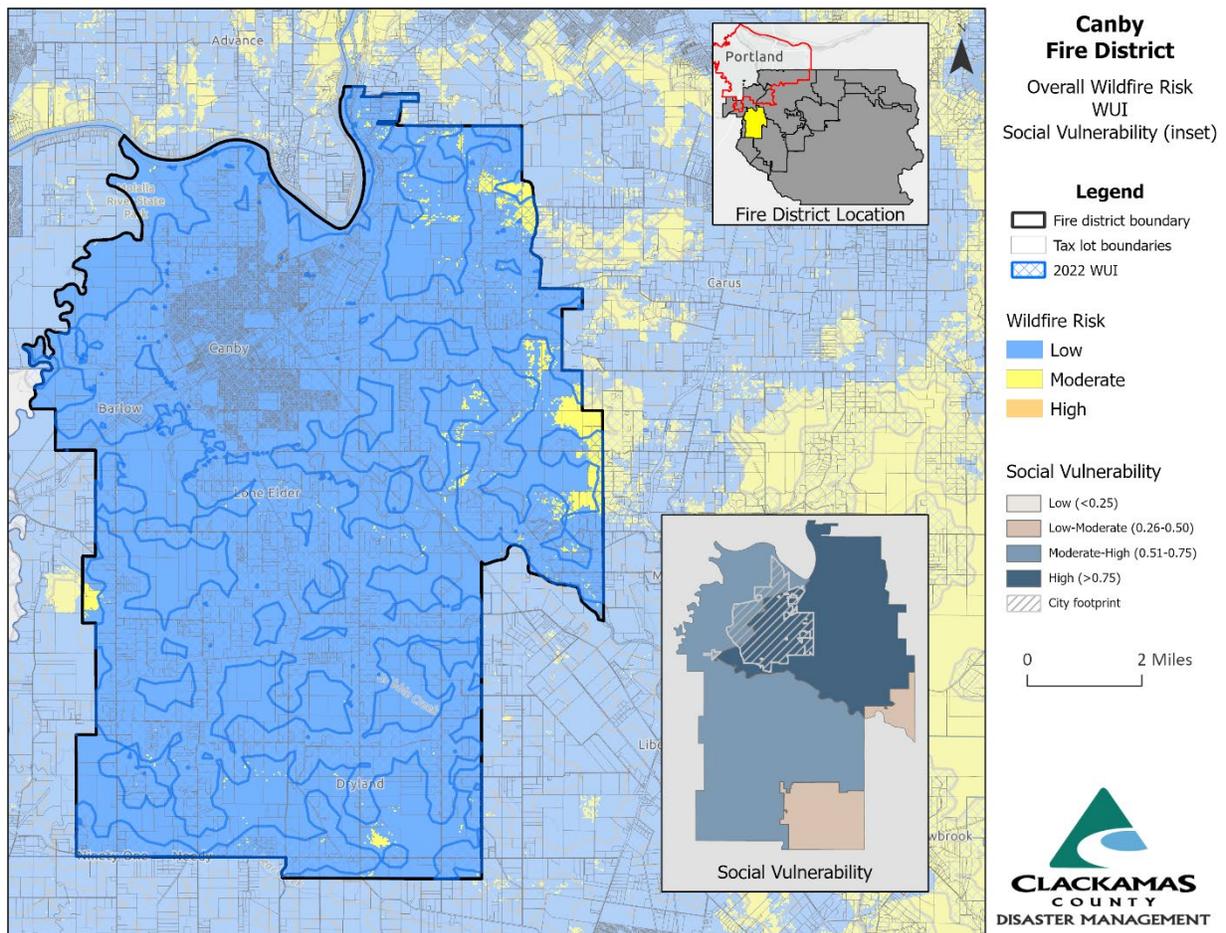
Burning of yard waste and debris is challenging in the Canby Fire District, as most wildfire ignitions are the result of escaped debris burns from agricultural lands. Agricultural burning is regulated by the Oregon Department of Agriculture, and fire districts may only ban burning if certain humidity, temperature, and wind conditions are met. Agricultural operations may burn all year, which makes enforcement of the backyard burning program difficult because local area residents do not understand why they cannot burn

while others can. The majority of Canby is within the DEQ boundary, so there is a burning season, but response from DEQ for violations is inconsistent.

Radio communications are good throughout Canby, although there are some gaps in coverage across the District. Canby Fire received an AFG large grant to address communication issues in these areas. Canby Fire would rely on two primary water supplies for wildfire response: one on Dryland Road and one on Elisha Road. The Canby Ferry also has a fire pump that could be utilized in an emergency. Canby Fire would like to continue developing rural water supply sources to be a recognized water supply by ISO.

The District employs 24 career and 20 volunteer firefighters who receive regular wildland fire training to remain current on qualifications. Although the District can support the S-130 and S-190 training, lack of live fire experience makes it difficult to retain wildland qualifications. Canby Fire is working with NAFT and WFTA to conduct a live fire exercise (potentially in Molalla area) to address the fire component of wildland task books. Canby Fire received grant funding to purchase wildland PPE and received a Fire Act FEMA grant for structural and wildland PPE five years ago, but likely will need additional wildland gear (turnouts and footwear) due to volunteer turnover.

Map 9-2 Canby Fire District Wildfire Risk and Social Vulnerability



Community Outreach & Education

Canby Fire is dedicated to fire prevention and uses a variety of forums to promote residential fire safety, defensible space, and safe burning practices. The community is very supportive of the Fire District and participates in activities throughout the year, some of which include in-classroom school programs, public presentations, fire station tours, media events, safety fairs, and joint Town Hall meetings with Clackamas County Disaster Management in both English and Spanish.

Canby Fire is a member of the Clackamas County Wildfire Collaboration, which is a consortium of structural and wildland fire protection professionals that work together to deliver outreach and educational programs (such as grade school fire safety programs), home assessments, fuels reduction projects, and essential GIS mapping services.

The District has also obtained \$35,000 grants in 2022 and 2023 from the Oregon State Fire Marshal's office, which it has used primarily for direct WUI community engagement as well as to increase engine staffing.

Local Communities at Risk (Strategic Planning Areas)

Canby Fire also recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at the more local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table.

Canby Fire professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Fuels reduction projects can and should be accomplished at the local scale, which involves the creation of defensible space around homes, as well as the landscape scale, which extends vegetation treatments onto adjacent forested land and natural areas. Canby Fire will assist in facilitating cooperation between public and private organizations to ensure that fuels reduction work occurs strategically and benefits homeowners as well as adjacent public and private lands.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk Identified by Canby Fire.

Fuels Reduction Priorities:

- Sundowner
- Molalla River State Park

Canby Fire District Action Plan

Canby Fire has developed a list of actions to build capacity at the District scale and has identified actions that can help to make the local CARS more resilient to potential wildfires. The action plan for Canby Fire and the local CARs therein is provided in Table 9-4.

Progress since 2018

Canby Fire has been busy working with Oregon Department of Environmental Quality (DEQ) and Oregon Department of Agriculture (ODA) to limit the number of illegal burns by developing a daily burn call-line. They would like to continue this work by developing a media campaign but will need additional resources and capacity. They successfully installed two additional pump sites and numerous hydrants outside of the city within the industrial park area. Their staff have been attending the annual Metro Advanced Wildland School (MAWS) and would like to fund additional positions for future MAWS training.

In their community, Canby Fire hosted two Community Preparedness meetings, with one session in Spanish, and participated in a virtual Community Preparedness session since 2018. It is difficult to monitor all the private burns in the spring and fall and they would benefit from more resources from DEQ and ODA as well as increased regulatory authority.

Table 9-3 Canby Fire Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Adkins Circle	H	X	X	X		X			X	X		X	Adkins Circle is a community of about 11 homes that have a single access bridge that is one way in and one way out. The community is adjacent to managed private timberlands. The area has steep slopes and residents regularly burn yard debris.
Sundowner	H	X	X	X				X	X	X			The Sundowner community is very rural and it would take over 10 minutes to respond, making it very important for landowners to be prepared for potential emergencies such as wildfires. There is only one way in and out. The homes here are relatively new and there is heavy vegetation leading up to the homes. Residents regularly burn yard debris in this community.
Dutch Vista/Madrona	H	X	X	X			X	X	X	X		X	The Dutch Vista One has limited access with a steep, one way in and out road. The homes are on the bluff of the river, which is accessed by recreators and fishermen who could serve as ignition sources. There is also a railroad here, which is a potential ignition source. Water supply is very limited.
Public Works Infrastructure	H	X	X	X	X								The City of Canby Public Works buildings and other infrastructure are adjacent to city-owned forest that would benefit from fuels reduction. Access is limited to one way in and out.
North Side Molalla River Bluff	M	X		X					X	X		X	The homes on the North Side of the Willamette River Bluff are at the top of a heavily vegetated slope. There are good potential evacuation routes in this area because there are many points of entry. However, this increased access to the area also increases the number of recreators and fishermen that could serve as ignition sources.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
South End	M	X		X			X	X	X	X		X	South End Road has adequate access, but a limited water supply. CCFD has a few hydrants here. Vegetation and steep slopes are the primary concerns here. Fire response would have to be staged off the main highway, so there would be disruption, and traffic management to consider. The railroad runs through here, which increases ignition potential. Anglers, transients, and recreators frequent the area and are potential ignitions sources.
Molalla River State Park	M	X	X		X				X	X		X	The Molalla River State Park draws many recreators, primarily anglers, to the area. The primary risk here is the heavy fuels loading throughout the park.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-4 Canby Fire Action Plan

ID	Action Item	Timeframe	Partners	Status	
Canby Fire Action Plan					
1.1	Pursue grant funding to purchase Wildland PPE to replace outdated PPE.	2 Years	ODF; CCFDB	Delayed	
1.2	Develop rural water supply sources to a standard that will be recognized by ISO.	3 Years	ODF; CCFDB	On Schedule	
1.3	Work with the ODA to educate local area residents about the differences between agricultural and backyard burning.	3 Years	ODF; DEQ; Clackamas Wildfire Collaborative	On Schedule	
1.4	Work with the DEQ to achieve consistent responses for burning violations.	2 Years	DEQ	On Schedule	
1.5	Identify and pursue opportunities to participate in prescribed burns and live fire training to update and maintain wildfire certifications.	Ongoing	CCFDB; NAFT; WFTA	Ongoing	
1.6	Continue to foster partnerships with natural resources managers to assess and implement potential fuels reductions projects in natural areas adjacent to local CARs.	Ongoing	ODF; BLM; City Parks	Delayed	
1.7	Partner with the Clackamas County Fire Defense Board to participate in a WUI conflagration exercise.	2 Years	CCFDB	On Schedule	
1.8	Develop a backyard burning campaign in partnership with DEQ and ODA.	2 Years	DEQ; ODA	New	
1.9	Add capacity and resources for wildland/WUI firefighting.	Ongoing	CCFDB	New	
1.10	Develop media plan and resources for public messaging.	2 Years	CCFDB; CCEM	New	
1.11	Develop and refine local CARs and wildfire risk reduction plan.	2 Years	CCFDB; CCEM	New	
ID	Action Item	Timeframe	Partners	CAR	Status
Canby Fire Local Communities at Risk Action Plan					
2.1	Improve address signage for emergency response.	Ongoing	Clackamas Wildfire Collaborative	All CARs	Ongoing
2.2	Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	Ongoing	Clackamas Wildfire Collaborative	All CARs	Delayed

ID	Action Item	Timeframe	Partners	CAR	Status
2.3	Promote legal, safe, and responsible debris burning through public outreach and education.	Ongoing	ODF; DEQ; Clackamas Wildfire Collaborative; ODA	All CARs	Ongoing
2.4	Develop a community-driven pre-disaster plan, including evacuation routes, telephone call down trees, and other strategies for strengthening community response.	Ongoing	CCEM; CCFDB	All CARs	Ongoing

Note: CAR=Community at Risk.

9.3 Community at Risk: Clackamas Fire District

Clackamas Fire District has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

Clackamas Fire District Description

The District has contracts to provide services for [Gladstone Fire Department](#) and [Sandy Fire District](#). The City of Gladstone entered into an Intergovernmental Agreement with Clackamas Fire District on July 1, 2022, which terminated on July 1, 2023. This agreement shall automatically be renewed for two consecutive two-year terms. Sandy Fire District entered into a full contract for seven years of service with Clackamas Fire District effective July 1, 2023.

CFD is one of the largest fire protection districts in Oregon, proudly serving over 300,000 residents in an area covering nearly 300 square miles of urban, suburban, and rural communities. The District provides fire, rescue, and emergency medical services to the cities of Happy Valley, Johnson City, Milwaukie, and Oregon City, as well as the unincorporated communities of Barton, Beaver Creek, Boring, Carus, Carver, Central Point, Clackamas, Clarkes, Damascus, Eagle Creek, Holcomb, Oak Lodge, Redland, South End, Sunnyside, and Westwood.

CFD staff of career and volunteer firefighters and paramedics respond to over tens of thousands of incidents annually from 25 fire stations located strategically throughout the fire district. CFD is an internationally accredited agency meeting the highest standards in emergency service delivery.

Wildland Urban Interface (WUI)

Many areas covered by CFD are excellent examples of the Wildland Urban Interface (WUI). They are characterized by suburban communities and rural residential homes surrounded by heavy fuels and steep slopes. In addition, many of the neighborhoods have limited access with narrow, steep driveways and poor water supplies.

The more rural wildland urban interface areas exist in the District's southern, southeastern, and eastern protection service areas. These rural interface areas are best defined as a mixed interface in which small to medium sized neighborhoods have been built on lands formerly used for a variety of farm use applications.

In the more urban areas, heavy and continuous fuels dominate many of the parks and natural areas surrounding the communities, so fires that begin on public land or on smaller private residential lots can quickly threaten communities and natural resources that thrive in the cities of Milwaukie, Happy Valley, and Oregon City and the communities of Clackamas, Oak Grove, and Jennings Lodge. In addition, response times from rural fire stations could be delayed, which underscores the need for community preparedness in the wildland urban interface.

Clackamas Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Clackamas Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-3 illustrates the overall wildfire hazard risk in CFD and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

CFD promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. CFD works well with the Cities of Milwaukie, Oregon City, Happy Valley, and Johnson City and Clackamas County to integrate these concepts at the regulatory level by participating in land use reviews for new development to provide input on access and water supply.

The area served by CFD has a great deal of development in urban areas, making it difficult to make specific recommendations and make site visits to confirm compliance with the guidelines set forth in the Zoning and Development Ordinance. This need to build capacity for rural development is included in the CFD Action Plan.

Emergency Response

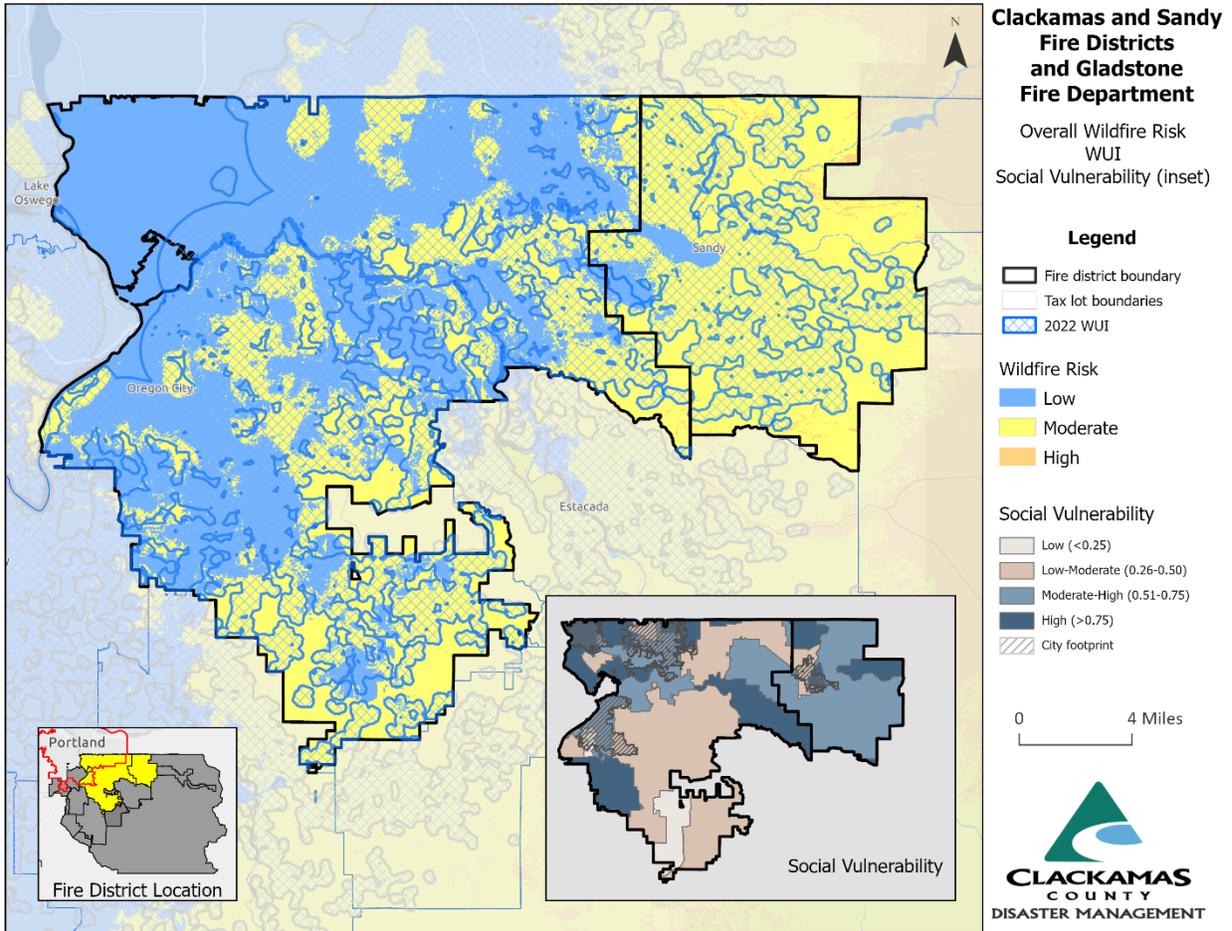
A major wildland urban interface fire in CFD may exceed the immediate resources and capabilities of the District. For this reason, CFD has mutual aid agreements in place to allow for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire.

In the event of a large wildland fire, evacuations may be necessary. The rural residential areas present some challenges for evacuations due to access constraints including long, narrow, and steep driveways with poor addressing. CFD has been working with ODF to improve address signage in vulnerable areas and will continue to work with the Clackamas Wildfire Collaborative to implement address signage in the Communities at Risk. Many of the identified communities at risk have only one point of egress, making it difficult to manage incoming and outgoing traffic during an emergency.

CFD follows DEQ burning policies for backyard burning. The majority of the cities covered by CFD are within the DEQ burn ban area, which does not allow backyard burning at any time of the year. In the more rural areas that allow burning, CFD tries to be consistent with debris burning policies set forth by the Fire Defense Board during fire season.

CFD employs over 267 career and 70 volunteer firefighters who receive regular wildland fire training to remain current on qualifications. Although the District is able to support classroom training, lack of live-fire experience has made it difficult at times to maintain wildland qualifications. New staff members who have little to no live-wildland fire experience have difficulty completing task books without being deployed on conflagrations. For this reason, CFD has been working with NAFT in support of the Metro Area Wildland School hosted by Molalla Fire annually in June, exploring training options with the USFS, and utilizing the experience gained from State conflagration deployment of task forces and members on State overhead teams. Since 2020, the District also employs a full-time seasonal type 2 crew and has updated their wildland records management system. Both of these actions have significantly increased their response capacity.

Map 9-3 Clackamas Fire District (including Gladstone Fire Department and Sandy Fire District #72) Wildfire Risk and Social Vulnerability



Community Outreach & Education

CFD's Fire Prevention Division's mission is to strive to be a well-trained team of empathetic professionals, constantly improving and empowering our people to best serve those we are sworn to protect. Education opportunities include: school programs, public presentations, media events, and safety fairs. Engineering activities include: pre-construction plans review, fire protection system review, consumer product data collection, and fire code development. Enforcement activities include: commercial fire code inspections, open burning regulation enforcement, fire cause determination and arson investigation, and juvenile fire setter counseling and follow-up. The District also hosts debris collection days for residents conducting defensible space creation and fuels reduction on their land.

Local Communities at Risk (Strategic Planning Areas)

Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-5. Clackamas Fire professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.

- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

The Bureau of Land Management, private industrial landowners, and small woodland owners have many heavily forested landholdings that are adjacent to homes in the WUI. As CFD targets residential communities for creating defensible space, there is an opportunity to engage private, state, and federal partners in reducing fuels on this adjacent public land.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the local Communities at Risk identified by Clackamas Fire.

Fuels Reduction Priorities

- | | |
|-----------------------------|------------------------------------|
| • Amisgger Road | • Eagle Fern Park/Ella V. Osterman |
| • Happy Valley Nature Trail | • Highland Summit |
| • Mt Talbert | • Three Creeks |
| • Willamette Narrows | • Mtn. View Cemetery |
| • Singer Creek Park | • Atkinson Park |
| • Waterboard Park | • Canemah Bluff |
| • Clear Creek | • Newell Invasives |
| • Scouter Mountain | • McIver Park |
| • Lower Highland & Ridge | • East Highland |
| • Spring Park | • Forest Creek |
| • Tickle Creek Road | • Hwy 224 Corridor |
| • Bartell Road | • Gold, Bronze, Nickel Creek |

Clackamas Fire District Action Plan

Clackamas Fire has developed a list of actions to build capacity at the Department scale and has identified actions that can help to make the local CARs more resilient to potential wildfires. The action plan for the District and the local CARs therein is provided in Table 9-6.

Progress since 2018

Clackamas Fire District has made the following progress on their action plan since 2018:

- Conducted three prescribed burns in the Beaver Creek area, two along Bluhm Road and one along Spangler Road.
- Transitioned all fire district personnel to the Incident Qualifications System (IQS).
- Ongoing conversations with Metro about fuels reduction projects on Metro properties within District boundaries.
- Leading annual conflagration exercises.
- Established new Firewise Communities in:
 - DeerField Park
 - Beaverlake Estates
 - Happy Valley Heights
 - Hunter Heights
- Held community educational meetings about defensible space and SB 762.
- Partnered with DEQ and ODF to conduct consistent outreach, education, and open-burning enforcement.
- Administered a survey to identify homes in need of defensible space.
- Worked with Clackamas County Disaster Management to develop evacuation plans.
- Worked with utility companies to establish safety measures to reduce fire risk during extreme weather.
- Established a rural home signage program.
- Received funding for a chipper program through Clackamas Emergency Services Foundation.
- Continued to successfully educate homeowners about defensible space, gathering essential items, and creating escape routes.

The District has added the following new action items:

- Increase the number of Firewise Communities.
- Develop a sustainable chipper program to assist homeowners with woody debris and fuels reduction.
- Train select District personnel to National Wildfire Coordination Group standards regarding prescribed fire management, implementation, and execution.
- Develop a burnable debris drop off location.
- Seek funding to support the seasonal Fuels/Fire Crew.
- Seek funding to design and implement an interactive WUI webpage and public website.

The District has completed the following action item from the 2018 CWPP:

- **2018 Action Item:** Reduce hazardous fuels in the right of way (ROW) of potential evacuation routes. Engage residents adjacent to primary evacuation routes to extend treatments onto private land.

Table 9-5 Clackamas Fire District Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Forest Park Leisure Woods	H	X	X	X		X	X		X		X	X	This community is a high priority for the District because it has only one way in one way out, it is surrounded by managed timberlands (Port Blakely and BLM), there is poor access into the forested areas and it is heavily used by bicycles in the summer. Access for response is extremely limited. Burning on residential and forested lands is an issue. There is a strong need for community awareness and preparedness as many homes have cedar shake roofs. There is very poor cell coverage, limited water, and delayed response times.
Diane Drive Shelly Road	H	X		X		X		X	X		X	X	There are large homes adjacent to commercial timber operation in this community. Active timber management can provide ignition sources. Some of the homes have defensible space, and most construction is good with fire resistive roofing. However, it is steep, and there are many slash piles surrounding the community, so embers encroaching would be an issue. There is no water here and the closest station is volunteer, so response times would be delayed.
Redland Road Fishers Mill Area Logan Road	H	X	X	X		X	X		X	X		X	Logan Road is characterized by many logging operations that include burning of material. CFD has had many responses to fire ignitions here. Access is poor off Eden. Water is limited to draft sites.
Clarkes/Beavercreek	H	X	X	X		X			X	X	X	X	There is a long history of many wildfire ignitions resulting in large fires in the Clarkes/Beavercreek area. The area is now densely populated with homes, but only about half have hydrants (towards Oregon City). Response times can be long to this area and communications may be an issue in some areas. The community is also adjacent to Port Blakely forests, which have heavy fuel loading.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description	
Beaver Lake	H	X	X			X		X					X	Beaver Lake is a gated community adjacent to Port Blakely forestland. The rear is not accessible, so it is one way in and out. The community has heavy timber surrounding it and is on the top of a steep slope. The District can contact the Port Blakely forester in case they need to use their roads or need a key to unlock forest road gates, but this will eat up valuable time.
Canemah Bluffs	H	X	X		X		X			X			X	Canemah Bluffs is very steep and has homes at the bottom and at the top of the slope. The homes at the bottom are surrounded by fine, flashy fuels. Access is limited here to one way in and out. A fuels reduction/oak restoration was implemented here.
Scouters Mountain	H	X	X	X	X	X	X		X	X	X	X	X	Scouters Mountain has a series of natural areas adjacent to homes and infrastructure. This has been identified in the Clackamas Parks Wildfire Management Plan as a priority for fuels reduction. The land is currently being developed into more residential housing units.
Mount Talbert	H	X	X	X	X		X			X			X	Mount Talbert Nature Park is a 242-acre property, co-owned by North Clackamas Parks and Recreation District and Portland Metro. The site is located east of I-205 and south of Sunnyside Road. The park has urban development at its edges on three sides. Surrounding properties are mostly medium density residential, with higher density residential and commercial uses to the north. It has steep slopes and has transient camps.
Three Creeks	M	X	X	X	X		X			X				Three Creeks is a Clackamas County Park area that has heavy fuels adjacent to homes and infrastructure. This is a priority for fuels reduction and has been identified in the Clackamas County Parks Wildfire Management Plan.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Holcomb	M	X				X			X				The Holcomb area has a history of juvenile fire setters. This ignition source coupled with steep slopes, heavy vegetation and lighter fuels in the open spaces could result in a rapidly spreading wildland fire. The area has also seen and continues to see an increase in housing developments with smaller setbacks pushing further into the rural area. These types of developments in sloped areas can lead to rapid structure to structure fire spread in the WUI.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-6 Clackamas Fire District Action Plan

ID	Action Item	Timeframe	Partners	Status
Clackamas Fire #1 Action Plan				
1.1	Identify and pursue opportunities to participate in prescribed burns and live fire training to update and maintain wildfire certifications.	Ongoing	ODF; Metro; USFS	Ongoing
1.2	Continue to foster partnerships with natural resources managers to assess and implement potential fuels reduction projects in natural areas adjacent to CARs.	Ongoing	ODF; Metro; City of Happy Valley; City of Oregon City	Ongoing
1.3	Partner with the Clackamas County Fire Defense Board to participate in a WUI conflagration exercise.	Ongoing	CFDB	Ongoing
1.4	Build capacity to increase participation in land use reviews of residential structures in the Timber/Agriculture Zone.	3 Years	CCDTD; CCBD	On Schedule
1.5	Increase the number of Firewise communities, focusing on outreach to community groups like CPOs and HOAs.	3 Years	CPOs; HOAs	On Schedule
1.6	Develop a sustainable chipper program to assist homeowners with woody debris from fuels reduction and reduce community smoke impacts from backyard burning.	1 Year	ODF; DEQ; CCDM	On Schedule
1.7	Train select District personnel to National Wildfire Coordination Group standards regarding prescription fire management, implementation, and execution.	Ongoing	ODF; OSFM; USFS; CCDM	New
1.8	Develop a burnable debris drop-off location where county residents can drop off up to a certain amount of woody debris to be converted into carbon sequestering soil amendments (biochar) that could be sold to offset operational costs.	Ongoing	ODF; OSFM; ODOT; CCDM	New
1.9	Seek funding to support the hiring of the seasonal fuels/fire crew.	Ongoing	CSEM; CCDM	New
1.10	Seek funding to design and implement an interactive WUI webpage within the District website promoting free woody debris dump sites, chipper program funding and support, the creation of defensible space, maps identifying residents who are High Risk for wildfire, public notifications, and surveys.	1 Year	ODF; OSFM; DEQ	New

ID	Action Item	Timeframe	Partners	CAR	Status
Clackamas Fire #1 Local Communities at Risk Action Plan					
2.1	Conduct Community Meetings to educate the community and solicit feedback on wildfire prevention projects that the community would support.	2 Years	ODF	Forest Park; Leisure Woods; Diane Drive; Shelly Road	On Schedule
2.2	Complete home addressing in CARs.	2 Years	Clackamas Wildfire Collaborative	All CARs	Delayed
2.3	Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	Ongoing	ODF; DEQ; OSFM	All CARs	Ongoing
2.4	Promote legal, safe, and responsible debris burning through public outreach and education.	Ongoing	ODOT; CCDTD	All CARs	Ongoing
2.5	Obtain structural ignitability data by conducting structural triage assessments (including GPS points) for homes in CARs.	Ongoing	CCEM	All CARs	Ongoing
2.6	Develop a community-driven pre-disaster plan, including evacuation routes, telephone call down trees, and other strategies for strengthening community response.	Ongoing	ODF; Clackamas County	All CARs	Ongoing
2.7	Implement road addressing (including length of driveways) and other signage for emergency response.	Ongoing	ODF; Clackamas County	All CARs	Ongoing
2.8	Seek grant funding to support fuels reduction and the creation of defensible space around homes.	Ongoing	Metro	Scouters Mountain; Mount Talbert	Ongoing
2.9	Conduct community clean-up days to reduce hazardous fuels. Identify opportunities to recycle or compose vegetative material instead of burning it.	Ongoing	ODF; Metro	All CARs	Ongoing

ID	Action Item	Timeframe	Partners	CAR	Status
2.10	Implement and expand Ready, Set, Go wildfire alert and preparedness system.	Ongoing	ODF; CCSO; CCEM; Red Cross	All CARs	Ongoing

Note: CAR=Community at Risk

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9.4. Community as Risk: Colton Rural Fire District #70

Colton Rural Fire Protection District #70 has been identified as a Community at Risk (CAR) by the Oregon Department of Forestry. The District has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events.

Colton Fire District Description

With over 50 years of service, the Colton Rural Fire Protection District is made up of men and women, primarily volunteers as well as two full-time employees year-round and two additional full-time employees during fire season, who serve the residents of Colton and Elwood. The District was founded in 1956 and covers 46 square miles between Estacada and Molalla. The District protects the community with fire service and emergency medical care and gives mutual aid service to other agencies as needed.

Wildland Urban Interface (WUI)

This area is an excellent example of the Wildland Urban Interface (WUI) because it is characterized by steep slopes with residential homes surrounded by heavy fuels. In addition, many of the neighborhoods have only one way in and one way out with narrow, steep driveways and poor address signage. Water is limited throughout the District, especially in the Communities at Risk.

Heavy and continuous fuels dominate this area, and forests are actively managed for lumber and Christmas trees. Land ownership includes a variety of rural residential, private forest land, large industrial forests, and public lands (Bureau of Land Management). There are also many small woodlands that are not actively managed and are littered with dead and dying trees and ladder fuels that could take a fire from the ground into the crowns of the trees. Many local youth illegally access these forest landholdings to build campfires and use All Terrain Vehicles (ATV's), which increases the likelihood of potential ignitions. Fires that begin on public land or on smaller private residential lots can quickly threaten the communities and natural resources that thrive in the Colton Fire District.

Colton Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Colton Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-4 illustrates the overall wildfire hazard risk in the Colton area and will be used to help target areas for wildfire prevention activities.

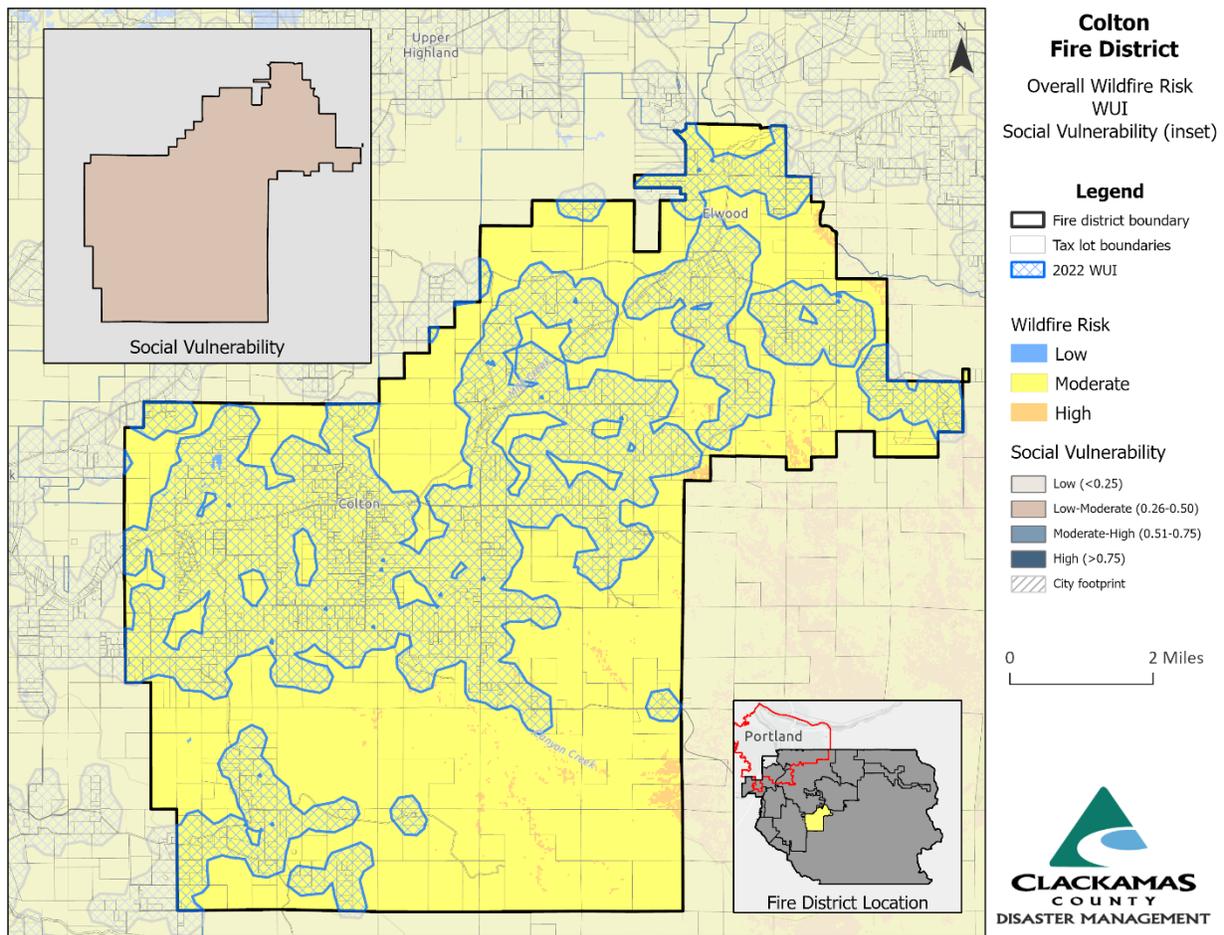
Structural Ignitability

Colton Fire District promotes the creation of defensible space, use of fire-resistant roofing and building materials, home sprinkler systems, specialized wildland sprinkler systems, and community preparedness in the WUI. Colton Fire District works with the Clackamas County Department of Transportation and Development to provide input on access and water supply for new lots of record. Colton Fire District provides alternatives to property owners who cannot meet the requirements for access and water supply. Clackamas County has upgraded their web site so the District can look up all building permit applications. There are some opportunities for improvement and coordination between Clackamas County and Colton Fire District:

- The Fire District is not notified of development that occurs on existing roads and or lots of record.
- The Fire District is not notified of homes that are being remodeled that require new access and water requirements.

The Colton Fire District is concerned with some new developments not meeting District requirements.

Map 9-4 Colton Rural Fire District Wildfire Risk and Social Vulnerability



Emergency Response

Emergency response is challenging at times in the Colton Fire District because staff is almost entirely volunteer, with two full-time employees year-round (a Fire Chief and Assistant Fire Chief) and two additional full-time Firefighters brought on during the fire season. A major wildland urban interface fire in the Colton area would quickly exceed the resources and capabilities of the District. For this reason, the District has mutual aid agreements in place which allow for the sharing of resources across the county, and state if necessary, in the event of a large scale disaster, including wildfires such as the Pit Fire. The district has four type 6 brush rigs, three class 1 structural engines, and one 2,500 gallon water tender that may become inadequate on a large wildland urban interface until other resources arrive.

Burning of yard waste and debris is unique in the Colton Rural Fire District because it is outside of the DEQ boundary, which means that the area residents can burn until burn regulations are in effect. The Fire District adheres to the Open Burn Policy adopted by the Clackamas County Fire Defense Board. The lack of staff and resources make it difficult to catch every illegal fire.

Radio coverage is generally good throughout the District using the 800MHz system. The District's radio system used for dispatching and alerting volunteers to emergency calls has been upgraded twice since 2018 alongside the rest of the county: first from VHS to analog, and then again to digital. This upgrade included much-needed new mobile and portable radios.

Because the Colton Water District does not have an extensive hydrant system outside of four square miles of hydrant area, it is important to identify and improve water sites. This is especially important for homes with long narrow driveways that will not support water tenders. Since 2018, the Fire District and ODF worked together to complete updates to address signage in many of the most vulnerable areas and water sites.

Community Outreach & Education

Colton Fire is dedicated to fire prevention and uses a variety of forums (e.g., social media and physical Fire Info Board spaces) to promote defensible space, fire-resistant building materials, and safe burning practices. The District partners with ODF to have wildfire prevention programs in local area schools and holds annual events at the main fire station that are paired with prevention messages, such as a Wildland Info and Open House held on the first Saturday in July in partnership with ODF.

The District would like to be more proactive about educating the public about the need for access, water, and defensible space and plans to use social media, postings on the Fire Info Boards at the main fire station and in the Elwood community, and direct conversations on a case-by-case basis to carry out a driveway outreach program to educate homeowners about lack of access and promote creation of turnaround space

Local Communities at Risk (Strategic Planning Areas)

Colton Fire District also recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at the more local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-7. Colton Fire Professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Fuels reduction projects should be accomplished at the local level, by the creation of defensible space around homes, wildland sprinkler suppression systems, and at the landscape scale, by extending vegetation treatments onto adjacent forested land and natural areas. The Colton Fire District will continue to facilitate cooperation between public and private organizations and local area residents to ensure that fuel reduction work continues and benefits homeowners, public, and private lands.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by the Fire District.

Fuels Reduction Priorities:

High Risk:

- Boomer Springs/Schieffer
- Deardorf

- Fernwood/Young Road Area

- Walton/Tiffany

Medium Risk:

- Dhooghe
- Elwood/Engstrom

- Hult Road
- Hunter Road

Colton Fire District Action Plan

Colton Fire District has developed a list of actions to build capacity at the Department scale and has identified actions that can help to make the local CARS more resilient to potential wildfires. The action plan for Colton Fire District and the local CARs therein is provided in Table 9-8.

Progress Since 2018

The District has completed the following action items from the 2018 CWPP:

- **2018 Action Item:** Pursue grant funding to purchase Wildland PPE to replace old equipment.
- **2018 Action Item:** Work with Clackamas County to ensure coordination regarding the new development on Rolliewood Road. As new homes are built, ensure the District is notified as no parking signs must be posted on all new legal roads.
- **2018 Action Item:** Work with Clackamas County to ensure coordination regarding development on existing lots and roads of record.
- **2018 Action Item:** Work with Clackamas County to use the total square footage of a home – including any remodel expansion – as the threshold for contacting fire agencies for access and water requirements.
- **2018 Action Item:** Work with Clackamas County to receive notification of occupancy permits through monthly emails and request access and training to use the Velocity Hall System.
- **2018 Action Item:** Complete home addressing in Communities at Risk throughout the District.

Table 9-7 Colton Fire Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Deardorf	H	X	X	X				X	X	X			X This community has only one way in and out with very narrow, steep roads and driveways. There are many homes in this area that have dense vegetation and need defensible space. There is no water here.
Boomer Springs/Schieffer	H	X	X					X	X	X			X There are not many homes in this community, but those that are located here have long, narrow driveways with no turn-around. There is no water here and there are very steep slopes.
Walton/Tiffany	H	X	X	X	X	X	X	X	X	X			X This community has many have long, narrow driveways with trees overhanging and encroaching. There is no water here and homes are in need of defensible space. Industrial forest lands surround the community and could be potential ignition sources.
Fernwood/Young Road Area	H	X	X	X		X	X	X	X	X			X This Community has very limited access with many roads being one way in and out and access is very narrow. Rounds Road is a very narrow, gravel road. Water is limited. There is a creek with a pond, but they are difficult to access. The community is adjacent to Port Blakey and Weyerhaeuser industrial forest operations. ATVs illegally access the Weyerhaeuser land where there is a great deal of slash from previous timber operations. Residents here burn all year, so there is a great deal of fuel around homes to be removed during the winter and spring, but there are some people who wait until summer to burn. OSU also has a managed forest here.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Dhooghe	M	X	X	X		X		X	X	X			Access to this area is difficult because many homes have long, narrow driveways. There is also a very narrow bridge that is one way in and out. Frank Road is in very poor condition. There is no water here. There is active logging in the heavily managed, private forest lands adjacent to the community. This forested area has a lot of ladder fuels on the western portion and could be targeted for Fuels Reduction.
Hult Road	M	X	X			X			X	X		X	The access in this community is extremely limited because Hult Road is now closed, making it one way in and out. It is also very steep. There is a good creek at the bottom, and about half of this community has hydrants. There are small, private forest lands surrounding the community. The managed woodlands look good, but the unmanaged woodlands have heavy fuels loading.
Hunter Road	M	X	X	X	X	X	X	X	X	X		X	This community only has one way in and out and it is very steep. There is a cluster of homes that need defensible space. Port Blakely and Weyerhaeuser own industrial forest lands that surround the community. Many local youth and homeless individuals illegally access these areas to hang out, smoke cigarettes, and start campfires.
Elwood Community	M	X	X			X		X	X	X		X	This community has good water with creeks and ponds from which pumps can draw. There are many homes here with narrow driveways. There is also a small bridge that fire apparatus cannot access. There are several one-way roads in the area with no turnaround, which is a big issue. Port Blakely manages industrial forest land adjacent to this community.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-8 Colton Fire Action Plan

ID	Action Item	Timeframe	Partners		Status
Colton Fire Action Plan					
1.1	Work with ODF, USFS, BLM, and other forest land managers to identify opportunities to participate in training.	Ongoing	ODF; USFS; BLM		Ongoing
1.2	Use social media, postings on information boards, and direct contact to carry out a driveway outreach program to educate homeowners about lack of access and promote creation of turnaround space	Ongoing	ODF; OSFM		New
1.3	Pursue grant funding to increase homeowner wildfire preparedness throughout the District.	Ongoing	ODF; OSFM		New
1.4	Work with loggers and contractors to identify and estimate local capacity to fight wildfires.	3 Years	ODF; Clackamas County		New
ID	Action Item	Timeframe	Partners	CAR	Status
Colton Fire Local Communities at Risk Action Plan					
2.1	Conduct Community Meetings to educate the community and solicit feedback on wildfire.	Ongoing	ODF	All CARs	Ongoing
2.2	Work with Clackamas Fire District to educate the local area residents of Hult Road about the importance of mitigation and preparedness given their high wildfire risk.	Ongoing	CFD	Hult Road	Ongoing
2.3	Begin identifying and improving potential water sites in Communities at Risk throughout the District.	3 Years	ODF	All CARs	On Schedule
2.4	Work with Port Blakeley and Weyerhaeuser to post signage and develop additional strategies to discourage illegal trespassing on forest land.	Ongoing	Port Blakely; Weyerhaeuser	Walton/Tiffany; Fernwood/Young Road Area; Hunter Road	Ongoing
2.5	Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	Ongoing	Clackamas Wildfire Collaborative	All CARs	Ongoing

ID	Action Item	Timeframe	Partners	CAR	Status
2.6	Promote legal, safe, and responsible debris burning through public outreach and education.	Ongoing	ODF; OSFM; Clackamas Wildfire Collaborative	All CARs	Ongoing
2.7	Reduce hazardous fuels in the ROW of potential evacuation routes. Engage residents adjacent to primary evacuation routes to extend treatments onto private land.	Ongoing	ODOT; CCDTD	All CARs	Ongoing
2.8	Seek grant funding to support fuels reduction and the creation of defensible space around homes.	Ongoing	ODF; OSFM	All CARs	Ongoing
2.9	Conduct evaluations of home wildfire preparedness via the Survey123 program.	Ongoing	ODF; OSFM	All CARs	New

Note: CAR=Community at Risk.

9.5. Community at Risk: Estacada Rural Fire District #69

The Estacada Rural Fire District #69 has been identified as a Community at Risk (CAR) by Oregon Department of Forestry. The District has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events.

Estacada Rural Fire District Description

The Estacada Rural Fire District #69 is a special service district that provides fire, rescue, and prevention services to the City of Estacada and the surrounding unincorporated areas. The mission of the Estacada Rural Fire District is to serve the community by providing quality fire and life safety services.

The Estacada Rural Fire District protects 88 square miles from two fire stations. The District includes the areas of Eagle Creek, Currinsville, Dodge, Garfield, George, Springwater, Tracy, and Viola. There are 13 career, 47 volunteer, and 2 seasonal firefighters that respond to approximately 1,700 alarms annually. Over 70% of the calls handled by the District annually are calls for emergency medical help.

Wildland Urban Interface (WUI)

Estacada's Fire District is a rural area on the eastern edge of Clackamas County adjacent to large tracts of federal and private forests. The terrain is steep, causing access and communication limitations. The Clackamas River bisects the District and continues to the Mount Hood National Forest, attracting thousands of visitors every year. Campers, hikers, hunters, and other visitors to this area can potentially start wildfires that could carry from public land to the residential communities.

The WUI area is characterized by rural residential homes surrounded by heavy fuels and steep slopes. In addition, many of the neighborhoods have only one way in and one way out with narrow, steep driveways and poor address signage. Heavy and continuous fuels dominate this area, so fires that begin on public land or on smaller private residential lots can quickly threaten the communities and natural resources that thrive in the Fire District.

Oregon State Parks, the Bureau of Land Management and the United States Forest Service have a few heavily forested landholdings that are adjacent to homes in the Wildland Urban Interface. As Estacada Fire targets the residential communities for creating defensible space, there is an opportunity to engage state and federal partners in reducing fuels on this adjacent public land.

Estacada Rural Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted the District in identifying areas that may be at higher risk to potential wildfires. Map 9-5 illustrates the overall wildfire hazard risk in the District and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

Estacada Fire promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. Estacada Fire works with the City of Estacada and Clackamas County to integrate these concepts at the regulatory level by providing input on access and water requirements for new development. When the District provides input, the fire flow and access requirements are always communicated to the Clackamas County Building Department.

Emergency Response

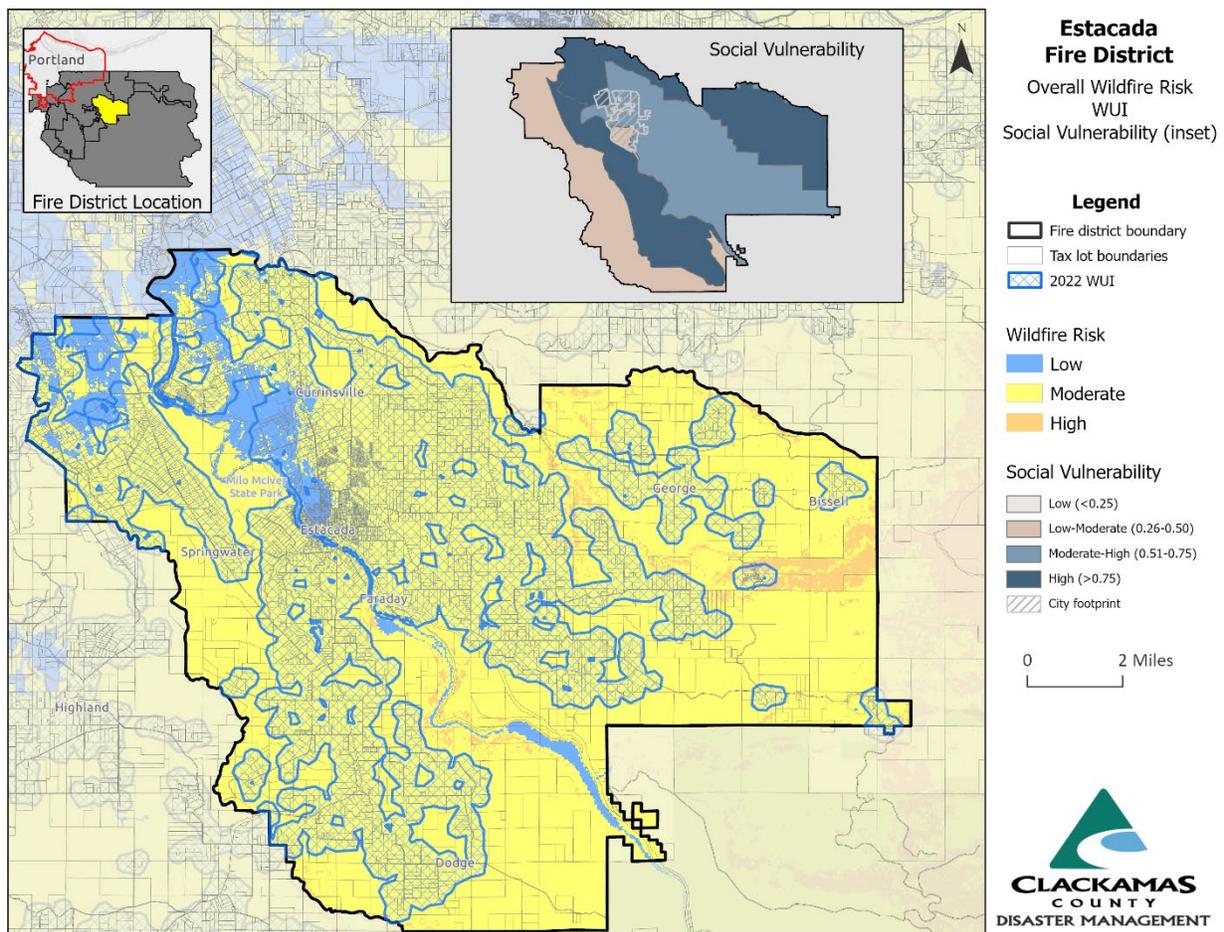
A major wildland urban interface fire in Estacada would quickly exceed the resources and capabilities of the District. For this reason, Estacada Fire has mutual aid agreements in place, which allows for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire.

In the event of a large wildland fire, evacuations may be necessary. This rural area presents some difficulties due to the large number of one way in and one way out roads. More coordination and outreach are needed to ensure that evacuation procedures are developed and understood.

Burning of yard waste and debris is challenging in the Estacada Fire District because backyard burning is allowed in all areas. Estacada Fire tries to be consistent with neighboring jurisdictions' Backyard Burning programs but does not have staff or resources to regulate burning in Estacada. Estacada Fire follows ODF's rules and regulations regarding backyard burning; when ODF halts burning, Estacada does as well. The District issues permits only for agricultural/slash and cultural burning, but honors ODF permits and is working to implement a self-certification/self-permitting process similar to Molalla Fire's program. The need for a more structured Backyard Burning Program is indicated in the Estacada Action Plan.

Estacada Fire employs 13 career, 47 volunteer, and 2 seasonal firefighters who receive regular wildland fire training to remain current on qualifications. They also have a student program that includes 2 students per shift and up to 6 total. The District supports S-130 and S-190 training. Estacada Fire would like to work more directly with the USFS and ODF to have opportunities to participate in live fires.

Map 9-5 Estacada Fire District Wildfire Risk and Social Vulnerability



Community Outreach & Education

Estacada Fire is dedicated to fire prevention and uses a variety of forums to promote residential fire safety, defensible space, and safe burning practices. The District has programs designed to empower community members to prepare for emergencies, including the Map Your Neighborhood Program, Community Emergency Response Teams, Citizen Ride-Alongs, discounted address signs, and station tours.

Estacada Fire continues to carry out much of the work formerly conducted by the now-defunct Fire Prevention Cooperative. This includes outreach and educational programs (such as grade school fire safety programs), home assessments, and fuels reduction projects. Estacada Fire would like to update its fire prevention program by taking advantage of cost-effective social media outlets as well as engaging local and regional youth groups from Estacada High School, Timberlake Job Corps, and the AntFarm.

Local Communities at Risk (Strategic Planning Areas)

Estacada Fire also recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at the local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-9. Estacada Fire professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Fuels reduction projects can and should be accomplished at the local scale by creating defensible space around homes, and at the landscape scale through vegetation treatments on adjacent forested land and natural areas. Estacada Fire will facilitate cooperation between public and private organizations to ensure that fuels reduction occurs strategically and benefits homeowners and adjacent public and private lands.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by Estacada Fire.

Fuels Reduction Priorities

- Eagle Creek Youth Camp
- Paradise Park
- Redland Road Area
- McIver Park
- Metzler Park
- Ranger Woods
- Clackamas River RV Park
- City of Estacada
- Frog Pond
- Viola
- Spring Water North
- Spring Water South
- Tracy
- Tumala
- George Community

Estacada Rural Fire District Action Plan

Estacada Fire has developed a list of actions to build capacity at the Department scale and has identified actions that can help to make the local CARs more resilient to potential wildfires. The action plan for Estacada Fire and the local CARs therein is provided in Table 9-10.

Progress Since 2018

The District has completed the following action item from the 2018 CWPP:

- **2018 Action Item:** Invigorate the District's Outreach and Education Program by partnering with ODF to incorporate wildfire prevention into the annual Open House and Safety Fair.

Table 9-9 Estacada Fire Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
George Community													<p>Access in this community is a big loop. There have been conflagrations in this area, which turns the loop into one way in and out. There are unique events that occur in this area including a nudist colony that holds events and there have also been music festivals here which bring many people. There is inadequate access and water for the number of people these events can bring in. It would be very beneficial to identify an alternate water source here because it is also adjacent to federal and private forests. There are also many environmental activists here. Protection capabilities are compromised because it takes about 25 minutes to reach the area, or even longer depending on the weather. Response professionals would likely enter from Clackamas Fire District. Eagle Creek Youth Camp is an area of particular concern and a fuels reduction priority because of heavy vegetation, and you must access the camp through home driveways and private roads that likely cannot support apparatus. Water supply is improving because the camp is putting in hydrants in to get building permits. Access to the Camp is one way in and out, and there are cabins throughout the woods. There is one open field that could be used for staging, life flight area, or safety zone. There is a fire station located in the community, but Estacada Fire has limited staffing there.</p>
Garfield/Porter Community	H	X	X	X	X	X	X	X	X	X	X	X	
Eagle Creek Youth Camp													
Dodge-Hillock Burn Area	H	X	X	X	X	X	X	X	X	X	X	X	<p>Access in this community is particularly challenging on one-way roads including: McQueen, Peterson, Horner and Benjamin. There is no water available here, so water would be brought in for firefighting. The community is surrounded by BLM, USFS, and private forest land. Recreates bring ATVs here even though there are there are gates. There are many old logging roads that attract recreators.</p>

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
													There have also been law enforcement issues in this area. Also, response times would be longer because the Hwy 211 bridge is the only access so if there is an issue there, the community could be inaccessible. Communications are limited for 800 MHz in area (50%), but VHF is good.
Frog Pond													All three of these areas have neighborhood associations, so they would be great to target for community clean up events. Access here is one way in and out, there is heavy vegetation and steep slopes, and you cannot draft out of the river so water will be hauled in. There is a great deal of recreation on the river, which people access illegally through private property and via islands. Protection of this area is difficult because the road is susceptible to landslides. There is a secondary way in and out, but it cannot support emergency vehicles. Communications can be an issue because it is a canyon. Paradise Park is a fuels reduction priority.
Paradise Park	H	X	X	X			X	X	X	X	X	X	
Twin Island													
Star Road													
Spring Water North													ODF used seasonal crews to reduce fuels and did some fuels reduction in McIver State Park, and they identified additional work to be done to make the park more fire resistant. There are two neighborhoods adjacent to the Park with heavy fuels leading directly to the homes. The river can be accessed for drafting. Access is one way in and out in all these areas, with very steep terrain that goes almost vertical near Feldheimer Road. Despite being able to draft from the river, some areas would require hauling water into the site. There is river access for boat launching at the State Park; Feldheimer road also has a public boat launch. Transients are often sighted on Riverlake Road. This area is a priority for fuels reduction.
McIver Park	H	X	X	X	X	X	X	X	X	X	X	X	
Parkview/Riverlake Community													

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Viola													This interface community has heavy vegetation adjacent to homes that extends into adjacent forest land. Some adjacent forest land is BLM and some is private industrial. The access is fair, but there are several one-way roads that could make response and evacuation challenging. There is a potential water supply up on the hill, but it hasn't been developed very well. Clackamas Fire District has a full-time staffed fire station in this area, so protection capabilities should be acceptable. Communications are at about 75% coverage in this area and cell coverage is available in the canyon.
Redland Road Area	M	X		X	X	X	X		X	X	X	X	
Fellows Road													
Spring Water South													This State Park is a good candidate for fuels reduction projects. It has a one-way in and out road, and many recreators use this facility. Water is limited here. There is a creek that could serve as a potential water source, and this needs to be explored further.
Metzler Park	M		X	X	X		X	X			X	X	
City of Estacada													Ranger Woods is owned by Estacada Schools and is adjacent to neighborhoods in northeast portion of town. Defensible space around the homes and the school is needed. This wooded area is particularly vulnerable because young adults coming from the school like to congregate here and sometimes light fires, smoke cigarettes, and engage in other activities that could serve as an ignition source. There is also a high concentration of invasive species here. This area is a priority for fuels reduction.
Ranger Woods	M	X			X				X	X	X	X	
Tumala													This RV Park gets extremely busy during the wildfire season. There is dense vegetation near the camping spots that the RVs and campfires could ignite easily. The Park has seen several fires since the 2020 season, so this area is a priority for fuels reduction.
Clackamas River RV Park (USFS)	M	X	X	X	X		X	X	X	X			

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-10 Estacada Fire Action Plan

ID	Action Item	Timeframe	Partners	CAR	Status
Estacada Fire Action Plan					
1.1	Identify and pursue opportunities to provide Incident Management Training for firefighters that will be Incident Managers on large scale emergencies.	Ongoing	FDB; CCEM; NAFT	Estacada Fire District	Ongoing
1.2	Continue ongoing relationship with the City Manager to ensure that the city’s contracted land use planner consults the District for access and fire flow requirements. Improve coordination between the contracted planner and Clackamas County Building Department to ensure that all fire flow and access requirements are met. Continue clear communication to manage frequent turnover at both the County and City of Estacada levels.	Ongoing	City of Estacada; Clackamas County	Estacada Fire District	Ongoing
1.3	Identify opportunities to engage young adults in community service and wildfire prevention projects.	Ongoing	Estacada High School; Timber Lake Job Corps; AntFarm	Estacada Fire District	Ongoing
1.4	Build capacity and support for a more involved backyard burning program, including staff to educate residents and regulate the Backyard Burning Program, using the model developed by Molalla Fire.	Ongoing	ODF; DEQ; Clackamas Wildfire Collaborative	Estacada Fire District	Ongoing
Estacada Fire Local Communities at Risk Action Plan					
2.1	Conduct additional Community Meetings to educate the community on defensible space and measures to reduce structural ignitability. Solicit feedback on wildfire prevention projects that the community would support.	Ongoing	ODF; OSFM; USFS; AntFarm; City of Estacada; Disaster Management; AMR; CERT	All CARs	Ongoing
2.2	Partner with the Clackamas Wildfire Collaborative, ODF, and OSFM to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	Ongoing	Clackamas Wildfire Collaborative; ODF; OSFM	All CARs	Ongoing

ID	Action Item	Timeframe	Partners	CAR	Status
2.3	Promote legal, safe, and responsible debris burning through public outreach and education.	Ongoing	ODF; DEQ; Clackamas Wildfire Collaborative	All CARs	Ongoing
2.4	Reduce hazardous fuels in the ROW of potential evacuation routes on USFS 4610 and Riverside Road. Engage residents adjacent to primary evacuation routes to extend treatments onto private land.	Ongoing	ODOT; USFS; Clackamas County Roads	All CARs	Ongoing
2.5	Obtain structural ignitability data by conducting structural triage assessment data collection (including GPS points) for homes in Communities at Risk.	Ongoing	ODF; Seasonal Firefighters	All CARs	Ongoing
2.6	Promote the District's Map Your Neighborhood and CERT programs to generate community-driven pre-disaster plans, including evacuation routes, telephone call-down trees, and other strategies for strengthening community response.	Ongoing	Clackamas County Disaster Management	All CARs	Ongoing
2.7	Implement road addressing (including length of driveways) and other signage for emergency response.	Ongoing	ODF	All CARs	Ongoing
2.8	Work with partner agencies such as ODF, SWCD, OSFM, and the Ford Institute to procure funding and technical support.	Ongoing	ODF; OSFM; SWCD; Grant Funders	All CARs	Ongoing
2.9	Work with State Parks to reduce hazardous fuels on their land and provide signage to educate recreators about wildfire prevention.	3 Years	ODF; State Parks	Mclver Park; Metzler Park	Delayed
2.10	Work with USFS and BLM to reduce hazardous fuels on federal land adjacent to CARs.	Ongoing	Clackamas River RV Park; USFS; BLM	Clackamas River RV Park; Redland Road	Ongoing
2.11	Conduct Community Clean-up Days to reduce hazardous fuels. Identify opportunities to recycle or compose vegetative material instead of burning it.	Ongoing	ODF; USFS; City of Estacada; HOAs	All CARs	Ongoing

Note: CAR=Community at Risk.

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9.6. Community at Risk: Gladstone Fire Department

The Gladstone Fire Department has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

Gladstone Fire Department Description

The City of Gladstone entered into an Intergovernmental Agreement with Clackamas Fire District on July 1, 2022, which terminated on July 1, 2023. This agreement shall automatically renew for two consecutive two-year terms. More information about the contract can be found in the [Clackamas Fire District](#) section of this plan. The Gladstone Fire Department provides fire, rescue, and prevention services to the City of Gladstone. The Gladstone Fire Department is primarily staffed by volunteers and is supported by a paid Fire Marshal and a Volunteer Coordinator.

Wildland Urban Interface (WUI)

Despite being primarily urban, some areas in Gladstone are excellent examples of the Wildland Urban Interface. They are characterized by residential homes surrounded by heavy fuels and steep slopes. Some communities have only one way in and one way out with narrow, steep driveways and poor address signage. Heavy and continuous fuels are present in some natural areas and parks adjacent to neighborhoods, so fires that begin on public land or on smaller private residential lots can quickly threaten the communities and natural resources that thrive in the City of Gladstone.

Gladstone Fire Department Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Gladstone Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-6 illustrates the overall wildfire hazard risk in the City of Gladstone and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

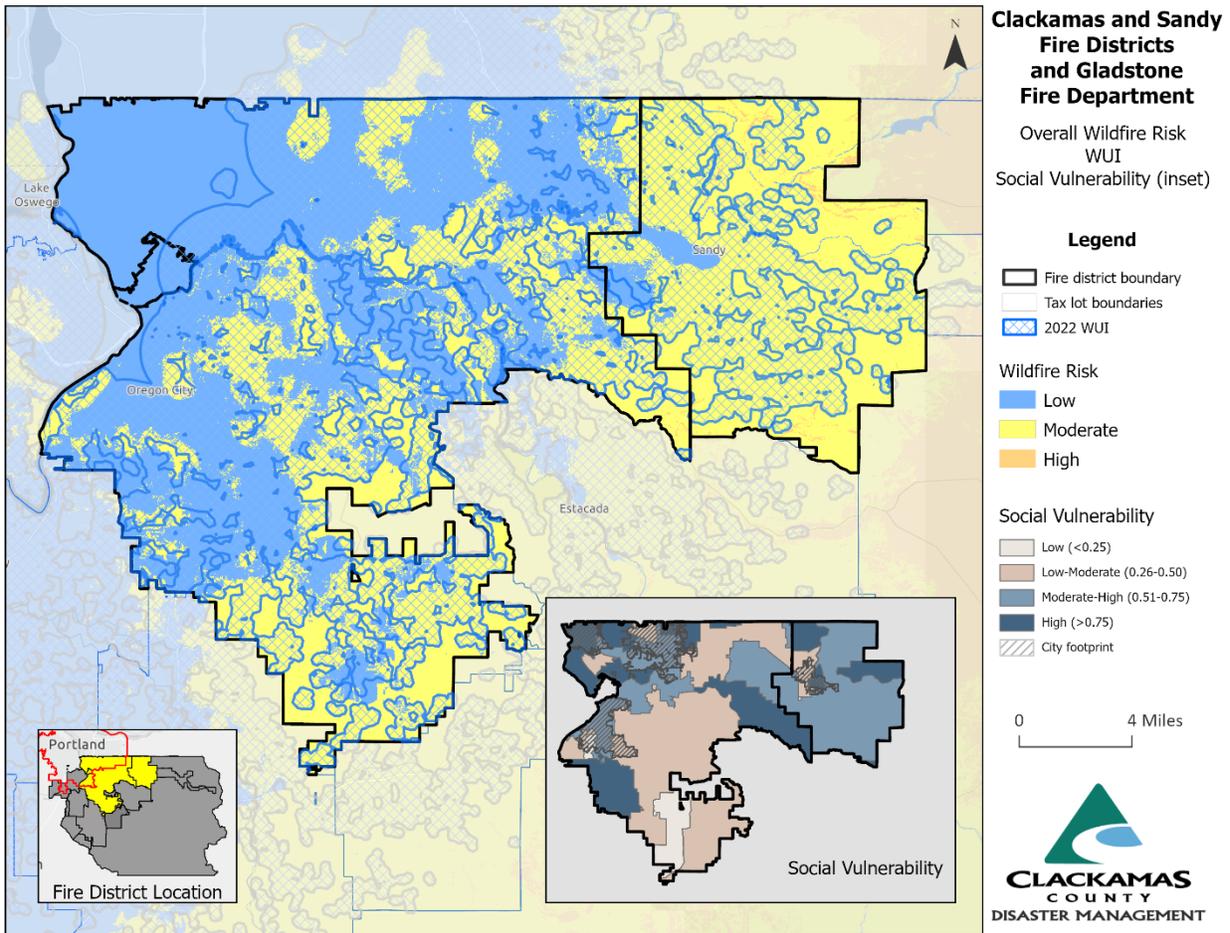
The City of Gladstone contracts with Clackamas County for land use planning and building permit services and has a local planning commission to help guide development. Gladstone Fire promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI by working with Clackamas County to integrate these concepts at the regulatory level. Gladstone Fire participates in land use reviews for new development to provide input on access and water supply.

Emergency Response

A major wildland urban interface fire in Gladstone would quickly exceed the resources and capabilities of the Department. For this reason, Gladstone has mutual aid agreements in place, which allows for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire. Gladstone's primary mutual aid partner is Clackamas Fire District, which surrounds the City of Gladstone. Burning of yard waste and debris is prohibited in Gladstone, as it is located within the DEQ Burn Ban Boundary.

Gladstone Fire employs two career and many volunteer firefighters. Historically, Gladstone Fire participated on state mobilization strike teams, but has opted out of this partnership in recent years due to diminished capacity to support training and maintain qualifications necessary to participate. Gladstone Fire provides annual refresher training to all staff and will send new staff to Clackamas County Community College to receive S-130 and S-190. The Department would like to improve its capacity in developing and retaining wildland fire certifications, and this is noted in the action plan.

Map 9-6 Gladstone Fire Department (including Clackamas Fire District and Sandy Fire District #72) Wildfire Risk and Social Vulnerability



Community Outreach & Education

Gladstone Fire supports fire prevention but has a limited capacity to develop and implement public outreach programs. Gladstone Fire would like to be a more active member of the newly formed Clackamas Wildfire Collaborative to increase their capacity for providing structural and wildland fire prevention programs in the City.

Local Communities at Risk (Strategic Planning Areas)

Gladstone Fire recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at the more local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-11. Gladstone Fire professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.

- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Fuels reduction projects can and should be accomplished at the local scale, which is the creation of defensible space around homes, as well as the landscape scale, which is the extension of vegetation treatments onto adjacent forested land and natural areas. Gladstone Fire will help to facilitate cooperation between public and private organizations to ensure that fuels reduction work occurs strategically and benefits homeowners as well as adjacent public and private lands.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by Gladstone Fire.

Fuels Reduction Priorities

- Parkway Woods
- Billy Goat Island

Gladstone Fire Action Plan

Gladstone Fire has developed a list of actions to build capacity at the Department scale and has identified actions that can help to make the local CARS more resilient to potential wildfires. The action plan for Gladstone Fire and the local CARs therein is provided in Table 9-12.

Table 9-11 Gladstone Fire Department Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Parkway Woods	H	X	X		X					X			Parkway Woods and Windfield Court are adjacent to this natural wooded area. There is no access into the wooded area, and it has very steep and difficult terrain to navigate. There is water on Oatfield and Parkway. The biggest issue is access and vegetation. This is a common area for the Parkway community and is choked with ladder fuels and invasive. This is a high priority for fuels reduction. A city councilor lives here and could be a champion for a community clean up event.
Billy Goat Island	H	X	X	X	X		X	X	X				This island is a popular place for recreators and transients. A wildfire occurred here in 1995, and response efforts were extremely challenging because access is very poor. There is a transient camp that has caused problems in the past, so Gladstone Fire has been working with the Gladstone Police Department and ODOT to remove it. There is a great deal of heavy vegetation adjacent to homes in this area, making it a priority for fuels reduction. A fire break is needed as well as a fire lane. There is a very expensive home with a very long driveway in this area as well that is cause for concern.
Dahl Beach	H	X	X	X	X		X		X				This is a very popular area for recreators and transients. Many people using Dahl Beach will make campfires that serve as potential ignition sources. There have been fires here in the past and access was extremely difficult.
Risley Wetlands	M	X	X	X	X			X		X			Access is poor throughout this community. There also is no access into the natural wooded area adjacent to a subdivision, and this is likely where a fire would begin. The homes here are very close to the vegetation from the wooded area.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Meldrum Bar Park	L		X	X			X		X				Meldrum Bar Park has no residences but is heavily populated during the summer months. This would be a priority for fuels reduction and community education.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-12 Gladstone Fire Department Action Plan

ID	Action Item	Timeframe	Partners		Status
Gladstone Fire Action Plan					
1.1	Work with ODF, the USFS, and other partners to identify opportunities to train staff in S-130 and S-190.	Ongoing	ODF; USFS; FDB		Ongoing
1.2	Schedule periodic meetings with local building officials, land use planners, and fire marshals to build relationships and encourage cooperation.	Ongoing	Building Officials; Land Use Planners; Fire Marshals		Ongoing
1.3	Invigorate the Department’s Outreach and Education program by partnering with ODF to incorporate wildfire prevention into current outreach programs including local school programs.	1 Year	Clackamas Wildfire Collaborative		Ongoing
ID	Action Item	Timeframe	Partners	CAR	Status
Gladstone Fire Local Communities at Risk Action Plan					
2.1	Conduct Community Meetings to educate the community and solicit feedback on wildfire prevention projects that the community would support.	2 Years	ODF	Parkway Woods	Ongoing
2.2	Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	2 Years	Clackamas Wildfire Collaborative	All CARs	Ongoing
2.3	Post signage that explains fire restrictions in natural areas.	1 Year	County Parks	Meldrum Bar; Billy Goat Island; Dahl Beach	Ongoing

Note: CAR=Community at Risk.

9.7. Community at Risk: Hoodland Fire District #74

The Hoodland Fire District #74 has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

Hoodland Fire District Description

Hoodland Fire covers 45 square miles of rugged foothills southwest of Mount Hood, along Highway 26, between Sandy and Government Camp, in historic east Clackamas County. Hoodland Fire protects the rural communities of Marmot, Cherryville, Brightwood, Wemme, Welches, Zig Zag, Rhododendron, and Government Camp from three fire stations. This rural area depends on a staff of 11 career and 30-40 volunteer firefighters that are dedicated to respond and provide quality fire and life safety protection to the community. Hoodland Fire responds to about 1,000 emergency calls for assistance from our 6,000 permanent and 15,000 seasonal residents.

Wildland Urban Interface

This area is an excellent example of the Wildland Urban Interface because it is characterized by steep slopes with residential homes surrounded by heavy fuels. In addition, the Mount Hood National Forest surrounds many of the communities, as do industrial timber management operations and some Bureau of Land Management land. Many of the neighborhoods have only one way in and one way out with narrow, steep driveways and poor address signage. Heavy and continuous fuels dominate this area, so fires that begin on public land or on smaller private residential lots can quickly threaten the communities and natural resources that thrive in the Hoodland corridor.

Tourism and recreation are also major influences here, with thousands of Portland area residents travelling along Highway 26 to access the Mount Hood National Forest. Campers, hikers, hunters, and other visitors to this area can potentially start wildfires that could carry from Forest service land to the residential communities. Industrial and federal forest operations are also potential ignition sources.

Hoodland Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Hoodland Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-7 illustrates the overall wildfire hazard risk in the Hoodland area and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

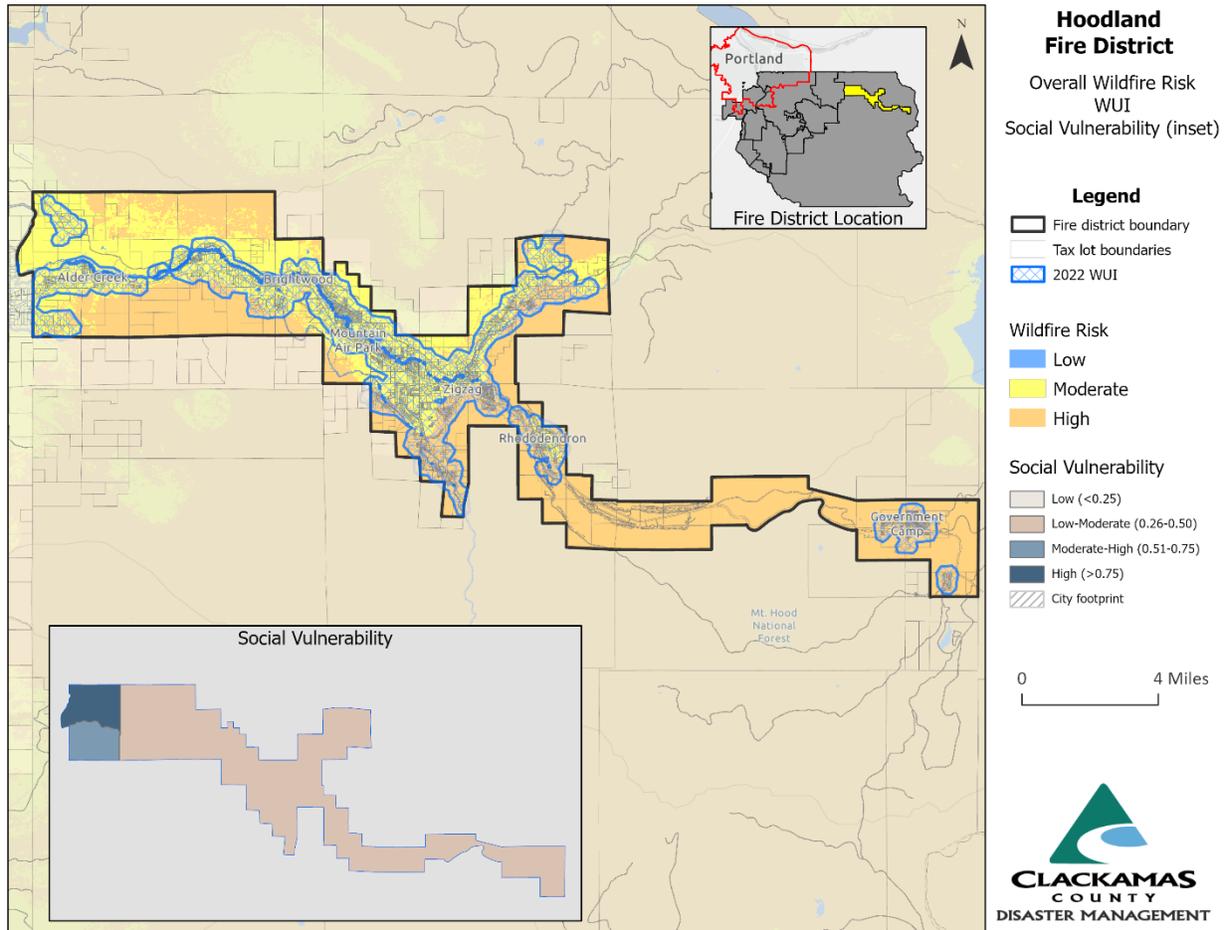
Hoodland Fire promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. Hoodland Fire participates in land use reviews for new development to provide input on access and water supply. The Clackamas County Planning Department uses a WUI checklist developed in 2005 to ensure that Fire Marshals are contacted when potential issues may arise for new development. In areas zoned Forest/Agriculture, the County's Zoning Development Ordinance (ZDO) has guidelines for fire-resistant building materials and defensible space and fuel breaks.

Emergency Response

Hoodland Fire professionals have experience in structural and wildland fire response tactics, with a large percentage of staff having spent years as wildland firefighters. Hoodland Fire works closely with the United States Forest Service and Oregon Department of Forestry and neighboring Sandy Fire District (which is currently contracted with Clackamas Fire District to provide service) to prevent and provide

quick response to fires in this area. Hoodland is a signatory to the Clackamas Fire Defense Board Mutual Aid Agreement, which allows for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire. Although Hood River County is along the eastern border of Clackamas County, USFS land separates these two counties in this location. This has created a barrier to Hoodland Fire’s ability to participate in the Hood River County Fire Defense Board Mutual Aid Agreement. This need has been identified and prioritized in the Hoodland Fire District Action Plan.

Map 9-7 Hoodland Fire District #74 Wildfire Risk and Social Vulnerability



Community Outreach & Education

Hoodland Fire is dedicated to fire prevention and uses a variety of forums to promote defensible space, fire-resistant building materials, and safe burning practices. The community of Government Camp has an Annual Community Clean Up event to create defensible space for six years running, which the District supports by providing technical assistance to landowners in determining how and why to create defensible space. In addition, Hoodland Fire has provided an incentive to participate by paying for the chipping costs associated with the cleanup and recently received a \$75,000 Small Woodlands Grant from ODF to support Firewise communities in fuels reduction. To date, the District has used these funds to conduct 80 property assessments and has had 30 properties request reimbursement for fuels reduction projects on their land carried out by youth workers with local nonprofit AntFarm. The District also attends Homeowners’ Association (HOA) meetings to discuss structural and wildland fire safety three to four

times per year and has developed a Wildfire Coalition with these HOAs, USFS, ODF, OSFM, and neighboring fire districts to coordinate regional work and establish more Firewise communities.

Local Communities at Risk (CARs)

Hoodland Fire also recognizes that there are smaller-scale Communities at Risk or Strategic Planning Areas that have unique wildfire hazards to be addressed at the more local level. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-13. Hoodland Fire professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Fuels reduction projects can and should be accomplished at the local scale, which is the creation of defensible space around homes, as well as at the landscape scale, which is the extension of vegetation treatments onto adjacent forested land and natural areas. Hoodland Fire will continue to facilitate cooperation between public and private organizations to ensure that fuels reduction work occurs strategically and benefits homeowners as well as adjacent public and private lands.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by Hoodland Fire.

Fuels Reduction Priorities

- Lolo Pass
- Marmot
- Barlow Trail
- Brightwood
- Government Camp Area
- Cherryville/Alder Creek

Hoodland Fire District Action Plan

Hoodland Fire has developed a list of actions to build capacity at the District scale and has identified actions that can help to make the local CARs more resilient to potential wildfires. The action plan for Hoodland Fire and the local CARs therein is provided in Table 9-14.

Progress Since 2018

Hoodland Fire, in partnership with ODF, has successfully created and implemented a home addressing program. Most homes in the district considered to be a CAR have received addresses signs. Additionally, Clackamas County Planning Division has added wildfire practices to its planning and building process, helping Hoodland Fire ensure that new developments are built in a way that reduces their risk to wildfire.

The District has completed the following action items from the 2018 CWPP:

- **2018 Action Item:** Work with the County to increase the usage of wildfire resistant building materials and home sprinkler systems through incentive programs (e.g., reduced permit fees).
- **2018 Action Item:** Complete home addressing in all local CARs.

Table 9-13 Hoodland Fire Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
US Forest Service Summer Homes	H	X	X	X	X		X		X	X		X	The USFS Summer Homes are a unique CAR as the USFS owns the land, but residents own houses here. Because the USFS must comply with state and federal environmental protection laws, it is difficult to reduce hazardous fuels here. In addition, many of the homeowners are absentee, so public education is challenging. Most roads in this area are narrow, not well- maintained, and do not provide adequate turnarounds for emergency service vehicles. Hoodland Fire and ODF have completed address signage for the homes in this CAR.
Rhododendron/Zig Zag/Woodland	H	X	X	X	X	X	X		X	X	X	X	Rhododendron is characterized by narrow roads, heavy fuels, and limited access. Public and private industrial forest land operations surrounding this community provide potential ignition sources. Water would need to be brought in to fight fire here. Address signage is needed. The Zig Zag and Woodland communities are surrounded by heavy fuels and have very poor access. There is no water available here and address signs are needed. However, the community has a great network for notifications during emergencies that could potentially be used for preparedness efforts.
Lolo Pass	H	X	X	X	X	X	X		X	X	X	X	Lolo Pass is surrounded by heavy vegetation on residential, USFS, and private forest land. Access here is limited to one way in and out, and water would need to be brought in to fight fire. Some homes in this CAR are second homes, making it difficult to work with owners.
Marmot	H	X	X	X	X	X	X		X	X	X		The Marmot community is comprised of farms and ranches that have large BPA power lines overhead. These power lines serve as ignition sources when the heavy brush below becomes tinder in the summer months. Access is limited to one way in and one way out. This area is adjacent to the Bull Run Watershed, which provides drinking water for the City of Portland.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Cherryville/Alder Creek	H	X	X	X	X		X	X	X	X		X	This Community has very steep terrain that limits access and communication. Hoodland Fire sometimes must access the area by going into the Sandy Fire District. Land uses here include agriculture and timber operations as well as USFS lands. This CAR is an important regional asset as well because it includes the drinking water source for the City of Sandy.
Summit Meadows	H	X	X	X	X		X	X	X	X			Summit Meadows is a recreational area with many wooden cabins that house people throughout the year. There is also a ski camp here. The area has extremely steep slopes and heavy fuels surrounding access roads and structures. Because the area is surrounded by USFS land, Hoodland Fire must navigate USFS roads to access the area in the event of a fire.
Government Camp Area	M	X	X	X	X		X	X		X	X	X	The Government Camp Area community is particularly vulnerable to wildfires because it is located along a ridge top that has very steep slopes, poor access, and heavy fuels. This community is located on Mount Hood along Highway 26, a heavily travelled road that provides access to forested areas used for recreation, which increases potential ignition sources and fuels. The area is surrounded by USFS land. Access is limited to one-way in and out with narrow roads and no turnarounds. Due to its location, response times are greater than 10 minutes, and response efforts will prove difficult as the roads are steep, driveways are narrow and not well marked, and there are no known alternative water sources for the ridgeline. The terrain also limits VHF radio communications.
Welches/Wemme	M	X	X	X	X	X	X		X	X	X	X	The Welches/Wemme area has very poor access with fewer than 300 homes having address signs. There is water here, but the roads are extremely narrow. Public and private industrial forest operations on lands adjacent to homes provide potential ignition sources.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Barlow Trail (Timberline Rim Division 1-4)	M	X	X	X	X	X	X		X	X		X	Barlow Trail has very poor access, with many roads having only one way in and out. About 255 homes have address signs, and some of these are incorrect. The community is adjacent to the Bull Run Watershed, which has heavy fuels. Escaped and/or illegal burns is a major issue in this CAR.
Brightwood/Sleepy Hollow (Timberline Rim Division 5)	M	X	X		X	X	X		X	X		X	This community is adjacent to USFS, industrial forest lands, and the Bull Run Watershed. It has a good water supply and access is fair. Address signs are needed here.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-14 Hoodland Fire Action Plan

ID	Action Item	Timeframe	Partners		Status
Hoodland Fire Action Plan					
1.1	Develop a volunteer recruitment and retention program.	Ongoing	CERT Teams		Delayed
1.2	Work with DPSST, USFS, and ODF to participate in wildfire response efforts to keep fire certifications current.	Ongoing	DPSST; USFS; ODF		Ongoing
1.3	Work with the Hood River County Fire Defense Board to develop mutual aid agreements.	3 Years	Hood River County FDB		Delayed
1.4	Cultivate partnerships with Parkdale, Dee, Odell, and Hood River County to encourage effective communication and coordination.	2 Years	Parkdale; Dee; Odell; Hood River County		On Schedule
1.5	Encourage USFS to extend fuels reduction treatments beyond the mountain bike track to the BPA power lines.	3 Years	USFS		On Schedule
1.6	Work with ODF and HOAs to provide education about the creation of defensible space and other measures to reduce structural ignitability.	Ongoing	ODF; HOAs		Ongoing
ID	Action Item	Timeframe	Partners	CAR	Status
Hoodland Fire Local Communities at Risk Action Plan					
2.1	Conduct Community Meetings to educate the community and solicit feedback on wildfire prevention projects that the community would support.	Ongoing	ODF; USFS	Government Camp Area; Timberline Rim; Zig-Zag Village	Ongoing
2.2	Continue the annual community clean-up event at Government Camp and encourage other CARs to participate.	Ongoing	ODF; USFS	All CARs	Ongoing
2.3	Work with USFS, ODOT, and other private landowners to extend vegetation treatments from defensible space to reduce fuels in common areas, right of ways, and other public and private lands.	Ongoing	USFS; ODOT; Clackamas County; Private Landowners	All CARs	Ongoing

ID	Action Item	Timeframe	Partners	CAR	Status
2.4	Seek grant funding to support fuels reduction and the creation of defensible space around homes.	Ongoing	ODF; OSFM; Wildfire Technical Committee	All CARs	Ongoing
2.5	Continue to promote wildfire preparedness at Homeowners Association meetings in 3-4 CARs each year.	Ongoing	ODF; HOAs	All CARs	Ongoing
2.6	Continue structural triage assessment data collection for structural ignitability and defensible space. Utilize this information to target areas for outreach and fuels reduction programs.	Ongoing	ODF	All CARs	Ongoing
2.7	Develop a community-driven pre-disaster plan, including evacuation routes, telephone call-down trees, and other strategies for strengthening community response.	Ongoing	CERT Teams	All CARs	Ongoing
2.8	Develop clear and effective signage for emergency response that includes alternate routes.	3 Years	ODF; ODOT; CCDTD	All CARs	On Schedule
2.9	Inventory existing water sources and identify alternative water sources to support potential wildfire fighting efforts. Provide signage for these sources.	3 Years	ODF; USFS	All CARs	Delayed

Note: CAR=Community at Risk.

9.8. Community at Risk: Lake Oswego Fire Department

The Lake Oswego Fire Department has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

The Lake Oswego Fire Department service area is in Clackamas, Multnomah, and Washington counties. For information on the service area within Multnomah County, see the [Multnomah County CWPP](#). For information on the service area within Washington County, see the [Washington County CWPP](#).

Lake Oswego Fire Department Description

The Lake Oswego Fire Department provides emergency response to more than 50,000 residents within the City of Lake Oswego and three adjoining contract districts (Lake Grove Rural Fire District, Riverdale/Dunthorpe Fire District, and Alto Park Water District).

Four fire stations are strategically located throughout Lake Oswego to provide rapid emergency service to residents in need 24 hours a day. Emergency services include fire suppression, emergency medical response, hospital ambulance transportation, water & dive rescue, technical rescue operations, hazardous materials incidents, and disaster response.

Non-emergency services include fire prevention and inspection services, code enforcement, public safety education services, fire extinguisher use, residential safety surveys, home fire escape planning, emergency and disaster preparedness training for citizens (CERT), and fire and life safety education in Lake Oswego schools.

Along with protecting residents within the city and contract districts, the Lake Oswego Fire Department has mutual aid agreements with Portland Fire & Rescue and Tualatin Valley Fire & Rescue, and is a signatory to the Clackamas Fire Defense Board.

Wildland Urban Interface (WUI)

Growth and development in forested areas is popular within the City of Lake Oswego. Wildfire has an effect on development, yet development can also influence wildfire. Owners often prefer homes that are private, have scenic views, are nestled in vegetation, and use natural materials. A private setting may be distant from public roads, or hidden behind a narrow, curving driveway. These conditions make evacuation and firefighting difficult. The scenic views found along Iron Mountain Bluff, Palisades, Mountain Park, and around the lake's rim can also mean areas of dangerous topography. Natural vegetation contributes to scenic beauty, but it may also provide a ready trail of fuel leading a fire directly to the combustible fuels of the home itself.

The forested hills surrounding Lake Oswego are interface areas. The interface neighborhoods are characterized by a diverse mixture of varying housing structures, development patterns, ornamental and natural vegetation, and natural fuels.

Lake Oswego Fire Department Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted the Lake Oswego Fire Department in identifying areas that may be at higher risk to potential wildfires. Map 9-8 illustrates the overall wildfire hazard risk in the Lake Oswego Fire Department and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

The Lake Oswego Fire Department promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. Lake Oswego Fire works well with other City of Lake Oswego departments to integrate these concepts at the regulatory level by participating in land use reviews for new development to provide input on access and water supply. When they are deficient in access or water, the Fire Marshal's Office can offer alternative measures such as residential sprinklers. Lake Oswego Fire also approves all occupancy permits to ensure that recommendations regarding access and water supply are implemented.

However, the wildfire hazard remains high in many residential developments. Some conditions existing in these areas include large houses on small lots, cedar shake roofing, open wooden decks adjacent to heavy fuels, and homes built on steep slopes with wooden stilts as support.

One of the most problematic issues is highly flammable cedar shake roofing. Roofs are the most vulnerable part of the home, as the majority of homes lost to wildland fires are ignited from embers landing on roofs and gutters. Despite this threat, some Homeowners Associations (HOAs) in Lake Oswego still require cedar shake roofs. Lake Oswego Fire would like to reduce the structural ignitability of roofs by educating these HOAs about the risks associated with cedar shake and the viable, attractive alternatives. Lake Oswego Fire would also like to work with the City of Lake Oswego Building Department and Oregon Department of Forestry to adopt a Wildland Urban Interface area that would disallow cedar shake roofs in areas particularly vulnerable to wildfire.

Road access is a major issue for all emergency service providers. Firefighters are particularly challenged by narrow roads with limited access, because the fire trucks are large and the equipment needed to fight fires is located on the trucks. When there is doubt concerning the stability of residential accesses, or adequate turn around space, the firefighters can work to remove the occupants, but saving the structure is difficult. Many of the Communities at Risk (CARs) to wildfire in Lake Oswego exhibit a combination of these issues that limit access.

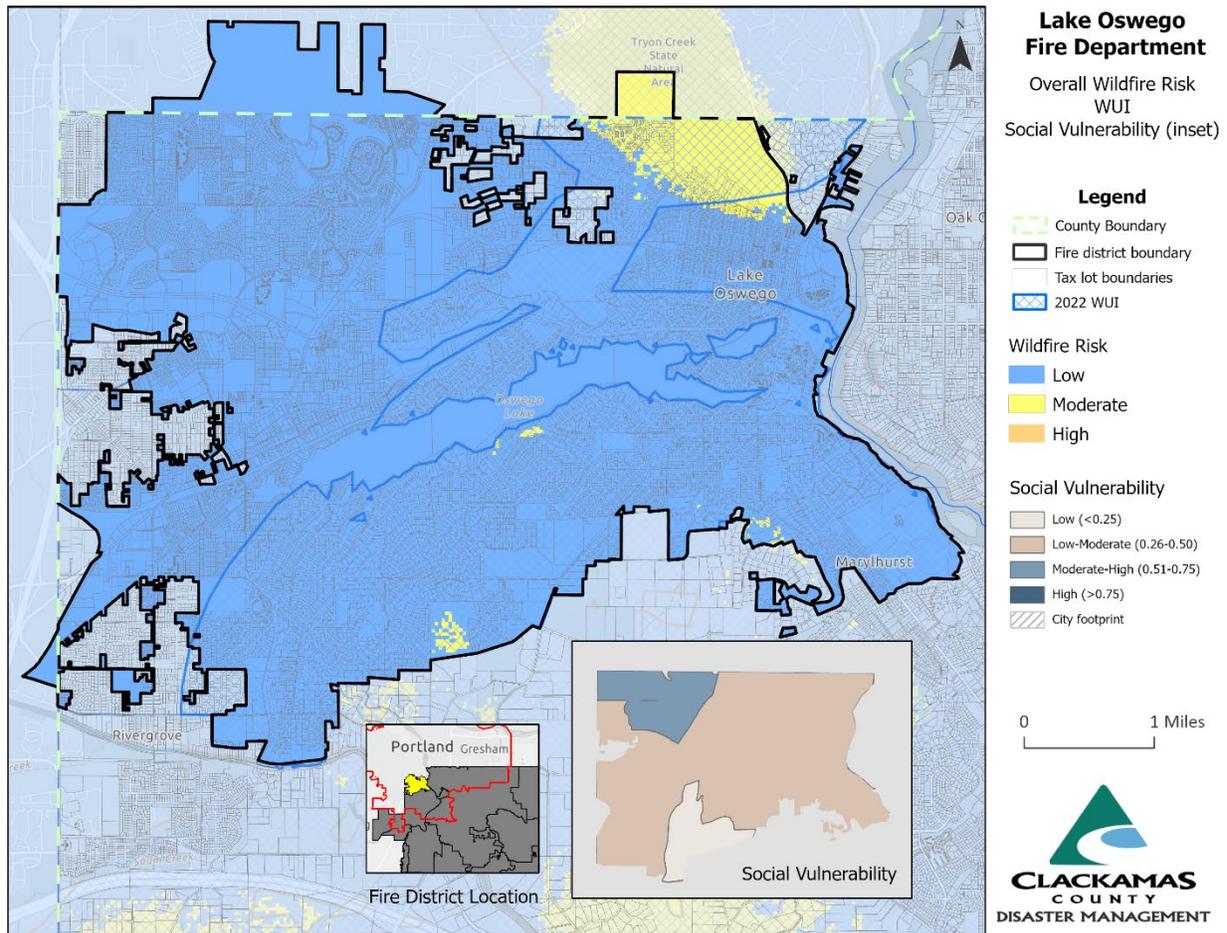
Although the City of Lake Oswego has a comparatively good water system, additional hydrants could be installed in the Iron Mountain Bluff area and in other communities at risk to assist with fire suppression efforts should they be needed. This and the other issues listed here are addressed in the Lake Oswego Fire Department Action Plan.

Emergency Response

Lake Oswego Fire professionals are trained for wildland fires with an annual training regime that supports the S-130 and S-190 with a goal of training staff to S-290. Certification through DPSST is voluntary.

Lake Oswego Fire officials are most concerned with potential wildfires igniting in late summer during an east wind event. A major wildland urban interface fire in Lake Oswego would quickly exceed the resources and capabilities of the Department. For this reason, Lake Oswego Fire has Mutual Aid agreements in place, which allow for the sharing of resources across the county in the event of a large-scale disaster, such as a including wildfire. Due to its location, Tualatin Valley Fire & Rescue or Portland Fire & Rescue in neighboring Washington and Multnomah Counties would likely be the first to provide mutual aid during an event.

Map 9-8 Lake Oswego Fire Department Wildfire Risk and Social Vulnerability



Community Outreach & Education

Lake Oswego Fire is dedicated to fire prevention and uses a variety of forums to promote residential fire safety, defensible space, and emergency preparedness. Lake Oswego developed an educational hand-out focusing on defensible space and distributed this and other Firewise materials through mass mailings. Lake Oswego Fire has been focused on fire alarms and sprinklers in new construction and emergency preparedness. Fire professionals are invited to speak and provide training in emergency preparedness at Homeowners Association meetings on a regular basis.

Local Communities at Risk (CARs)

The Lake Oswego Fire Department also recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at a more local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-15. Lake Oswego professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.

- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Lake Oswego has a very restrictive tree ordinance designed to retain urban canopy for environmental and aesthetic benefits. Currently, homeowners can trim trees and can treat ladder fuels, but cannot cut down any trees that are five inches or greater in diameter. Lake Oswego Fire has worked with the City to consider expanding these provisions for the creation of defensible space on residential properties as well as the natural areas managed by the City adjacent to CARs. For example, in 2003 a fuels reduction demonstration project was implemented in Cooks Butte Park and the adjacent community. The Spring Brook Park Homeowners Association has also been successful in creating defensible space around homes. Since that time, the City has acquired many more natural areas, but very little has been done to mitigate wildfire hazards in these areas. Lake Oswego Fire recognizes the need to work with the City Planning Department in amending the Tree Ordinance to balance the benefits of urban canopy with the risk to life and property from wildfires. To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by Lake Oswego Fire.

Fuels Reduction Priorities

- Iron Mountain Bluff
- Spring Brook Park
- Waluga Park
- Cooks Butte Park
- Tryon Creek

Lake Oswego Fire Department Action Plan

Lake Oswego Fire has developed a list of actions to build capacity at the Department scale and has identified actions that can help to make the local CARs more resilient to potential wildfires. The action plan for Lake Oswego Fire and the local CARs therein is provided in Table 9-16.

Progress Since 2018

Lake Oswego Fire has been busy making their service area safer from wildfire. Since 2018, they have conducted significant fuel mitigation and water station work in Spring Brook Park, Cooks Butte Park, and with the Iron Mountain HOA alongside ODF.

The Department has completed the following action items from the 2018 CWPP:

- **2018 Action Item:** Work with the City of Lake Oswego to allow exemptions under the Tree Ordinance for the creation of defensible space around homes and fuels reduction in parks adjacent to CARs.
- **2018 Action Item:** Distribute outreach materials that promote defensible space and reduction of structural ignitability within the Home Ignition Zone.
- **2018 Action Item:** Develop a community-driven pre-disaster plan, including evacuation routes, telephone call down trees, and other strategies for strengthening community response.
- **2018 Action Item:** Implement road addressing (including length of driveways) and other signage for emergency response.

Table 9-15 Lake Oswego Fire Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Iron Mountain Bluff	H	X	X	X	X		X	X		X	X	X	The residential area at the top of Iron Mountain Bluff is at risk of wildfire because there is heavy vegetation and steep slopes that will drive a fire toward the homes. There are a few one way in and out roads in the neighborhood that would be used for firefighting. The homes need defensible space, and the adjacent city-owned park would benefit from fuels reduction as would the land is owned by the Hunt Club. There is a good hydrant system at the top of Iron Mountain Blvd. An above ground water main and wildland detector has been discussed in the past, but no progress has been made toward these efforts. The adjacent parks lands have had a few ignitions, but Lake Oswego Fire’s effective initial attack has halted major damage here. Protection capabilities are compromised because it is steep for response. Lake Oswego Fire has done a lot of outreach in this area, and some residents have expressed interest in reducing wildfire hazards. There has not been a community meeting, but individuals have been concerned about parking and limiting access. Communications by radio is good, but cell phones are spotty.
Palisades	H	X								X		X	The homes in this community are close together, are surrounded by heavy vegetation, and are on very steep slopes. There is good access, good water, and good communications. The focus here is on preparedness and education because this HOA still requires cedar shake roofs.
Cooks Butte Park	H	X	X	X	X		X	X		X	X	X	This is the most remote park in Lake Oswego. It is steep, has poor access on a couple roads, and if a fire were to start here, there is no early notification so response times could be an issue. The community is on the periphery of the park. Since recreators light campfires in the park, it has previously been closed during fire

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
													season, but now the Parks Department posts signage and lets people in during fire season so that there are eyes on the ground. The area has southern exposure, steep slopes, and heavy fuels, so the park would benefit from fuels reduction. There are two water reservoirs in the park, and there is a hydrant, but it has no pressure. A demonstration project was done here to remove fuels in the late 2010s, but there are drier flashy fuels on the periphery with a mature forest in the center. The lighter fuels are in interface. There is also a big grass field that the Parks Department mows. The residents adjacent to Cooks Butte are not very prepared and have an inaccurate perception that it is not going to burn. Lake Oswego Fire shares fire protection with TVFR.
Mountain Park	H	X	X		X		X	X		X		X	The homes in this community are close together, are surrounded by heavy vegetation, and are on very steep slopes, ranging from 100 feet to 1000 feet. There are some green belt trails that would provide some limited access for firefighting. The City cleared some of these trails for brush truck access in the late 2010s. Priorities for this community are preparedness and defensible space.
Tryon Creek State Park	H	X	X	X	X		X			X		X	There is a residential area surrounding this state park. The park has an older stand of mature trees, but defensible space around homes is needed. Access and water are limited here, but it is visited by many recreators, which presents some opportunities for outreach and education. Transients also use this park and have been known to start warming fires, which risk causing larger burns. Lake Oswego Fire shares protection with Portland Fire and they review response strategies annually.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Luscher Farm Park	H	X	X		X							X	Luscher Farm Park has many large, open fields with flashy fuels. The park has high visitation from surrounding counties due to a small garden area and a turf field that frequently hosts events in the summer. The part has some water supply and good communications. It is bordered by residential homes with high exposure on the hillside in the event of a fire.
Spring Brook Park	M	X	X		X		X			X			This community was targeted for a community meeting because Lake Oswego Fire and the Parks Department thinned the park adjacent to the community. Some training on emergency preparedness was done here. Defensible space around the homes is needed. There are lots of trails in the park that could be used for firefighting, but Lake Oswego Fire does not have the equipment for that type of response. Roads are not bad in this area, slope is gentle, and protection capabilities are good. There is a junior high school very close that could serve as a staging area in the event of a fire.
Waluga Park	M	X	X	X	X					X		X	There is a residential community adjacent to this park, which has heavy vegetation and steep slopes near the top. The area is characterized by flashy fuels and ladder fuels leading to heavier fuels along the slopes.
George Rodgers Park	M		X		X		X	X		X		X	George Rodgers Park is on the Willamette River and has experienced several fires in the past. This park is located within a highly populated area and gets large volumes of visitors from surrounding counties. The park has steep terrain with heavy vegetation, but good water supply and communications.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-16 Lake Oswego Fire Action Plan

ID	Action Item	Timeframe	Partners	CAR	Status
Lake Oswego Fire Action Plan					
1.1	Work with the City of Lake Oswego Building Department to adopt a WUI area in which cedar shake roofing is disallowed.	2 Years	City of Lake Oswego; ODF	Lake Oswego Fire Dept.	On Schedule
1.2	Continue annual wildland fire training for Lake Oswego Fire professionals.	Ongoing	ODF; OSFM; NAFT	Lake Oswego Fire Dept.	Ongoing
Lake Oswego Fire Local Communities at Risk Action Plan					
2.1	Work with the Clackamas Fire Operators Group to enhance capabilities for interoperability.	Ongoing	ODF; OSFM; Lake Oswego Parks	All CARs	Ongoing
2.2	Work with the City of Lake Oswego Parks Department to reduce hazardous fuels in city parks adjacent to CARs.	Ongoing	ODF; Lake Oswego Parks	Iron Mountain Bluff; Cooks Butte Park; Waluga Park; Spring Brook Park; Mountain Park	Ongoing
2.3	Reduce hazardous fuels in the ROW of potential evacuation routes. Engage residents adjacent to primary evacuation routes to extend treatments onto private land.	Ongoing	City of Lake Oswego	All CARs	Ongoing
2.4	Coordinate with Clackamas Fire District and ODF to obtain structural ignitability data by conducting structural triage assessment (including GPS points) for homes in CARs.	Ongoing	ODF; CFD	All CARs	Ongoing
2.5	Seek grant funding to support fuels reduction and creation of defensible space around homes in CARs.	Ongoing	ODF: OEM; FEMA: Lake Oswego Parks	All CARs	Ongoing

Note: CAR=Community at Risk.

9.9. Community at Risk: Molalla Rural Fire Protection District #73

The Molalla Rural Fire Protection #73 District has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

Molalla Fire District Description

Molalla Rural Fire Protection District #73 (MRFPD #73) is an Oregon special service district that provides fire suppression, prevention, investigation, public education, rescue, and ambulance transport services. MRFPD #73 is approximately 101 square miles with an ambulance service area (ASA) of 350 square miles covering a portion of the neighboring fire agencies and wilderness.

The District operates from three stations: Station 82, the headquarter station in the city of Molalla; Station 81, four miles to the north on Highway 213 near the small community of Mulino; and Station 85, five miles south on Sawtell Road.

Wildland Urban Interface (WUI)

The Molalla Rural Fire Protection District #73 is a rural area on the eastern edge of Clackamas County adjacent to large tracts of federal, state, and private forests. The terrain is steep, causing access and communication limitations. The Molalla River Corridor attracts thousands of visitors every year. Campers, hikers, anglers, All Terrain Vehicle users, hunters, and other visitors to this area can potentially start wildfires that could carry from public land to the residential communities.

This area is characterized by rural residential homes surrounded by heavy fuels and steep slopes. In addition, many of the neighborhoods have only one way in and one way out with narrow, steep driveways and poor address signage. Heavy and continuous fuels dominate this area, so fires that begin on public land or on smaller private residential lots can quickly threaten the communities and natural resources that thrive in the Molalla Fire District. In addition, the City of Molalla is growing rapidly, and increases in residential development paired with large tracts of unmanaged industrial land is increasing the fire risk in urban, WUI areas. This has already led to several large fires and evacuation orders issued each year since 2018.

The Bureau of Land Management, private industrial landowners, and small woodland owners have many heavily forested landholdings that are adjacent to homes in the Wildland Urban Interface. As Molalla Fire targets the residential communities for creating defensible space, there is an opportunity to engage private, state and federal partners in reducing fuels on this adjacent public land. This has been identified as an action item.

Molalla Fire District Wildfire Hazards

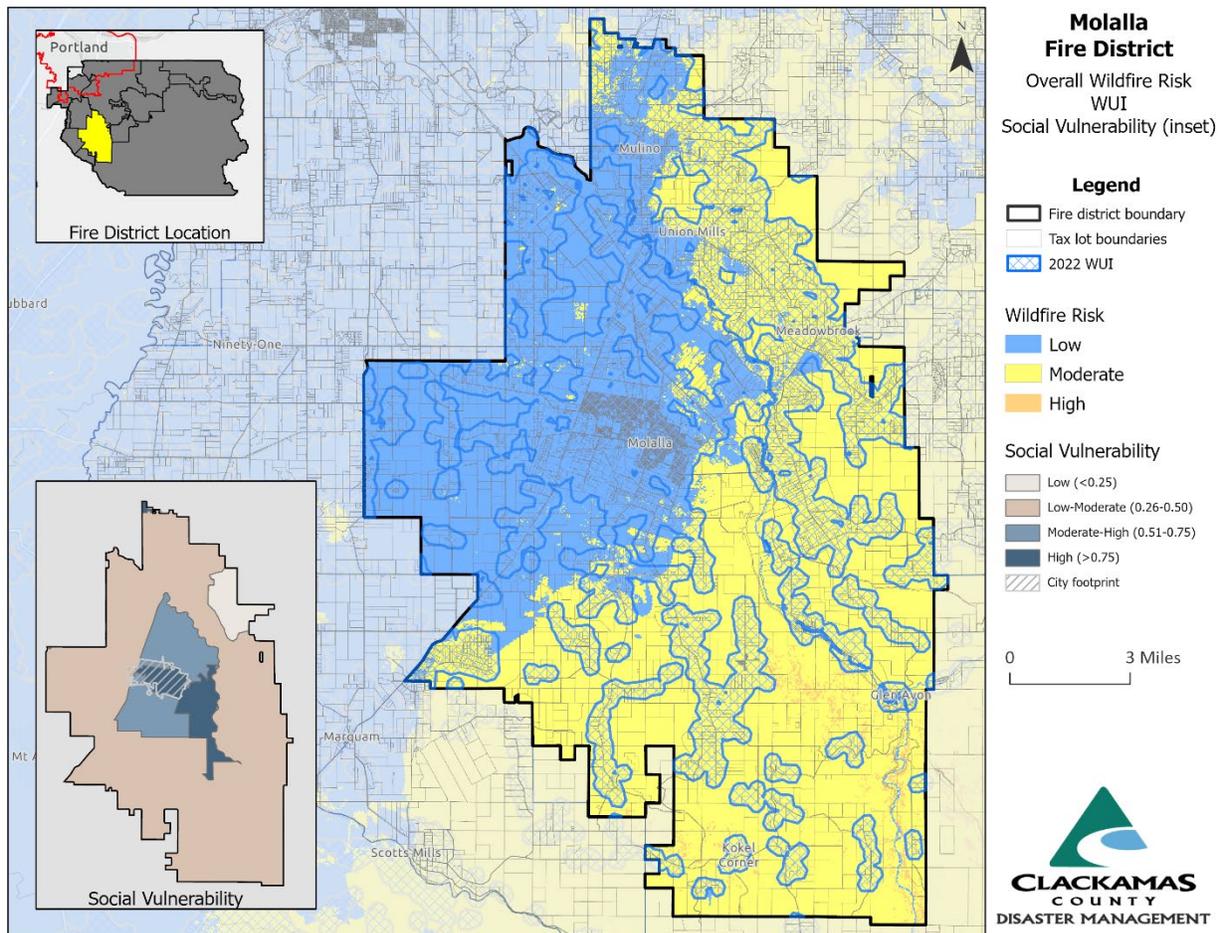
The Clackamas County CWPP wildfire hazard assessment assisted Molalla Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-9 illustrates the overall wildfire hazard risk in the MRFPD #73 and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

Molalla Fire promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. Molalla Fire works with the City of Molalla and Clackamas County to integrate these concepts at the regulatory level by providing input on access and water requirements for new development.

The City of Molalla contracts with Clackamas County for land use planning and building permit services. This presents some difficulties for the Fire District because the County does not always contact the District for input on fire flow and access for new lots of record. The need for enhanced communication between Clackamas County and Molalla Fire has been noted in the Molalla Fire Action Plan.

Map 9-9 Molalla Rural Fire Protection District #73 Wildfire Risk and Social Vulnerability



Emergency Response

Emergency response is challenging in the Molalla Rural Fire Protection District #73 because staff are almost entirely volunteer (36 total), with only 16 paid staff. A major wildland urban interface fire in Molalla would quickly exceed the resources and capabilities of the District. For this reason, Molalla Fire has mutual aid agreements in place, which allow for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire.

Although the District is able to support annual wildland fire training (S-130 and S-190), it would like to offer S-215 and S-290 to senior staff. Also, the lack of live fire experience makes it difficult to retain wildland qualifications. Molalla Fire is working directly with Northwest Association of Fire Trainers, USFS, ODF, and other land managers to identify and take advantage of opportunities to participate in live fires.

Because Molalla Fire does not have a hydrant system that extends to rural areas, it is important to begin identifying and improving potential water sites. This is especially important for homes that have long narrow driveways that will not support water tenders. ODF has been working with Molalla Fire to improve address signage in many of the most vulnerable areas and potential water sites could be added to these

signs. While ODF has paused this program as of this plan update, Molalla Fire is continuing to offer address signage for residents and will install signs by request for a small fee.

In the event of a large wildland fire, evacuations may be necessary. This rural area presents some difficulties due to the large number of one way in and one way out roads with poor addressing. Molalla Fire has been working with ODF to improve address signage in vulnerable areas and will continue to work with the Clackamas Wildfire Collaborative to implement address signage in the Communities at Risk. More coordination and outreach are also needed to ensure that evacuation procedures are developed and understood.

Burning of yard waste and debris is challenging in the District because backyard burning is allowed in all areas. Molalla Fire tries to be consistent with neighboring jurisdictions' Backyard Burning programs but does not have staff or resources to strictly regulate burning in Molalla. The District is also home to many Christmas tree operations that have authority to burn an incredible amount of material all year long regardless of fire severity or air quality restrictions. Molalla Fire would like to work with ODF to develop a better strategy for dealing with Christmas tree waste such as a chipper cooperative.

Community Outreach & Education

Molalla Fire is dedicated to fire prevention but has limited staff and capacity for a wildland fire outreach program. Molalla Fire would like to increase capacity in its community outreach and educational program for fire prevention, including by partnering with the Clackamas Wildfire Collaborative. The District would also like to increase its capacity for recruiting potential volunteers in both firefighting and administrative roles.

Local Communities at Risk (CARs)

Molalla Fire also recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at the more local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-17. Molalla Fire professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Fuels reduction projects can and should be accomplished at the local scale, which is the creation of defensible space around homes, as well as the landscape scale, which is the extension of vegetation treatments onto adjacent forested land and natural areas. Molalla Fire will facilitate cooperation between public and private organizations to ensure that fuels reduction work occurs strategically and benefits homeowners as well as adjacent public and private lands.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by Molalla Fire.

Fuels Reduction Priorities

- Sawtell Road
- Salo Oaks
- Freeman Road
- Blue Road
- Alder Creek Lane
- Rosewood Way

Molalla Rural Fire Protection District Action Plan

Molalla Fire has developed a list of actions to build capacity at the District scale and has identified actions that can help to make the local CARS more resilient to potential wildfires. The action plan for Molalla Fire and the local CARs therein is provided in Table 9-18.

Progress Since 2018

Molalla Fire continues to take action to reduce risk to wildfire in their district. The District has completed the following action items from the 2018 CWPP:

- **2018 Action Item:** Secure funding to develop a marketing campaign that utilizes social media outlets to build support and capacity for the Molalla Fire District (e.g., volunteer recruitment, community support, and fundraising).
- **2018 Action Item:** Pursue grant funding to purchase Wildland PPE to replace outdated PPE.
- **2018 Action Item:** Develop rural water supplies in areas that do not have hydrants and are difficult to access.

Table 9-17 Molalla Fire Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Rosewood	H	X	X	X	X		X	X	X	X	X	X	The Rosewood Community is densely populated with homes located at the top of a very steep, vegetated slope. There are major access limitations here, as Colmer Creek is no longer a through road. There is a lot of poison oak on private lands as well as the adjacent heavily forested BLM land. Many residents use ATVs here and there have been instances of teenagers starting fires. There are also homemade saunas that tend to burn down. Residents of this community burn yard debris all year long,
Alder Creek	H	X	X	X	X	X		X	X	X	X	X	The Alder Creek Community is on a steep, very narrow dirt road. There are water limitations here and the landscape is heavily forested. Burning is an issue here and the community is not aware of the high wildfire hazards.
Sawtell Trout Creek Lebo/Novak/Hardy Maplegrove Road	H	X	X	X	X	X	X	X	X	X	X	X	This is a large community in eastern Molalla that extends beyond the Molalla RFPD boundary, so some homes are structurally unprotected. Access is limited throughout this area, as Hardy, Leabo, Hibbard, Appleman, and Maple Grove Road are one way in and out. Steiner's Pond is a draft site and Deardorf has a huge lake that could be used as a watering site. Trout Creek and Hardy Roads have interrupted radio coverage. ATV users, transients, and other recreators accessing the Molalla River Corridor are potential ignition sources. Also, it takes 30 minutes to get to the end of it, so protection capabilities are compromised.
Dickey Prairie Road	H	X	X	X	X	X	X	X	X	X	X	X	The Dickey Prairie area is characterized by dense homes, heavy timber, and limited access and water supply. The forest road between Adams Road and Dickey Prairie is in very poor condition, The City's Water Works Plant intake is also located here. Weyerhaeuser industrial forest land is adjacent to Dickey Prairie.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Molalla Heights	H	X	X	X	X	X		X	X	X	X	X	The Molalla Heights Community has limited access and the closest water draft site is at the bridge, which is difficult to get to. Many homes need defensible space. The rock pit here is very active, which provides potential ignition sources.
Fernwood Road Area Ramsby/Munson/Callahan	M	X	X	X		X	X	X	X	X	X	X	The Fernwood Area is a steep canyon that drives fire up the steep slope towards homes. There was a fire here about 10 years ago that did just this and was very difficult to fight. There is heavy vegetation and limited access with tight windy driveways and lots of foliage overhanging. It is about 20 minutes away from a fire station. Recreators and transients use this area frequently because it is near a forest road.
Blue Road	M	X	X	X	X	X		X	X	X	X	X	Blue Road has very limited access and heavy vegetation. There are only a few homes here, but they are adjacent to private and public forest land. Water is an issue here and it would require a longer response time.
Big Rock Loop	M	X	X		X	X	X	X	X	X	X	X	Big Rock Loop is vulnerable because there is heavy vegetation and no defensible space around homes. There is a potential water source, but accessing the water source is an issue. Many recreators use this area for ATVs, shooting, campfires, and other activities that could provide an ignition source. It is also adjacent to steep BLM public forest land.
Salo Royal Oaks	M	X	X	X		X		X	X	X	X	X	Salo Royal Oaks has steep, narrow access with very little defensible space around homes. There is poison oak here as well, and no water supply.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-18 Molalla Fire Action Plan

ID	Action Item	Timeframe	Partners	Status	
Molalla Fire Action Plan					
1.1	Conduct a yearly large-scale wildfire exercise.	Ongoing	ODF; OSFM; DPSST	Ongoing	
1.2	Identify and pursue opportunities to provide Incident Management Training for firefighters that will be Incident Commanders on large-scale emergencies.	Ongoing	FDB; CCEM; NAFT	Ongoing	
1.3	Identify and pursue opportunities to participate in prescribed burns and live fire training to update and maintain wildfire certifications.	Ongoing	ODF; BLM	Ongoing	
1.4	Partner with the Clackamas County Fire Defense Board to participate in a WUI conflagration exercise.	Ongoing	CCFDB	Ongoing	
1.5	Work with local Christmas tree growers to develop and implement a chipper program to reduce excessive burning of woody debris/material.	Ongoing	ODF; CCFA	Delayed	
ID	Action Item	Timeframe	Partners	CAR	Status
Molalla Fire Local Communities at Risk Action Plan					
2.1	Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	Ongoing	Clackamas Wildfire Collaborative	All CARs	Ongoing
2.2	Engage residents adjacent to primary evacuation routes to extend treatments onto private land.	Ongoing	ODOT; CCDTD	All CARs	Ongoing
2.3	Obtain structural ignitability data by conducting structural triage assessments (including GPS points) for homes in CARs.	Ongoing	ODF	All CARs	Ongoing
2.4	Implement road addressing (including length of driveways) and other signage for emergency response.	Ongoing	ODF	All CARs	Ongoing
2.5	Work with industrial and public forest land holders to reduce fuels on private and federal land adjacent to CARs.	Ongoing	ODF; BLM; Weyerhaeuser; Port Blakely	All CARs	Ongoing

Note: CAR=Community at Risk.

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9.10. Community at Risk: Monitor Rural Fire Protection District #58

The Monitor Rural Fire Protection District has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

The Monitor Rural Fire Protection District service area is in both Clackamas and Marion counties. For information on the service area within Marion County, see the [Marion County CWPP](#).

Monitor Fire District Description

The Monitor Rural Fire Protection District is a very rural, primarily agricultural area. The District is completely volunteer, so response times are dependent on the availability of volunteers (many of whom are not available during the work day). The community is very supportive of the Fire District, as demonstrated by the five-year Local Option Levy that recently purchased two new engines. The District also has two retired forest service vehicles that are used as brush trucks. Monitor Fire averages about 200 calls a year and operates from two stations, located on Kropff Road and Woodburn Monitor Road.

Wildland Urban Interface (WUI)

The Monitor Rural Fire Protection District is an agricultural area in southern Clackamas County. It is a relatively flat area, with good access and radio coverage. There is not much of a wildland urban interface in Monitor, because the majority of heavy fuels occur along the rivers and streams and there are very few homes located in these areas. The homes that are near wooded riparian areas and wetlands typically have defensible space around them. The primary threat of wildland fire ignition would be from an escaped agricultural burn.

Clackamas County developed a Wildland Urban Interface Map based on housing density and fuel types. Although there is not a great deal of localized wildfire hazard in Monitor, there are some areas that met the criteria for being included in the Countywide Wildland Urban Interface as illustrated by Map 9-10.

Monitor Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Monitor Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-10 of the Clackamas CWPP illustrates the overall wildfire hazard risk in the Monitor Rural Fire Protection District and can be used to help target areas for wildfire prevention activities.

Structural Ignitability

Monitor Fire promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness. However, with very limited staffing, there is very little communication with the Clackamas Department of Transportation and Development, which provides land use planning and building services in this area. Because protection capabilities are so limited here, Monitor Fire promotes home sprinkler systems, especially in homes that are greater than 3,600 square feet in area. Monitor Fire does not participate in land use reviews, and currently works with individual homeowners or contractors during development to ensure adequate access and fire flow. The District does not receive monthly notifications of new building permits and has not been trained on Velocity Hall. This has been noted in the Monitor Fire Action Plan.

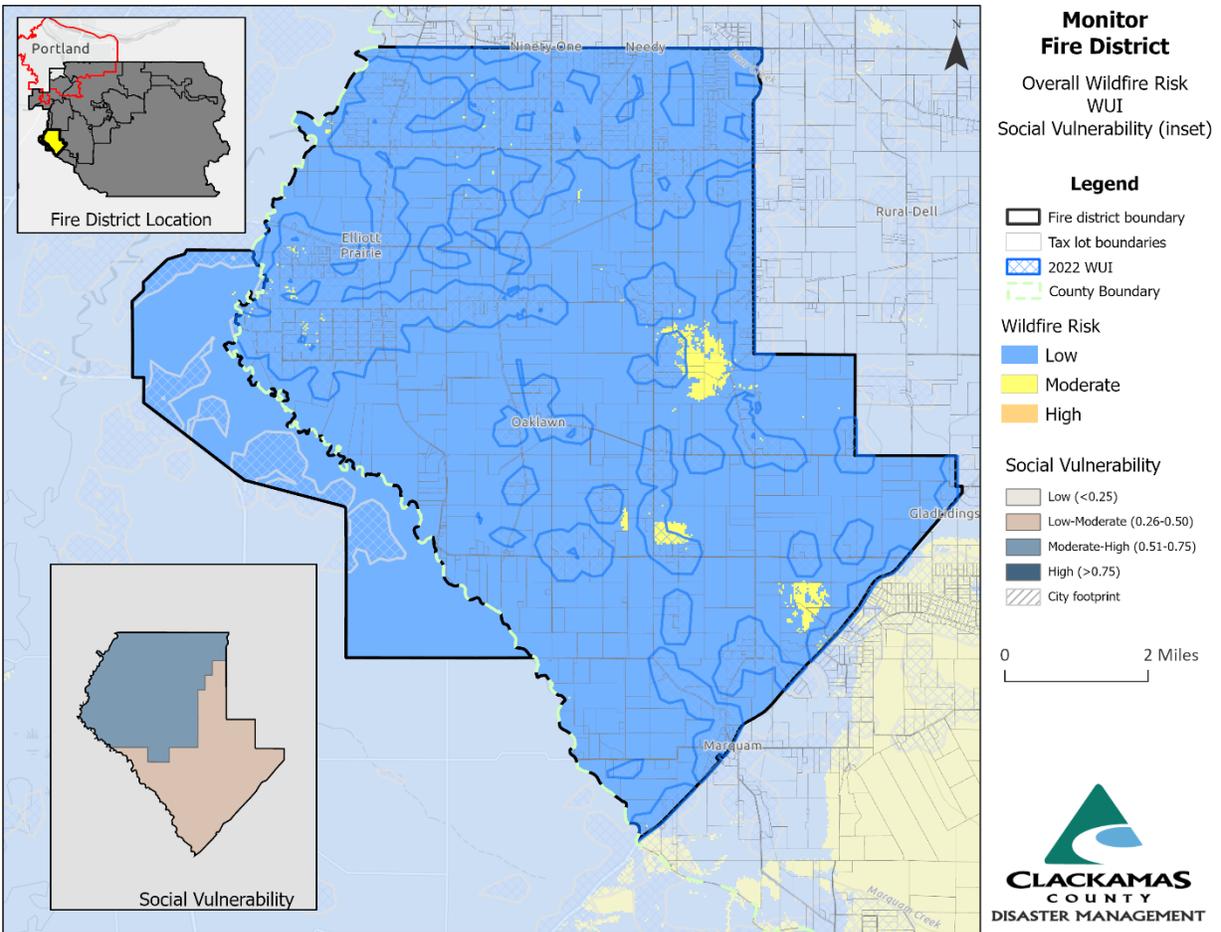
Emergency Response

Emergency response is challenging for Monitor Fire because staff is entirely volunteer and ranges from 12 to 15 firefighters, depending on turnover. A major wildland urban interface fire in Monitor would quickly exceed the resources and capabilities of the District. For this reason, Monitor Fire has mutual aid agreements in place, which allow for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire.

Monitor Fire has an excellent training program for a volunteer Fire District, and the majority of volunteers are DPSST certified as Wildland Urban Interface Firefighters. Turnover is always an issue, so training new volunteers can be challenging. Monitor Fire would like to strengthen its relationship with the ODF by attending training (S-130, S-190) to assist in maintaining wildfire qualifications. The District is also in need of new wildland Personal Protective Equipment, including Nomex pants, shirts, and new generation live fire shelters.

Although there is a great deal of agricultural burning in this area, most farmers are well-versed in safe burning practices. Access is good throughout the District, with very few single access roads. Radio and cell phone communication is also good. Each vehicle is now equipped with an 800 MHz and a VHF radio. As the County moves toward narrow banding and higher frequencies, the overall coverage and quality of communication in rural areas such as Monitor are diminished and more repeaters may be needed.

Map 9-10 Monitor Rural Fire Protection District Wildfire Risk and Social Vulnerability



Community Outreach & Education

Monitor Fire is dedicated to fire prevention but has limited staff and capacity for a fire prevention program. The District incorporates fire prevention messaging into all outreach programs including fire station open houses, pancake breakfasts, and National Night Out. Monitor Fire would like to increase capacity in its outreach program for fire prevention and for recruiting potential volunteers.

Local Communities at Risk (Strategic Planning Areas)

Monitor Fire has not identified any local Communities at Risk to wildfire. Elliot Prairie is the only concentration of homes, but fuels here do not constitute a high wildfire risk.

Fuels Reduction

A core focus of the Clackamas County Community Wildfire Protection Plan (CWPP) is reducing hazardous fuels around homes, along transportation corridors, and in surrounding forested lands to minimize losses to life, property, and natural resources from wildfire. Heavy fuel loads in the Monitor Rural Fire Protection District are concentrated along wetland and riparian areas, but there are very few homes or infrastructure at risk. There have been no areas identified as potential fuels reduction project sites.

Monitor Fire District Action Plan

Monitor Fire has developed a list of actions to build capacity for potential wildland fires at the District scale. The action plan for Monitor Fire is provided in Table 9-19.

Table 9-19 Monitor Fire Action Plan

ID	Action Item	Timeframe	Partners	Status
Monitor Fire Action Plan				
1.1	Work more closely with the Clackamas County Department of Transportation and Development to ensure input on access and water is requested and received in a timely manner, including access to the Velocity City Hall system.	Ongoing	OSFM; CCDTD	Ongoing
1.2	Partner with ODF to receive wildland fire training (S-130 and S-190) to maintain wildfire qualifications.	Ongoing	ODF	Ongoing
1.3	Continue to improve address signage throughout the District.	Ongoing	Clackamas Wildfire Collaborative; ODF	Ongoing
1.4	Partner with ODF and the Clackamas County Wildfire Collaborative to increase capacity in the fire prevention and outreach program.	Ongoing	Clackamas Wildfire Collaborative	Ongoing

Note: CAR=Community at Risk.

9.11. Community at Risk: Sandy Fire District #72

Sandy Fire District #72 has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

Sandy Fire District entered into a full contract for seven years of service with Clackamas Fire District effective July 1, 2023. More information about the contract can be found in the [Clackamas Fire District](#) section of this plan.

Sandy Fire District Description

Sandy is a scenic community with beautiful mountain views and the Sandy and Bull Run Rivers and is home to a major portion of the historic Barlow Road of the Oregon Trail. Residents enjoy a mild climate, clean air, good water, and other advantages of living in a small town 45 minutes from downtown Portland. The community is largely built in the Wildland Urban Interface (WUI).

Sandy's heritage is logging and sawmilling. There are several nurseries and berry farms with millions of dollars of assets and inventory, and many jobs. There are several light industries, including construction and steel work, plastic injection molding, auto sales and service, and fuel facilities. The Oregon Trail School District operates seven facilities within the fire district that are major assets for the community as well as the largest employer in the area.

Sandy Fire District #72 protects a 77 square mile district with a population of approximately 25,000, including the City of Sandy, which is just over three square miles and has a population of 12,700. In 2022, Sandy Fire District responded to almost 2,600 alarms. The District serves the community with 12 career personnel, three support personnel, and 20 volunteers. The District is a fire protection district governed by an elected board of directors and is well supported by its patrons.

Sandy is adjacent to federal, state, and local recreational lands. The rivers in the area are well known for their fishing and rafting, and the surrounding forest lands offer a variety of recreational opportunities.

The Bull Run Watershed is accessed through the Fire District. Sandy Fire provides mutual aid to the City of Portland as first-in responders into the Bull Run. US Highway 26 bisects the district and is a major transportation route between the Portland area and central/eastern Oregon. 35,300 vehicles travel through Sandy each day.

Wildland Urban Interface (WUI)

The topography of the Sandy Fire District, like most areas in Oregon, is quite diverse. The southern and eastern borders of the District are mostly forested land and the southwest border is the Deep Creek canyon. The Sandy River canyon, which is quite steep and picturesque, dissects the center of the District, and creates an access problem for the northern area of the District, as well as an interface problem with the steep southern bluffs bordering city residential areas. These canyons are forested and have homes built sporadically throughout. This combination of homes, steep topography, and trees pose a significant wildland interface hazard. This topography also impacts communication systems because of slopes that can block radio and cellular telephone signals.

The remainder of the District ranges from gentle hills to relatively flat areas. These areas consist of a combination of farms, homes, and businesses. The nursery business is a major part of local agriculture. There is also a variety of forest lands and natural areas, from thick stands of second growth timber to open grass lands. In addition, public and private management of the surrounding timber lands creates a patchwork of various stages of growth, including slash from logging operations and re-seeding projects.

Tourism and recreation are also huge influences here, with thousands of Portland area residents travelling along Highway 26 to access the Mount Hood National Forest. Campers, hikers, hunters, and other visitors to this area can potentially start wildfires that could carry from public land to the residential communities.

Sandy Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Sandy Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-11 illustrates the overall wildfire hazard risk in the Sandy Fire District and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

Sandy Fire promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. Sandy Fire works well with the City of Sandy and Clackamas County to integrate these concepts at the regulatory level. In addition, Sandy Fire participates in land use reviews for new development to provide input on access and water supply.

Since the adoption of the county-wide driveway standard, private driveways are being installed that are designed to allow fire engine access. There are several pre-existing private driveways that pose access difficulties like: inadequate turning radiuses; steep grades; inadequate vegetation clearance; and inadequately designed bridges and driveways that will not withstand the weight of a fire engine, especially during the wet season. These factors reduce Sandy Fire's response time.

Approximately six percent of the District is served by municipal water systems. There are eight water districts serving the District. The major district is the City of Sandy. The City of Sandy also has an agreement with the Portland Water Bureau to provide water via the Hudson/Bluff inter-tie. Other smaller districts include Skyview Acres Water District, Pleasant Home Water District, and Latigo Hills Water District. The remaining water districts serve primarily rural residential communities and are, generally, inadequate for providing fire flow. The remaining 94% of the District uses well water for domestic use. Fire District water tenders provide fire flow for these areas. The water tenders also augment fire flow in hydrated areas if fire flow is inadequate.

Fire flows in the City of Sandy have improved tremendously over the past decade. The City has added another water reservoir, for a total storage capacity of 4.75 million gallons, and has added larger distribution mains to increase available fire flow for much of the City. Its water sources are now capable of producing in excess of three million gallons per day. The City has also identified how the system will grow with new development.

The District has developed strategically located static water sources (ponds and cisterns) in rural areas of the District to assist in fire flow requirements. These drafting locations are documented in fire apparatus books with a description and photos of the site.

For the most part, the transportation system in the District is adequate. There are a few problems that can be directed towards transportation inadequacy, although congestion on Highway 26, through downtown Sandy, is becoming a problem at certain times and days of the week. Highway 26 is a corridor for recreational activities on Mount Hood and in Central Oregon. Funding for maintenance and improvements has shown to be inadequate over the past few years and will continue to be inadequate if sources of funding are not addressed. Clackamas County has undertaken a project called "Concurrency" to further address these issues. Should this trend continue, congestion or the quality of some roads might be an obstacle to emergency response times.

Emergency Response

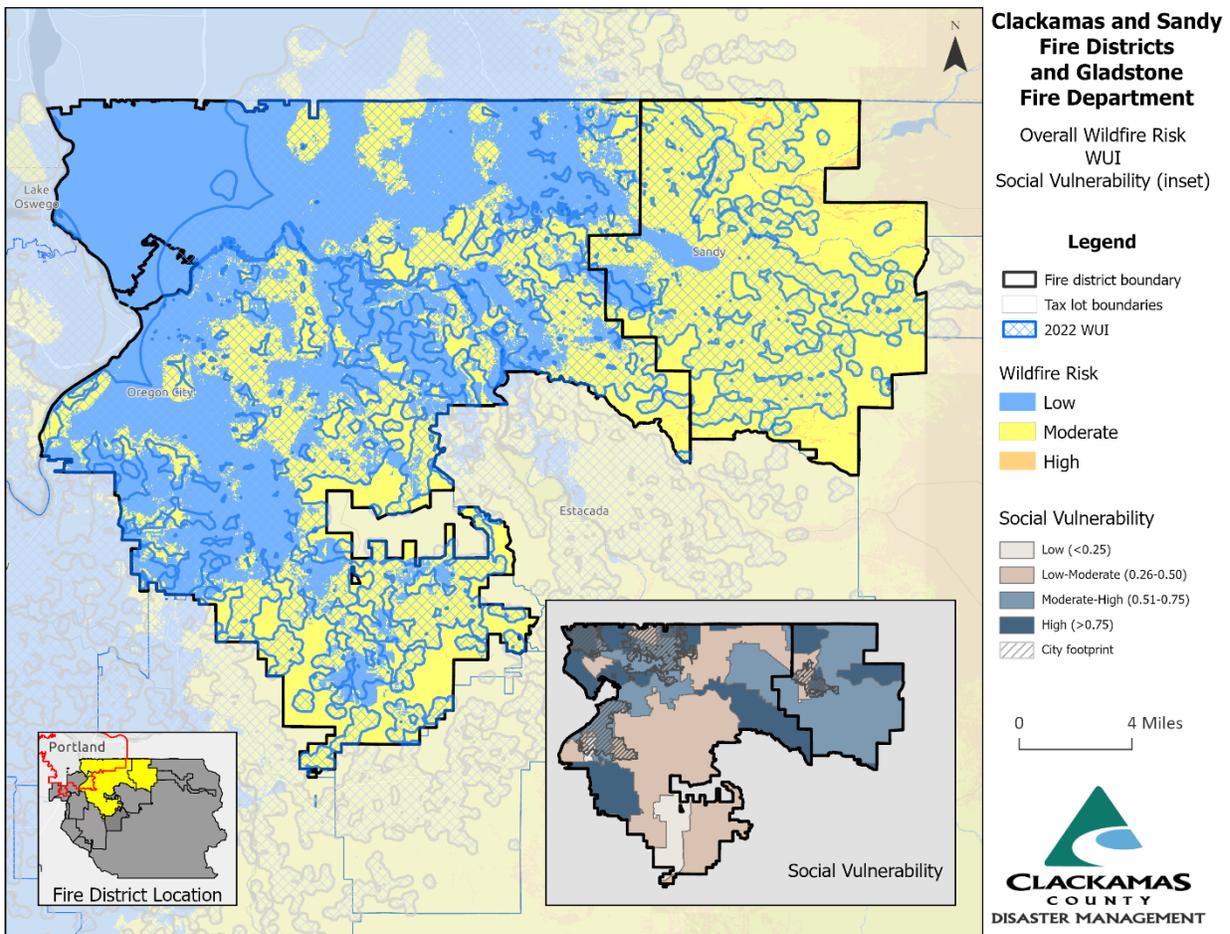
Sandy Fire members are well-trained for wildland fires with an annual training regime that supports task forces and strike teams that respond to local wildfires and conflagrations. Staffing for bigger incidents can be challenging; the District often relies on neighboring agencies for assistance through both Mutual and Automatic Aid agreements. The population is dispersed, which can result in increased response times to outer reaches of the District.

The District has two dedicated Type V brush engines, the latest of which was added in FY 2018/19.

In the event of a large wildland fire, evacuations may be necessary. These rural areas present some difficulties due to the number of residential properties that can only be accessed by one way in and one way out roads. Also, there are many private bridges in the area that may not be able to support emergency service vehicles.

Burning of yard waste and debris is a challenge in the Sandy Fire District because burning is allowed in all areas. Sandy Fire adheres to the Open Burn Policy adopted by the Clackamas County Fire Defense Board and tries to be consistent with neighboring jurisdictions in regulating the Backyard Burning program.

Map 9-11 Sandy Fire District #72 (including Clackamas Fire District and Gladstone Fire Department) Wildfire Risk and Social Vulnerability



Community Outreach & Education

Sandy Fire is dedicated to fire prevention and uses a variety of forums to promote residential fire safety, defensible space, and safe burning practices. The community is very supportive of the Fire District and participates in activities throughout the year, some of which include smoke detector, fire prevention, car seat, and other programs.

Local Communities at Risk (CARs)

Sandy Fire also recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at a more local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-20. Sandy Fire considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

Fuels reduction projects can and should be accomplished at the local scale, which is the creation of defensible space around homes, as well as the landscape scale, which is the extension of vegetation treatments onto adjacent forested land and natural areas. Sandy Fire will facilitate cooperation between public and private organizations to ensure that fuels reduction work occurs strategically and benefits homeowners as well as adjacent public and private lands.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by Sandy Fire.

Fuels Reduction Priorities

- Cedar Creek/Sandy Rim
- Bull Run Watershed
- Wildcat Mountain/Hope Lake
- Sandy River Park Area

Sandy Fire District Action Plan

Sandy Fire has developed a list of actions to build capacity at the District scale and has identified actions that can help to make the local CARs more resilient to potential wildfires. The action plan for Sandy Fire and the local CARs therein is provided in Table 9-21.

Progress Since 2018

The District has completed the following action item from the 2018 CWPP:

- **2018 Action Item:** Develop a community-driven pre-disaster plan, including evacuation routes, telephone call down trees, and other strategies for strengthening community response.

Table 9-20 Sandy Fire District #72 Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Wildcat Mountain Hope Lake	H	X	X	X	X	X	X	X	X	X			X This community borders BLM, USFS, and industrial forestland on the southeast edge of the District. Access is very limited in many areas to only one way in and out. 800mHZ works in most of this area; however, cellular service is poor. Many driveways are not marked and have challenging ingress for fire apparatus due to slope, surface conditions, and tree spacing/overhang. Parts of Hope Lake burned during wildfires in 2020.
Cedar Creek/Sandy Rim	H	X	X	X	X	X	X	X		X	X	X	Cedar Creek runs in the bottom of the drainage along the north side of downtown Sandy. Homes are scattered throughout the Cedar Creek drainage area and in the areas along the rim at the top of the drainage (City of Sandy). Steep slope, difficult access, and heavy fuel load combine to create wildland fire suppression challenges. This north aspect slope has a low history of fire escapement but under the right weather conditions would sustain fire. Heavy timber and understory further exacerbate the potential fire problem. Adjacent to this area is a primitive city park that is composed of largely overgrown, second-growth timber. One poorly maintained road provides access from Marcy Street nearly to the Sandy River/Cedar Creek confluence. Transients inhabit this area year-round and small warming fires are not uncommon in this area.
Firwood	H	X	X	X	X	X		X	X	X			X This agricultural community is comprised of nurseries, berry farms and tree farms. The access is not bad, but the topography does present challenges in some areas. Generally, this community is not as steep as the other CARs. There is a great need for defensible space here. There is a 30,000-gallon tank at the Firwood fire station and some ponds throughout the area that could potentially be used as helicopter dip spots, but water would probably need to be

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
													brought in by truck. Firwood is an all-volunteer station so the main station would likely be first on scene. There is a lot of burning here, but very little problems resulting from it. Communications are good because nearby Linhart Butte Road is a C-800 transmitter site.
Bull Run Area	H	X	X	X	X	X	X	X	X	X		X	The Bull Run Watershed is co-managed with USFS Mt. Hood NF and Portland Water Bureau. Continue discussions with all partners on strategic fuels plans in the Bull Run area.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-21 Sandy Fire District Action Plan

ID	Action Item	Timeframe	Partners		Status
Sandy Fire Action Plan					
1.1	Inventory private bridges to determine whether they have had an engineer certification and encourage landowners to update them to meet the 60,000-pound requirement for emergency service vehicles.	3 Years	CCEM; Clackamas County		On Schedule
1.2	Work with Clackamas County Disaster Management and the Sheriff's Office to discuss evacuation planning in communities with only one way in and out.	2 Years	CCSO; CCEM		On Schedule
1.3	Work with Clackamas County Roads to ensure that driveways in the WUI are wide enough with adequate clearance for emergency service vehicles.	3 Years	CCEM; CCDTD		On Schedule
1.4	Develop a sustainable chipper program to assist homeowners with woody debris from fuels reduction and reduce community smoke impacts from backyard burning.	1 Year	ODF; DEQ; CCDM; Clackamas Fire #1		New
ID	Action Item	Timeframe	Partners	CAR	Status
Sandy Fire Local Communities at Risk Action Plan					
2.1	Conduct Community Meetings to educate the community and solicit feedback on wildfire prevention projects that the community would support.	Ongoing	ODF	Wildcat Mountain; Bull Run	Ongoing
2.2	Develop a working relationship with natural land managers including USFS, BLM, Sandy Parks, and the Portland Water Bureau to address wildfire hazards and potential responsible capabilities for public lands adjacent to CARs.	2 Years	USFS; BLM; Sandy Parks; Portland Water Bureau	All CARs	On Schedule
2.3	Implement road addressing (including length of driveways) and other signage for emergency response.	Ongoing	ODF	Firwood; Cedar Creek; Wildcat Mountain	Delayed
2.4	Reduce hazardous fuels in the ROW of potential evacuation routes and engage residents adjacent to primary evacuation routes to extend treatments onto private land.	Ongoing	ODOT; CCDTD	All CARs	Delayed
2.5	Seek grant funding to support fuels reduction and the creation of defensible space around homes.	Ongoing	ODF	All CARs	Ongoing

Note: CAR=Community at Risk

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9.12. Community at Risk: Silverton Fire District #2

The Silverton Fire District #2 has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events, especially in local Communities at Risk (CARs).

The Silverton Fire District service area is in both Clackamas and Marion counties. For information on the service area within Marion County, see the [Marion County CWPP](#).

Silverton Fire District Description

Silverton Fire District #2 has nine full-time employees and over 65 volunteers. Silverton Fire District provides emergency medical services as well as fire services to an area of about 106 square miles and serves a population of over 23,000 from five stations. Both volunteers and paid staff work under the direction of the Fire Chief.

Wildland Urban Interface (WUI)

Silverton is the location of the largest wildland fire in Oregon's history, which burned over 1 million acres of timber in 1865. Except for the 2020 Labor Day fires, there have been few large fires leading to heavy fuel loading that could cause another large fire to ignite.

Silverton's Fire District is a rural area on the eastern edge of Clackamas County adjacent to large tracts of federal, state, and private forests. The terrain is steep, causing access and communication limitations. The area attracts campers, hikers, anglers, ATV users, hunters, and other visitors that can potentially start wildfires that could carry from public land to the residential communities.

The area is characterized by rural residential homes surrounded by heavy fuels and steep slopes. In addition, many of the neighborhoods have only single access (one way in and one way out) with narrow, steep driveways and poor address signage. Heavy and continuous fuels dominate this area, so fires that begin on public land or on smaller private residential lots can quickly threaten the communities and natural resources that thrive in the Silverton Fire District.

Silverton Fire District Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted Silverton Fire in identifying areas that may be at higher risk to potential wildfires. Map 9-12 illustrates the overall wildfire hazard risk in the Silverton Fire District and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

Silverton Fire District promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. The Silverton Fire District works with the City of Silverton, the City of Scotts Mills, and Clackamas County to integrate these concepts at the regulatory level by providing input on access and water requirements for new development.

The City of Silverton provides land use planning and building permit services within the city. Coordination between the District and the City is excellent. Unincorporated areas are served by Clackamas County Land Use Planning and Building Departments. Silverton Fire has experienced some difficulties coordinating with the County and is not always notified to provide information on fire flow and access for new lots of record. Additionally, many homes are being built on existing lots of record with no input from the Fire District on issues such as access and water. This issue has been identified as a County-wide issue and therefore is articulated as a need in the Clackamas CWPP Action Plan. Silverton Fire also does not have

access to the County's Velocity Hall System, which catalogues pending and approved building permits. The need for enhanced communication between Clackamas County and Silverton Fire has been noted in the Silverton Fire Action Plan.

Emergency Response

Emergency response is challenging in the Silverton Fire District because staff are almost entirely volunteer, with only nine paid staff. A major wildland urban interface fire in Silverton would quickly exceed the resources and capabilities of the District. For this reason, Silverton Fire has mutual aid agreements in place, which allow for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire.

The Silverton Fire District supports annual wildland fire training, which includes S-130 and S-190 as well as all others required for engine boss. Silverton Fire is fortunate that they can work with local farmers to implement prescribed field burns that provide the live fire experience critical to retaining wildland fire qualifications.

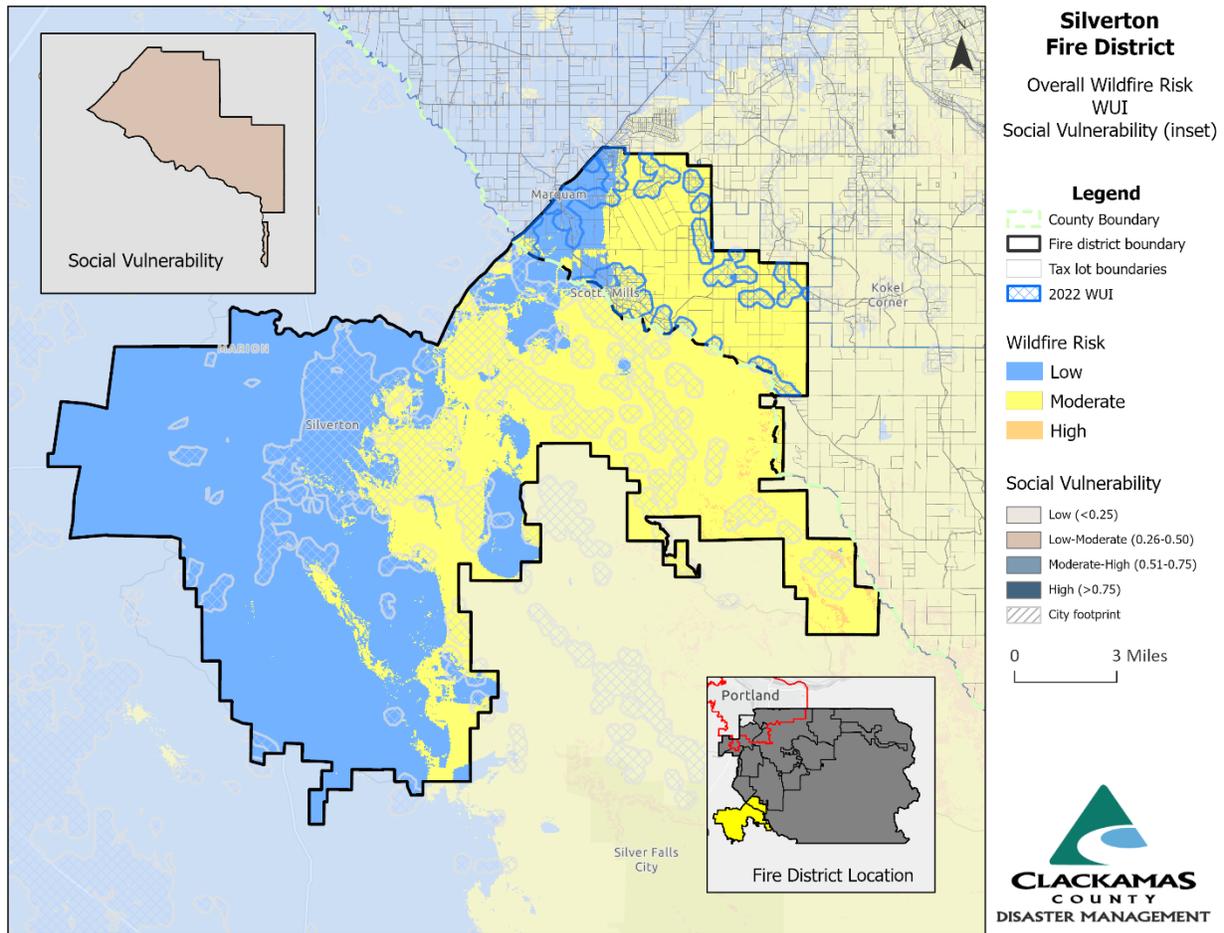
The District has received a number of modern used radios since 2018. However, during a multi-agency response, interoperability remains an issue for Silverton Fire because their used 800 MHz radios do not always connect to VHF radio; in addition, some are poorer quality and do not display radio frequencies.

Because Silverton Fire District does not have a hydrant system that extends to rural areas, it is important to begin identifying and improving potential water sites. This is especially important for homes that have long narrow driveways that will not support water tenders.

In the event of a large wildland fire, evacuations may be necessary. This rural area presents some difficulties due to the large number of single access roads with poor addressing. There are also a significant number of private bridges with unknown load capacity, especially along South Butte Creek Road. Since 2018, Silverton Fire has finishing a project to work ODF to improve address signage in vulnerable areas. As needed, the District will continue to work with the Clackamas County Clackamas Wildfire Collaborative to implement address signage in local Communities at Risk (CAR).

Burning of yard waste, agricultural waste, and other debris is challenging in the Silverton Fire District because backyard burning is allowed in all areas. Silverton Fire District tries to be consistent with neighboring jurisdictions' backyard burning programs but does not have staff or resources to regulate burning in Silverton. The District is also home to many Christmas tree operations that have authority to burn an incredible amount of material all year long regardless of the severity of fire danger or air quality restrictions. Silverton Fire would like to work with ODF to develop a better strategy for dealing with Christmas tree waste such as a chipper cooperative. This has been identified in the Silverton Action Plan.

Map 9-12 Silverton Fire District #2 Wildfire Risk and Social Vulnerability



Community Outreach/Education

One of the missions of the Silverton Fire District is to provide public education in fire prevention. Some of the ways that they provide this is to visit classrooms to talk with students and to offer station tours for school and youth groups. The Silverton Fire District also participates in activities throughout the area, which include First Fridays, July 3rd Fireworks Display, Homer Davenport Days Festival, Food & Toy Drive, and many other community events. The District also conducts direct outreach to residents residing in WUI areas regarding wildfire preparedness, including the importance of creating defensible space and other opportunities to participate in fuels reduction projects.

Local Communities at Risk (Strategic Planning Areas)

Silverton Fire also recognizes that there are smaller-scale Communities at Risk that have unique wildfire hazards to be addressed at a more local level. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-22. Silverton Fire officials considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, single access.
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.

- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

A core focus of the CWPP is reducing hazardous fuels around homes, along transportation corridors, and in surrounding forested lands that can significantly minimize losses to life, property, and natural resources from wildfire.

Fuels reduction projects can and should be accomplished at the local level, which includes the creation of defensible space around homes, as well as the landscape scale, which extends vegetation treatments onto adjacent forested land and natural areas. Silverton Fire District will facilitate cooperation between public and private organizations to ensure that fuels reduction work occurs strategically to benefit homeowners as well as adjacent public and private lands.

The Bureau of Land Management, private industrial landowners, and small woodland owners have many heavily forested landholdings that are adjacent to homes in the Wildland Urban Interface. As Silverton Fire District targets the residential communities for creating defensible space, there is an opportunity to engage private, state, and federal partners in reducing fuels on this adjacent public land. This has been identified as an action item.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by Silverton Fire.

Fuels Reduction Priorities

- Boy Scout Camp
- South Butte Road
- South Maple Grove Road Area
- Groshong Road Area

Silverton Fire District Action Plan

Silverton Fire District has developed a list of actions to build capacity at the Department level and has identified actions that can help to make the local CARs more resilient to potential wildfires. The action plan for Silverton Fire and the local CARs therein is provided in Table 9-23.

Progress Since 2018

The District has completed the following action items from the 2018 CWPP:

- **2018 Action Item:** Work with the Clackamas County Fire Defense Board to replace outdated 800 MHz radios with newer equipment.
- **2018 Action Item:** Procure 85 new generation fire shelters and other wildland PPE for staff and volunteers.
- **2018 Action Item:** Utilize Silverton’s First Friday event as a venue for public education.
- **2018 Action Item:** Implement road addressing (including length of driveways) and other signage for emergency response.

Table 9-22 Silverton Fire Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Boy Scout Camp	H	X	X	X	X	X	X		X	X	X	X	The Boy Scout Camp is an area of concern because it is heavily vegetated, has limited access and water, and is densely populated in the summer months. This area saw several fires during the 2020 wildfire season. The canyon going into the camp reduces radio coverage. This is also an excellent location for community outreach.
South Butte Creek Road	H	X	X	X	X	X	X		X	X	X	X	South Butte Creek Road has many homes in heavily forested areas. Access here is impaired by private bridges, one way in and out roads that are steep and narrow, sharp curves and blind corners. This area saw several fires during the 2020 wildfire season. There are very few address markers here; Silverton worked with ODF to install some in 2012 and finished updating signage since 2018. Butte Creek Road is a dead-end road. The canyon area presents communication issues and is also conducive for sever fire behavior as well as landslides. Public education and outreach are needed here to work with traditionally adversarial homeowners and to reach teenagers that recreate on BLM and private forest lands.
South Maple Grove Road Area	H	X	X	X	X	X	X		X	X	X	X	The Maple Grove area has very steep terrain with canyon areas, farmland, tree farms, and residential properties. Access is limited with narrow driveways, private bridges, and one way in and out roads. Communications are good here and although there are a couple of ponds and swimming pools, water will still be an issue, so response would require water from monitor and Molalla. Cooper Lake is a great fill site.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
South Wildcat Road	H	X			X	X			X	X			South Wildcat Road is characterized by managed farmlands with a great deal of field burning. Brand from these large-scale field burns threaten nearby forest lands. This area saw several fires during the 2020 wildfire season. There are not many homes in this area, but those that are located here have long narrow driveways.
Marquam Circle Area	M	X	X	X					X	X		X	Marquam Circle has a high concentration of homes, with fuels consisting of tall overgrown brush blackberries and other flashy fuels. Meadow Court is one way in and out and turns into gravel. Water is the biggest issue besides defensible space.
Groshong Road Area	M	X	X	X					X	X		X	Groshong Road Area is a high priority for fuels reduction in heavily forested areas within this community. Access and communications are good, but water is an issue.
Prospect	M	X	X	X					X	X		X	Prospect has very limited access because it has only one way in and out and is a narrow road. It would be difficult to get a type one engine into this area. There are many homes at the top of the slope where a fire could potentially run.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-23 Silverton Fire Action Plan

ID	Action Item	Timeframe	Partners		Status
Silverton Fire Action Plan					
1.1	Inventory private bridges to determine whether they have had an engineer certification and encourage landowners to upgrade them to meet the 60,000-pound requirement for emergency service vehicles.	3 Years	CCDTD; CCEM		On Schedule
1.2	Build capacity and support for a more involved Burning Program, including staff to educate local area residents and regulate the program.	3 Years	ODF; DEQ; Clackamas Wildfire Collaborative		On Schedule
1.3	Work with local Christmas tree growers to develop and implement a chipper program to reduce excessive burning of woody material.	3 Years	ODF; CCFA		On Schedule
1.4	Work with Clackamas County Disaster Management and the Sheriff's Office to discuss evacuation planning especially in communities with only one way in and out.	1 Year	CCSO; CCEM		On Schedule
1.5	Develop and implement a driveway program to ensure that driveways are wide enough with adequate clearance for emergency service vehicles.	3 Years	CCSO; CCEM		On Schedule
1.6	Work with Clackamas County Land Use Planning and Building Departments to provide input on access and water requirements in new developments.	3 Years	Clackamas County; CCDTD		On Schedule
1.7	Continue to work with ODF and other partner fire agencies to maintain wildland fire training credentials and work with local area farmers to develop opportunities to participate in live fire exercises.	Ongoing	ODF; FDB; Local Area Farmers		Ongoing
1.8	Work with Clackamas County Building Departments to require residential sprinklers in new residential construction.	3 Years	Clackamas County; CCDTD		New
ID	Action Item	Timeframe	Partners	CAR	Status
Silverton Fire Local Communities at Risk Action Plan					
2.1	Conduct a public outreach campaign, including Community Meetings, to educate residents about defensible space, safe burning practices, and required access for emergency vehicles.	Ongoing	ODF; OSFM	All CARs	Ongoing
2.2	Develop working relationships with natural land managers, including USFS and the BLM, to address wildfire hazards and potential response capabilities for public lands adjacent to CARs.	1 Year	USFS; BLM	All CARs	On Schedule

ID	Action Item	Timeframe	Partners	CAR	Status
2.3	Implement road addressing (including length of driveways) and other signage for emergency response.	Ongoing	ODF; OSFM	All CARs	Ongoing
2.4	Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	Ongoing	Clackamas Wildfire Collaborative	All CARs	Ongoing
2.5	Reduce hazardous fuels in the ROW of potential evacuation routes. Engage residents adjacent to primary evacuation routes to extend treatments onto private land.	Ongoing	ODOT; CCDTD	All CARs	Ongoing
2.6	Seek grant funding to support fuels reduction and the creation of defensible space around homes.	Ongoing	ODF; OSFM	All CARs	Ongoing
2.7	Identify opportunities to recycle or compose vegetative material instead of burning it.	Ongoing	ODF; OAN	All CARs	Ongoing
2.8	Increasing water supply via sustainable water supplies listed on a map, addressing signs, or both	Ongoing	ODF; CCEM	All CARs	New

Note: CAR=Community at Risk.

9.13. Community at Risk: Tualatin Valley Fire & Rescue

Tualatin Valley Fire & Rescue (TVF&R) has participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events.

The Tualatin Valley Fire & Rescue service area is in Clackamas, Multnomah, Washington, and Yamhill counties. For information on the service area within Multnomah County, see the [Multnomah County CWPP](#). For information on the service area within Washington County, see the [Washington County CWPP](#). For information on the service area within Yamhill county, see the [Yamhill County CWPP](#).

Tualatin Valley Fire & Rescue Description

Tualatin Valley Fire & Rescue provides fire protection and emergency medical services to approximately 547,142 residents in one of the fastest growing regions in Oregon. The District's 390 square mile service area includes eleven cities and unincorporated portions of Clackamas, Multnomah, Washington, and Yamhill Counties. The cities covered by TVF&R within Clackamas County include Rivergrove, West Linn, and Wilsonville.

TVF&R has 29 fire stations and employs more than 475 career firefighters. They also have a volunteer fire station, a Command and Business Operations Center (CBOC), a Training Facility, a South Operating Center (SOC), a full-service fleet maintenance shop, and a Logistics Service Center (LSC).

Wildland Urban Interface (WUI)

The Wildland Urban Interface areas in the Clackamas County portion of TVF&R's District are characterized by suburban communities and rural residential homes in proximity to grasses, brush, and some timber, with varying topography. In addition, many of the older neighborhoods share common characteristics including limited access, unique arrangements, and mature vegetation.

Much of the region contains some mix of grass, shrubs, brush, and timber that are common components in fueling vegetation fires. Along with projected inclement weather hazards to the area, the risk of impact from fire to our communities cannot be understated. TVF&R continues to evaluate the response to this risk and works hard to maintain an appropriate response to such hazards.

TVF&R Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted TVF&R in identifying areas that may be at higher risk for potential wildfires. Map 9-13 illustrates the overall wildfire hazard risk in TVF&R and will be used to help target areas for wildfire prevention activities. The Oregon Department of Forestry's [2020 Communities at Risk Report](#) classified all of TVF&R's service area within Clackamas County as "low risk".

Structural Ignitability

TVF&R promotes the creation of defensible space, use of fire-resistant roofing and building materials, and community preparedness in the WUI. TVF&R works well with Clackamas County and the cities of West Linn, Rivergrove, and Wilsonville to integrate these concepts at the regulatory level by providing input on access and water supply during land use reviews for new residential development.

Emergency Response

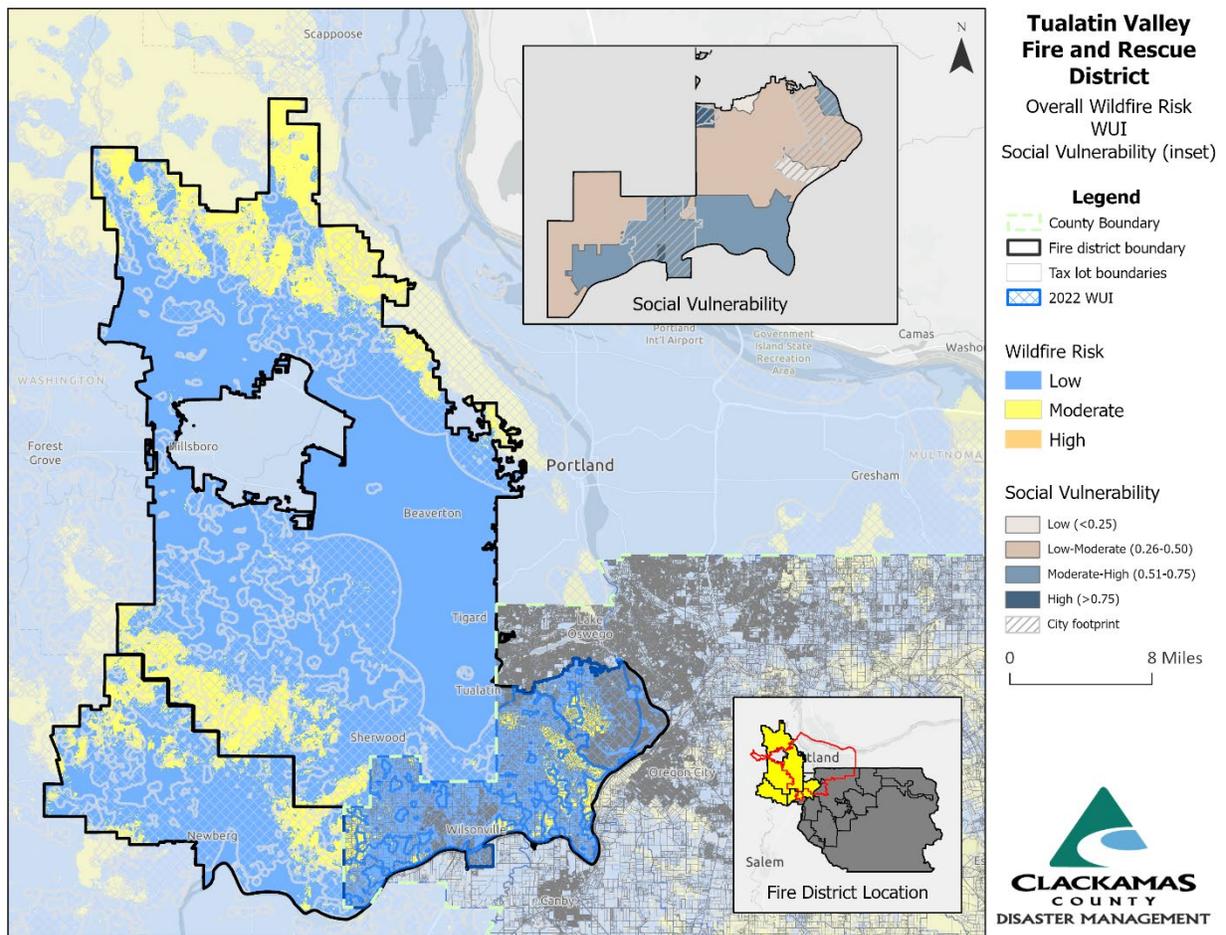
A major wildland urban interface fire in West Linn, Rivergrove, or Wilsonville may exceed the immediate resources and capabilities of TVF&R. For this reason, TVF&R has mutual aid agreements in place to allow for the sharing of resources across the county in the event of a large-scale disaster such as a wildfire.

In the event of a large wildland fire, evacuations may be necessary. In rural residential areas this could present some challenges for evacuations where access includes long, narrow, and steep driveways. Some of the identified Communities at Risk have smaller local roads serving the area and/or have limited point of egress, making it difficult to manage incoming and outgoing traffic during an emergency.

TVF&R follows Department of Environmental Quality (DEQ) burning policies for backyard burning. The majority of West Linn and Rivergrove are within the DEQ burn ban area, which does not allow backyard burning at any time of the year. Wilsonville residents are permitted only during designated burn seasons and on DEQ approved burn days.

TVF&R firefighters receive regular wildland fire training to remain current on qualifications. TVF&R also assists all of Oregon through mobilization requests from the Oregon State Fire Marshall (OSFM)’s office. Both training and deployment have boosted TVF&R’s readiness as it relates to wildland firefighting. However, new staff members have little to no live-fire experience and many Battalion Chiefs assigned to task forces have difficulty completing task books without being deployed. TVF&R has been working with Metro, Tualatin Hills Park and Recreation District and Clean Water Services to identify opportunities for prescribed burns in Washington County that would benefit native ecosystems while providing live-fire experience to TVF&R staff (e.g., Cooper Mountain and Gardner Prairie). TVF&R would like to expand this partnership to the Clackamas County area by furthering relationships with Metro, Wilsonville, West Linn, and County Parks staff.

Map 9-13 Tualatin Valley Fire & Rescue Wildfire Risk and Social Vulnerability



Community Outreach & Education

TVF&R is dedicated to fire prevention, public safety, and community wellness and uses a variety of forums to promote residential fire safety, defensible space, and safe burning practices. The community is very supportive of TVF&R and participates in activities throughout the year, some of which include smoke detector, fire prevention, and community safety programs. TVF&R has a “Wildfire Can Happen Here” program that promotes wildfire awareness in high hazard areas. To date, most of the areas targeted for these programs have been in Washington and Multnomah Counties; however, efforts have been made in Clackamas County as opportunities were presented. TVF&R would like to continue to expand this effort to the Clackamas Communities at Risk.

Local Communities at Risk (Strategic Planning Areas)

TVF&R has not identified any local Communities at Risk to wildfire. Instead, TVF&R uses a risk assessment process guided by their internally-developed [2023 Standards of Cover](#) to evaluate and determine response to structure and wildland fires.

Fuels Reduction

A core focus of the Clackamas County Community Wildfire Protection Plan (CWPP) is reducing hazardous fuels around homes, along transportation corridors, and in surrounding forested lands to minimize losses to life, property, and natural resources from wildfire. TVF&R has not identified any areas as potential fuels reduction project sites.

TVF&R Wildfire Action Plan

TVF&R has developed a list of actions to build capacity for potential wildland fires at the District scale. The action plan for TVF&R is provided in Table 9-24.

Progress Since 2018

TVF&R has completed the following action items from the 2018 CWPP:

- **2018 Action Item:** Continue to foster partnerships with natural resources managers to access and implement potential fuels reduction projects in natural areas adjacent to Communities at Risk.
- **2018 Action Item:** Partner with the Clackamas County Fire Defense Board to participate in a WUI conflagration exercise.
- **2018 Action Item:** Utilize TVF&R's "Ready, Set, Go" public outreach and education campaign in the high-priority CARs previously identified in Clackamas County.
- **2018 Action Item:** Incorporate wildfire awareness and risk reduction strategies into TVF&R's "Ready, Set, Go" wildfire preparedness program.
- **2018 Action Item:** Improve address signage for emergency response.
- **2018 Action Item:** Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote burning responsibilities, defensible space, and reduction of structural ignitability within the Home Ignition Zone as part of the "Ready, Set, Go" wildfire preparedness program.
- **2018 Action Item:** Encourage communities to develop a community-driven pre-disaster plan, including evacuation routes, telephone call down trees, and other strategies for strengthening community response, as part of the "Ready, Set, Go" wildfire preparedness program.

Table 9-24 TVF&R Action Plan

ID	Action Item	Timeframe	Partners	Status
TVF&R Fire Action Plan				
1.1	Identify and pursue opportunities to participate in live fire training exercises to maintain wildfire certificates.	Ongoing	Metro; ODF; City of West Linn; City of Wilsonville; Clean Water Services	Ongoing
1.2	Continue to foster partnerships with regional natural resources managers.	Ongoing	Metro; ODF; City of West Linn; City of Wilsonville; Clean Water Services	Ongoing
1.3	Partner with the Clackamas County Fire Defense Board to participate in a WUI conflagration exercise.	Ongoing	CCFDB	Ongoing
1.4	Obtain and evaluate new wildfire risk assessment maps created through the Senate Bill 762 process and the Regional Disaster Preparedness Organization (RDPO).	Ongoing	ODF; OSFM	New
1.5	Promote wildfire preparedness and risk reduction strategies through the “Ready, Set, Go” program.	Ongoing	ODF; OSFM; CCFDB; CCEM	New
1.6	Promote education and assessment assistance with regional communities who may have increased wildfire risk and encourage these neighborhoods to become Firewise communities.	Ongoing	CCDM; NFPA; Regional communities	New

9.14. Community at Risk: Wildland Agencies (ODF and USFS)

The communities in Clackamas County that are not covered by a structural fire agency are considered Communities at Risk (CAR) by Oregon Department of Forestry (ODF). Many of these areas are within wildland agency protection boundaries of either ODF or the US Forest Service (USFS). These agencies provide fire suppression for forest land only and do not provide structural fire protection to most of these areas. ODF and the USFS have participated in the Clackamas County CWPP planning process to evaluate capabilities to prevent, prepare for, and respond to potential wildfire events.

Wildland Agencies Areas Description

In 2004, the Governor’s Fire Service Policy Council convened a task force to discuss the issue of areas that are vulnerable to wildfire but are without publicly funded structural fire protection. This is a major issue throughout the state because the number of structurally unprotected homes in the Wildland Urban Interface (WUI) continues to grow. State firefighting actions on these lands are made possible only after the Governor invokes the Conflagration Act. The task force agreed that protection should be provided only if the county is: 1) completing a community wildfire protection plan; 2) has adopted the Department of Land Conservation and Development’s Goal; 3) requiring fire defense standards for new construction in forest zones; and 4) changing property tax statement language for ODF assessment from “fire protection” to ODF “non-structural fire suppression” so homeowners and insurers are not led to believe they have structural fire protection. The Governor’s Council was reconvened in 2019 and produced a series of recommendations that led to the passage of [Senate Bill 762](#) in 2021, which modernized and improved Oregon’s wildfire preparedness and response. This section of the Clackamas County CWPP addresses structurally unprotected areas, thereby meeting the provisions set forth by both task forces.

There are approximately 722,799 acres of structurally unprotected lands in Clackamas County. The majority of this acreage is Mount Hood National Forest land, private industrial forest land, or undeveloped land. Some small pockets of land do contain a few residences, buildings, and infrastructure that would require protection. These are the areas addressed here. ODF and USFS do provide wildland fire protection to areas without structures, but these areas are not discussed in this section.

Wildland Urban Interface (WUI)

Many communities, buildings, and infrastructure in structurally unprotected areas are very rural examples of the WUI. They are characterized by residential homes surrounded by heavy fuels and steep slopes, very limited access, and potential communication issues. These factors, combined with the lack of structural fire protection, make these communities extremely vulnerable. [Oregon state law](#) defines the WUI as “a geographical area where structures and other human development meets or intermingles with wildland or vegetative fuels.”

In 2023, the USFS designated the Mount Hood Forest Health and Fire Resilient Communities as one of 21 nationwide priority landscapes under their 10-year [Wildfire Crisis Strategy](#). The USFS’ goal in launching the Wildfire Crisis Strategy was to safeguard communities and the resources they depend on by increasing fuels treatments over time, promoting community readiness, and supporting postfire recovery and restoration. This landscape comprises federal, state, tribal, and private lands on and around the Mt. Hood National Forest (585,348 acres, or 54% of the project area, are on national forest land). The USFS will coordinate all work on national forest system lands with work on adjacent lands in other ownerships. Expected outcomes include fuels reduction in WUI areas, reduced ignition source risks, maintaining and improving critical evacuation routes, and protecting source water areas that provide drinking water to one-third of Oregonians.

Wildland Agency Wildfire Hazards

The Clackamas County CWPP wildfire hazard assessment assisted the ODF and USFS in identifying areas that may be at higher risk to potential wildfires. Map E-4 illustrates the overall wildfire hazard risk across the entire county and will be used to help target areas for wildfire prevention activities.

Structural Ignitability

The Clackamas County Department of Transportation (DTD) notifies local deputy fire marshals of new lots of record to receive input on access and water requirements. In areas that are not within a structural fire agency's boundary, these requirements may not be adequately incorporated into new development. To reduce structural ignitability, DTD now requires that any new construction must either annex into a structural fire agency's boundary or contract for structural protection. Lots zoned for Agriculture/Forestland are required to have fuel breaks, emergency access and turn-arounds, and adequate water supply. Senate Bill 762, passed in 2021, also updates statewide building codes within the WUI to increase wildfire preparedness, reduce ignition risk, and support emergency response.

Emergency Response

A major wildland urban interface fire in the structurally unprotected areas of Clackamas County would likely require a multi-agency response. The Oregon Department of Forestry and the US Forest Service are the wildland protection agencies. The USFS and ODF have a mutual aid agreement that allows for the sharing of resources. The Clackamas Fire Defense Board also has a Fire Mutual Aid Agreement that is the vehicle through which resources can be shared across jurisdictional boundaries throughout the County. The USFS is not a signatory to this agreement, so any assistance from structural fire agencies would have to come through the ODF agreement.

Burning of yard waste and debris is a major issue in these communities because backyard burning is responsible for most fire ignitions in the WUI. Many of the structurally unprotected communities are outside of the DEQ's boundaries, which means they must get permission from the local fire district to burn. Districts regulate what they can but are often too understaffed to monitor such burns. Though ODF regulates illegal burning during fire season, it is not common knowledge and the only burn permits issued are for recreational campfires. This means that backyard burning in these areas is largely unregulated.

The majority of acreage outside of structural fire protection boundaries is in the eastern portion of the county, where VHF is more effective than 800 MHz. Radio communications in these areas can be challenging because 800 MHz is the primary system for structural fire agencies. ODF, the USFS, and the majority of rural structural fire agencies use VHF, so interoperability for a larger scale mutual aid event may become an issue. ODF has a limited supply of portable 800 MHz radios, but the USFS does not. In addition, the USFS does not routinely communicate with structural fire agencies, so there may be confusion regarding communication protocol during a large-scale event. The USFS has identified the need to coordinate radio communications with structural fire agencies in the USFS Action Plan.

Water supply is usually an issue in rural, structurally unprotected areas. ODF and USFS are accustomed to drafting from existing water bodies to supplement water that is brought on scene, and having water sources identified and developed in rural structurally unprotected areas can be critical to response tactics. This has been identified as a need in both the ODF and USFS action plan.

The ODF and USFS utilize permanent and seasonal staff to respond to wildfires. Wildfire training and refreshers are provided annually to remain current on qualifications. Although the wildland agencies can provide classroom training, the lack of live fire experience among some districts makes it difficult to retain wildland qualifications. ODF and USFS are working with the Fire Defense Board to identify opportunities to provide live fire training and prescribed burns to address the fire component of wildland task books.

Community Outreach & Education

ODF and USFS are committed to fire prevention and use a variety of forums to promote residential fire safety, defensible space, and safe burning practices. Outreach activities include school programs, public presentations, media events, and safety fairs. The USFS and ODF use fire severity rating signs placed in strategic areas to inform the public about wildfire danger. These wildland agencies are expected to be active members in the newly formed Clackamas County Clackamas Wildfire Collaborative, which is a consortium of structural and wildland fire protection professionals that work together to mitigate wildfire in the county.

Local Communities at Risk (CARs)

ODF and USFS have identified Communities at Risk that have unique wildfire hazards to be addressed at a more local scale. Communities that have been identified as being particularly vulnerable to wildfires are listed in Table 9-25 (USFS) and Table 9-26 (ODF). Wildland Fire professionals considered the following factors to determine the local CARs including:

- Need for defensible space.
- Access limitations (narrow driveways, lack of address signage, one way in/one way out).
- Steep slopes that can hinder access and accelerate the spread of wildfire.
- Lack of water available for wildland fire fighting.
- Heavy fuels on adjacent public lands.
- Potential ignition sources from recreationists and transients.
- Agricultural and backyard burning.
- Lack of community outreach programs to promote wildfire awareness.
- Communications difficulties.

Fuels Reduction

The Oregon Department of Forestry has received numerous grants to encourage homeowners and small woodland owners to reduce hazardous fuels through a cost share program. Fuels reduction projects on federal land require an in-depth National Environmental Protection Act analysis that can be costly and time consuming, so completing fuels reduction projects in a timely manner can be challenging. However, the USFS has identified priorities for fuels reduction on federal lands adjacent to communities at risk.

To ensure that landscape-level treatments are paired with projects to create defensible space around vulnerable communities, priority fuels reduction projects have been overlaid with the Communities at Risk identified by Wildland Agency Areas.

Fuels Reduction Priorities

- Mount Hood Corridor
- Sandy Watershed
- NF Bedford
- USFS Summer Homes
- Kiwanas Camp
- Trillium Lake
- Wapinitia
- Sisi Butte Lookout and Electronic Site
- Timothy Lake Area
- Government Camp Area
- Powerline Infrastructure
- Timberlake CCC Job Corps
- Ripplebrook Guard Station
- Joe Graham Guard Station
- 3 Lynx
- Zig Zag Guard Station
- Bull Run Management Unit and Surrounding Area

Wildland Agency Action Plan

The ODF and USFS have developed a list of actions to build capacity at the District scale and has identified actions that can help to make the local CARs more resilient to potential wildfires. The action plan for Wildland Agencies and the CARs therein is provided in Table 9-27 and Table 9-28.

USFS Progress Since 2018

The USFS has worked with the Clackamas Fire Operations Group to enhance capabilities for interoperability and obtain a cache of at least five 800 MHz portable radios available for USFS use. They also continue to work with mutual aid partners to determine the best communications strategies (consistent frequency, VHF, and 800 MHz).

ODF Progress Since 2018

ODF has worked with most of the fire districts within Clackamas County as well as in structurally unprotected areas to implement road addressing (including length of driveways) and other signage for emergency response. ODF has also provided support in wildfire response and community education, working closely with the Oregon State Fire Marshal (OSFM).

Table 9-25 USFS Protection Boundary Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Ripplebrook Guard Station	H	X			X		X	X	X	X	X	X	The USFS Ripplebrook Guard Station houses many Job Corps instructors. There are at least 20 structures behind the station along with 4 buildings associated with the station. There is a helibase with structures to be protected as well. Farther upslope, there are 2 bunk houses with 6 units. Access is generally good; there is an improved gravel road to the helibase and the bunk house tied to the water system from Job Corps and hydrants. Radio comms are good, but there is no cell service.
Timothy Lake	H	X	X		X		X	X	X	X	X		Timothy Lake is a remote area with few structures; these include a Pacific Gas and Electric lodge along with several cabins and some power infrastructure. Defensible space and improved access are both needed in this area.
Timberlake Job Corps	M	X			X		X	X	X	X	X	X	The Timberlake Job Corps is a United States Department of Labor program that provides housing and curriculum to students from 18-25. It is located on USFS land and uses USFS buildings. The big problem here is protection capability. The Job Corps is about 30 minutes from Estacada Fire, which is the closest structural protection district. Currently, there is no contract in place to provide structural protection at Timberlake and the Job Corps is considering a Fire Brigade that would help with the initial attack until Estacada arrives. They do have a hydrant system. Radio communications are adequate because the Whalehead repeater is nearby, but there is no cell service here. Burning is accomplished through burn permits and they are generally not an issue. Shaded fuel breaks leading into job corps boundary are needed. There is great opportunity for youth engagement, potentially integrating structural fire protection into curriculum – though turnover is problematic.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
3 Lynx	M	X		X	X		X	X	X	X	X	X	The 3 Lynx community was established as hydropower was being developed on the Clackamas River. It used to be a thriving community, but there are many empty structures now. This community of about 15 homes contracts with Estacada Fire for structural fire protection. There is adequate water here, but communications may be compromised, and response times will be greater than 10 minutes.
Joe Graham/Clackamas Lake Guard Station	M	X			X		X	X		X	X	X	The Joe Graham/Clackamas Lake Guard Station was once a ranger district, so there are many historic structures here. It has a water system and there is a huge lake nearby. There were several fires here in 2002 and 2003. The visitor's center is typically occupied on a rotating basis.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-26 ODF Protection Boundary Local Communities at Risk

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Elk Prairie	H	X	X	X	X	X		X	X	X		X	Elk Prairie is a community of many residential homes that are surrounded by private forest land. Access here is poor and there is no hydrant system in the area. There are ponds that may be used for fire suppression.
Upper Sawtell (Structurally Unprotected)	H	X		X	X	X		X	X	X		X	This community includes everything above Maple Grove and North of Elk Prairie. The area has very poor access and a great deal of debris burning. It is surrounded by BLM and private forest land and has steep slopes. ODF has done some canvassing in this area and would like to partner with local fire agencies to inform the landowners of their structurally unprotected status.
East Highland	H	X	X	X	X	X	X	X	X	X	X	X	East Highland Road has about 7 homes surrounded by 3 fire districts but is largely structurally unprotected. Water and access are major issues here. This community includes the BLM seed orchard. This community is partially protected by Clackamas Fire District, who have not reported significant issues with fire risk in this area.
Lower Highland	M	X		X		X		X	X	X		X	Lower Highland Road is a good example of the Wildland Urban Interface as it has heavy fuels adjacent to structurally unprotected homes. The homes are surrounded by managed forest land that could serve as an ignition source. Access and communications are good. There are no hydrants, but there are ponds nearby.
Ramsby Road Area (Structurally Unprotected)	M	X		X		X		X	X	X		X	The structurally unprotected portion of Ramsby Road has a history of arson fires. There are managed private forest lands surrounding the area that also can serve as an ignition and fuel source. Communications and protection capabilities are the most challenging aspects for this community.

Community at Risk (CAR)	CAR Priority	Defensible Space	Access	Water	Public Forest Lands	Private Forest Lands	Recreators/Transients	Protection Capabilities	Burning	Preparedness	Communications	Steep Slopes	Description
Wapinitia	M	X	X	X	X	X	X	X	X	X	X	X	The Wapinitia community is highly vulnerable. It is a few miles east of the Hoodland Fire District on Hwy 26. ODF and USFS have made attempts to work with the community in the past, but it has been difficult to achieve and sustain progress because many homeowners are not engaged. There is a standpipe and a pump house, but it doesn't have much volume. There was a house fire recently, and the homeowners used the standpipe and local hose to help with fire. The HOA Board is not supportive of defensible space, but some individual owners have done some work on their own. There is little support for fuels reduction in common areas. The community is surrounded by USFS land. The USFS attempted to create a 300-foot defensible space buffer, but the community was not supportive. Access is extremely limited, and radio and cell communications are limited.
Lais Road	M	X	X	X		X		X	X	X		X	Lais Road has serious access constraints as it is one way in and out and many homes have steep and narrow driveways with poor turnarounds. There are a series of cabins along the river that are accessed through Weyerhaeuser industrial forest land. Although it is close to the river, water will be an issue here because it is difficult to access the river.
Butte Creek (Structurally Unprotected)	M	X	X	X	X	X		X	X	X	X	X	The structurally unprotected portion of Butte Creek Road is highly vulnerable because there is no water, access is limited to one way in and out, and there are managed BLM and private forest lands nearby. Communication is limited here, and Butte Creek is one way in and out all the way into Scotts Mills.

Note: For CAR Priority, H=High Priority, M=Medium Priority, and L=Low Priority.

Table 9-27 Wildland Agencies (ODF and USFS) Action Plan

ID	Action Item	Timeframe	Partners	Lead	Status
1.1	Inform homeowners in structurally unprotected areas of their lack of structural protection via mailings and educate them regarding options for enhancing structural protection.	2 Years	Clackamas Wildfire Collaborative; USFS; OSFM	ODF; USFS	On Schedule
1.2	Encourage communities in structurally unprotected areas to develop local community wildfire protection plans and become Firewise USA communities.	Ongoing	ODF; USFS; Clackamas County	ODF; USFS	Ongoing
1.3	Research opportunities to provide disclosure of lack of structural protection status on lots via deed restriction (the County only requires all new homes to be in a fire district or contract for services).	2 Years	Clackamas County	ODF; USFS	On Schedule
1.4	Partner with the Clackamas Wildfire Collaborative to create and distribute outreach materials that promote responsible burning, defensible space, and reduction of structural ignitability within the Home Ignition Zone.	Ongoing	Clackamas Wildfire Collaborative	ODF	Ongoing
1.5	Promote legal, safe, and responsible debris burning through public outreach and education.	Ongoing	ODF; DEQ; Clackamas Wildfire Collaborative	ODF; USFS	Ongoing
1.6	Reduce hazardous fuels in the ROW of potential evacuation routes. Engage residents adjacent to primary evacuation routes to extend treatments onto private land.	Ongoing	ODOT; Clackamas County Roads	ODF	Ongoing
1.7	Continue to gather structural ignitability data by conducting structural triage assessment (including GPS points) for homes in CARs.	Ongoing	ODF; OSFM	ODF	Ongoing
1.8	Develop a community-driven pre-disaster plan, including evacuation routes, telephone call down trees, and other strategies for strengthening community response.	Ongoing	CCEM; OSFM	ODF	Ongoing
1.9	Seek grant funding to support fuels reduction and the creation of defensible space around homes.	Ongoing	ODF; OSFM	ODF; USFS	Ongoing
1.10	Work with private forest landowners to reduce fuels adjacent to CARs.	Ongoing	CCFA	ODF; USFS	Ongoing
1.11	Work with BLM and USFS to reduce hazardous fuels adjacent to CARs.	Ongoing	BLM; USFS	ODF; USFS	Ongoing

ID	Action Item	Timeframe	Partners	Lead	Status
1.12	Research opportunities for grant funding to harden cell phone and other communications infrastructure for emergency communications.	Ongoing	Cell Phone Towers	USFS	New
1.13	Continue to discuss strategic plans for the Bull Run area and surrounding USFS lands.	Ongoing	Portland Water Bureau	USFS	New

Note: CAR=Community at Risk.

Table 9-28 Wildland Agencies (ODF and USFS) Local Communities at Risk Action Plan

ID	Action Item	Timeframe	Partners	Status
ODF Local Communities at Risk Action Plan				
1.1	Work with the County Tax Assessor to change the language on property tax statements for the ODF assessment from “fire protection to “non-structural fire suppression” so homeowners and insurers are not misled.	2 Years	ODF; County Tax Assessor	On Schedule
1.2	Clarify responsibilities for fire suppression and prescribed burns on State Park lands and Metro-owned properties.	Ongoing	State Parks; Metro	Ongoing
1.3	Continue to seek grant and other funding to support the fuels reduction cost share assistance program.	Ongoing	OSFM; SFA	Ongoing
1.4	Continue to seek grant and other funding to support seasonal fuels reduction and fire crews.	Ongoing	OSFM; SFA; Clackamas County	Ongoing
1.5	Identify opportunities for joint live fire exercises.	Ongoing	FDB; Metro; City Parks	Ongoing
USFS Local Communities at Risk Action Plan				
2.1	Work with the Clackamas Fire Operators Group to enhance capabilities for interoperability.	2 Years	CFOG; Fire Districts	On Schedule
2.2	Work with the Fire Defense Board to become a signatory on the county’s Mutual Aid Fire Agreement.	1 Year	FDB	On Schedule
2.3	Clarify roles and financial responsibility for response and reimbursement of costs for fires in structurally unprotected areas.	Ongoing	FDB	Ongoing
2.4	Conduct an operations meeting with adjacent fire districts to discuss joint operational response tactics.	2 Years	Fire Districts	On Schedule
2.5	Work with AMR to develop an understanding of resources available for emergencies and protocol for response.	1 Year	AMR	On Schedule
2.6	Work with C-COM, BDEC, and Sandy Fire/Clackamas Fire District to include USFS on run cards associated with Bull Run Watershed events.	1 Year	CCOM; BDEC; Sandy Fire	On Schedule

Note: CAR=Community at Risk.

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Chapter 10: Post-Fire Recovery

Importance of Post-Fire Recovery

This chapter includes preliminary recommendations and criteria for incorporating recovery planning and reflective learning in the wake of fire events into the fire planning cycle. This chapter is a new addition to the CWPP structure first implemented during the 2023 update.

Including post-fire recovery considerations is a key component of the adaptive fire management framework. As fires are recurring events, damage to communities and landscapes is expected. Incorporating intentional reflective learning from past fire events is essential to enhancing the capacity of the County and stakeholders to be effective in planning for future fire events. Post-fire planning can be described as either short-term planning or long-term planning. Short-term recovery planning includes recovery actions in the immediate wake of a fire event including emergency shelter, hazardous material removal, and actively communicating with stakeholders and the community. Long-term recovery planning includes actions that contribute towards building greater resiliency in communities and landscapes such as stabilization of hillsides, assistance in rebuilding fire hardened communities, and education about resources available to individuals and organization for post-fire recovery.

Through proactive planning, the county can guide recovery efforts in ways that strengthen communities against the future impacts of fire and generate resiliency.

Recommendations

The post-fire approach should be twofold, including both ecological and social components.

Ecological

- Identify areas for environmental site stabilization and cleanup.
 - Working with the US Forest Service, FEMA, and other organizations, identify the priority areas within the county that may need environmental stabilization or could pose a severe contamination threat post wildfire.
 - Transition to watershed level analysis of fire risk and recovery.
- Create a list of contacts within the county for post-fire collaboration and communication.
 - From stakeholder interviews, we have found that a requested resource is a resource for contacts in the county. This resource should include a compilation of federal, state, county, and local groups with an organizational contact for each as well as a brief annotation.

Social

- Create a guide for homeowners to help them return home safely.
 - Include safety considerations (e.g., Stay away from your home until fire officials tell you it is safe to return.).
 - Mobilizing your community (e.g., Appoint a post-fire coordinator in your neighborhood.).
 - Where to find assistance (e.g., grant programs for homeowners).
 - Contact information (e.g., Gas, water, power, and home inspector services).

Funding:

Clackamas County should create a living list of recovery resources that can be accessed post-fire for erosion control, vegetation management, hazardous material removal, and reconstruction efforts.

Through regular maintenance of this list, Clackamas County will be able to increase the efficiency of post-fire recovery and streamline communications. This list should be made available on Clackamas County's website for easy access. Table 10-1 Funding Resources for Post-Fire Recovery Efforts, 2023 includes an example list of funding resources for post-fire recovery efforts. Note that this list is not comprehensive and should be frequently updated to include Clackamas County resources.

Table 10-1 Funding Resources for Post-Fire Recovery Efforts, 2023

Funding Opportunity	Administering Organization	Link
Federal Opportunities		
Community Development Block Grant	U.S. Housing and Urban Development	http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs
Hazard Mitigation Grant Program (HMGP)	FEMA	https://www.fema.gov/sites/default/files/documents/fema_funded-wildfire-mitigation-activities.pdf
Hazard Mitigation Grant Program (HMGP), Post-Fire	FEMA	https://www.fema.gov/sites/default/files/documents/fema_funded-wildfire-mitigation-activities.pdf
State Opportunities		
Special Public Works Fund	State of Oregon	https://www.oregon.gov/biz/programs/spwf/pages/default.aspx
Wildfire Season Staffing Grant	OSFM	https://www.oregon.gov/osfm/wildfire/pages/investments-for-oregon.aspx

Appendix A: Wildfire Mitigation Funding Opportunities

Funding Wildfire Mitigation Projects

There is a wide array of potential state and federal funding opportunities for Clackamas County and local fire agencies to conduct wildfire mitigation. These grants are usually offered by state and federal land management or emergency preparedness agencies. Eligibility varies based on several factors, including wildfire risk, historic wildfire occurrences, and social vulnerability. Table A-1 State and Federal Funding Sources for Wildfire Mitigation provides a list of the most reliable funding sources as of 2023 that are available to entities with a completed CWPP.

Table A-1 State and Federal Funding Sources for Wildfire Mitigation

Funding Opportunity	Administering Organization	Link
Federal Opportunities		
Community Wildfire Defense Grant (CWDG)	USFS	https://www.fs.usda.gov/managing-land/fire/grants
Hazard Mitigation Grant Program (HMGP)	FEMA	https://www.fema.gov/sites/default/files/documents/fema_funded-wildfire-mitigation-activities.pdf
Building Resilient Infrastructure and Communities (BRIC)	FEMA	https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities
Fire Management Assistance Grant (FMAG)	FEMA	https://www.fema.gov/assistance/public/fire-management-assistance
State Opportunities		
Small Forestland Grant Program	ODF	https://www.oregon.gov/odf/pages/small-forestland-grant-program.aspx
Community Wildfire Risk Reduction Grant	OSFM	https://www.oregon.gov/osfm/wildfire/pages/investments-for-oregon.aspx

Determining Grant Eligibility

The main method for demonstrating eligibility for the above mitigation grants is this CWPP itself. However, communities seeking to apply for the CWDG should use the [Wildfire Risk to Communities tool](#) to determine potential eligibility, while those seeking to apply for FEMA grants should rely upon the [Resilience Analysis and Planning Tool \(RAPT\)](#). Note that these websites are not the sole determinant of whether a community is eligible for a grant; the maps and data contained within this CWPP can be used to demonstrate risk in lieu of these national tools.

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Appendix B: Clackamas County Community Survey

Purpose

To gather input from the Clackamas County community for the 2023 CWPP Update, the Oregon Partnership for Disaster Resilience (OPDR) team designed a survey to measure community experience, perceptions, and preparedness for wildfire. Our survey was not designed to only gather information from people who live in rural areas or own property; it was designed to gain a broader understanding from the community because both rural and urban residents, as well as landowners and renters, are impacted by wildfire. The survey had the additional benefits of educating and informing the community, understanding community values to steer decision making, and building a larger social network to improve the adaptive capacity of the Clackamas County community.

Key Takeaways

The following key takeaways from the 2022 Clackamas County Community Survey provide a high-level overview of information provided by survey participants.

- Survey participants generally had similar demographic characteristics to the broader Clackamas County community when compared to the 2020 U.S. Decennial Census and the 2019 American Community Survey (5-year estimates).
- Most participants indicated that they were concerned about wildfire impacting their personal property, neighborhoods, communities, and Clackamas County.
- Most participants had experience with the “Ready, Set, Go!” program for evacuations, but few had created evacuation plans or had defensible space around their homes.
- Some participants indicated that they had difficulty speaking or reading English for day-to-day activities and some participants indicated that they lived with a disability that required assistance during evacuations.
- Comments received from participants generally reflected their concern about how evacuations went during the 2020 Labor Day Fires. They indicated a desire for there to be clearer evacuation protocols for the community with extra care taken for community members who live with a disability or other condition that would require assistance during an evacuation.

Methodology

In the spring of 2022, the OPDR Team administered the survey online using the Qualtrics digital survey platform. The survey was promoted through press releases, social media promotions, email list serves, and verbally. Limitations to this design were the ability to reach community members who do not have a digital device, internet service, or technical ability. Future surveys should be conducted both online and in print. Survey responses were received from a total of 778 respondents. Six hundred and ninety-one respondents (691) indicated that they lived in Clackamas County. The team removed 160 of those

responses because they were deemed to be repeated responses (Ballot stuffing) or did not pass an internal Bot Check. Of the 691 respondents, 467 respondents completed the survey, and 64 responses were incomplete.

Survey questions were developed based on wildfire science, social science, and experiences with wildfire. The OPDR team felt that it was important to create opportunities for the community to think about wildfire differently than they have in the past and wrote educational opportunities into the survey design. The survey was distributed in English with Spanish translation available. The survey included a brief introduction to the purpose of the survey, how the responses would be used, and asked for their consent to participate in a research study. Respondents were then asked if they lived in Clackamas County to preclude non-Clackamas County community members. Respondents who indicated that they did not live in Clackamas County were taken to the end of the survey.

Respondents were given the choice to opt-in to a drawing to win one of two \$25 gift cards for their participation.

The survey included questions from five main themes:

- **Respondent characteristics:** This section helps to better understand who the respondents are and measure what social and economic groups to engage with outside of the survey.
- **Housing Characteristics:** This section helps to understand the housing that respondents live in.
- **Perception of wildfire risk:** This section helps to understand how concerned the community is about wildfire impacting their lives, the types of educational opportunities to engage in, and the community's individual concerns.
- **Wildfire preparedness:** This section provides a good metric for how prepared the community is for future wildfires and what their needs are to become more prepared.
- **Woodland owner preparedness and needs:** Woodland owners play a unique role in wildfire mitigation as they are typically at an elevated level of risk to wildfire.
- **Preferred communication methods and willingness to play an active role in community preparedness:** This section helps to better understand how to communicate with the community, the types of media they use, and their willingness to play an active role in community wildfire preparedness.

Survey Limitations

The most limiting factor to the survey was that that it was only distributed in a digital format. This distribution method did not measure how many people it was distributed to, so the team was unable to measure non-response bias. Therefore, the responses may only represent specific opinions of the community and not the entire community. The information from the survey will only be used to inform the update to the CWPP, not represent a metric for how well the community is prepared for wildfire, their perceptions about wildfire, or the overall demographics of the Clackamas County community.

Additionally, only providing the survey in a digital format may reduce who the survey was able to reach. Not everyone in Clackamas County has a digital device or access to the internet. Future surveys should include printed versions that can be distributed through the mail and made available in government offices, community centers, faith centers, grocery stores, and fire departments.

The final limitation the OPDR team identified is the length of the survey. The median time a participant took to complete the survey was about 9.5 minutes. The average participant took closer to 30 minutes to complete the survey.

Survey Results

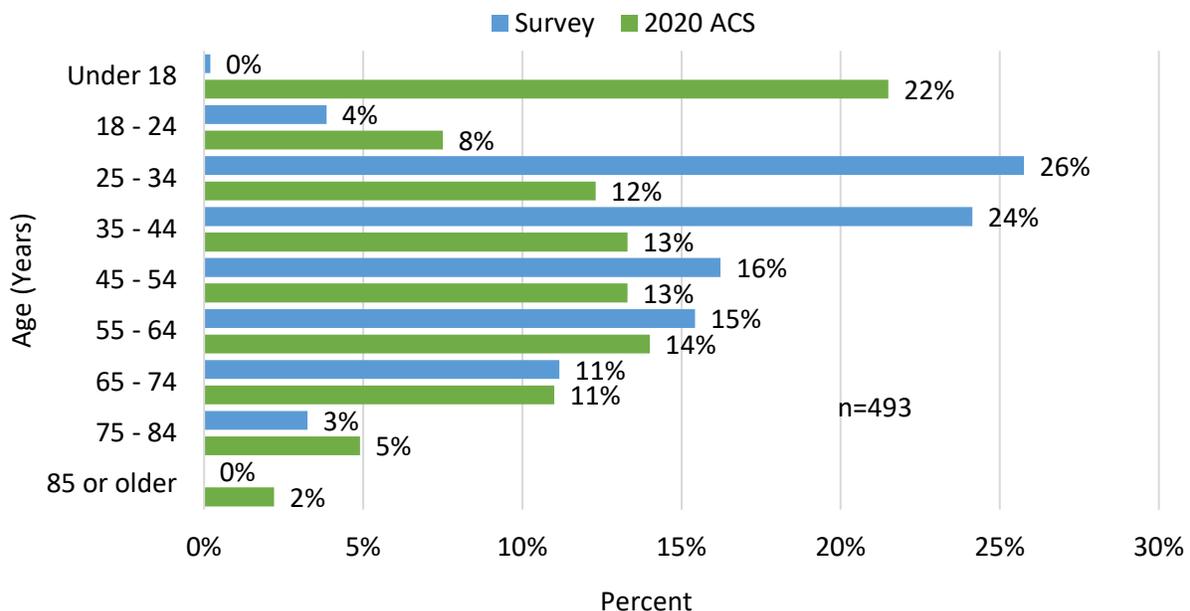
Survey results are organized in the five categories listed previously. Data is shown in tables and figures when possible as well as described with text. Each figure and table have the question number in the title and the question is included immediately below the figure.

Characteristics of Survey Respondents

The survey asked about respondents age, race/ethnicity, educational attainment, annual household income, location of their primary residence by zip code, ability to speak English, and their experience with wildfire. Through these questions the survey was able to identify characteristics of survey respondents and what geographic locations and demographics the survey was distributed to. This also allowed the comparison of some of the survey results with demographic data for Clackamas County with the 2020 US Census Bureau’s Decennial Census and the 2020 American Community Survey (5-year estimates).

Most (26%) respondents were between the ages of 25 and 34. Participants 25 to 44 years old were over-represented in the survey when compared to the 2020 American Community Survey (5-year estimates). People under the age of 18 were underrepresented in the survey. The number of participants quickly declined by age but was like the 2020 ACS. Age of respondents are shown in Figure B-1.

Figure B-1 Age of Respondents (n=493), Clackamas County, OR, 2022 – Q29

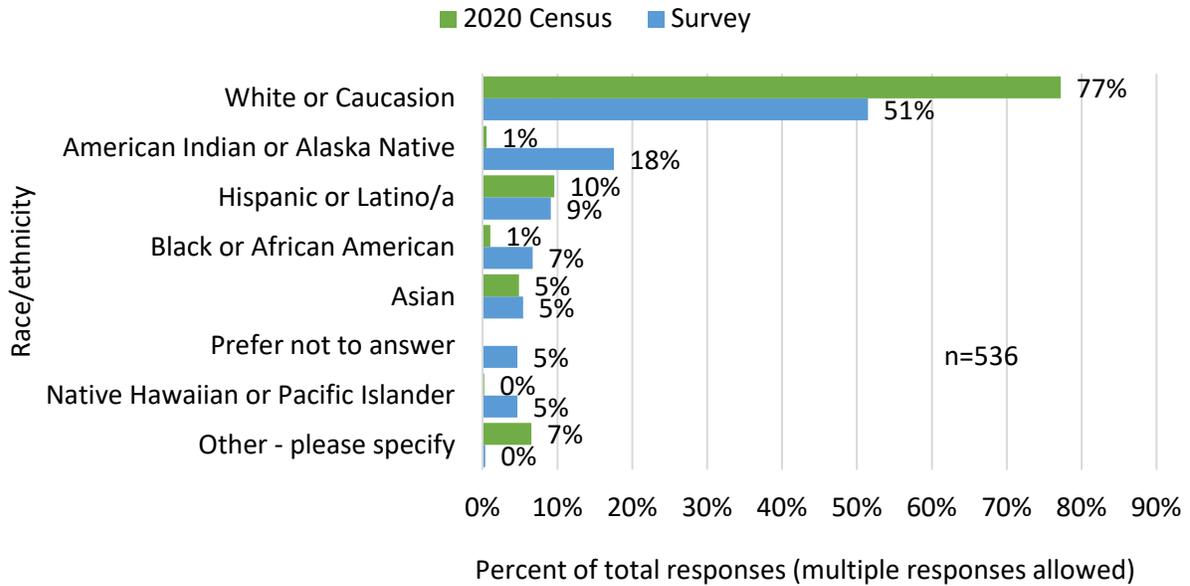


Source: 2020 Clackamas County Community Survey, analysis by OPDR, Q29 - Which option best describes your age?; American Community Survey, 2020 (5-year estimates), Social Explorer Tables, SE:A01001. Age

As Figure B-2 illustrates, most participants identified as White (51%), followed by American Indian or Alaskan Native (18%). American Indian or Alaskan Native was overrepresented in the survey when compared to the population demographics of Clackamas County, where they represented 1% of the total county population in 2020 (US Census Bureau, 2020). Participants who identified as Black or African American were overrepresented in the survey when compared to that 2020 U.S. Decennial Census (US Census Bureau, 2020).

Further, respondents who identified as White were underrepresented when compared to the population demographics of Clackamas County of 77% of the total population (US Census Bureau, 2020).

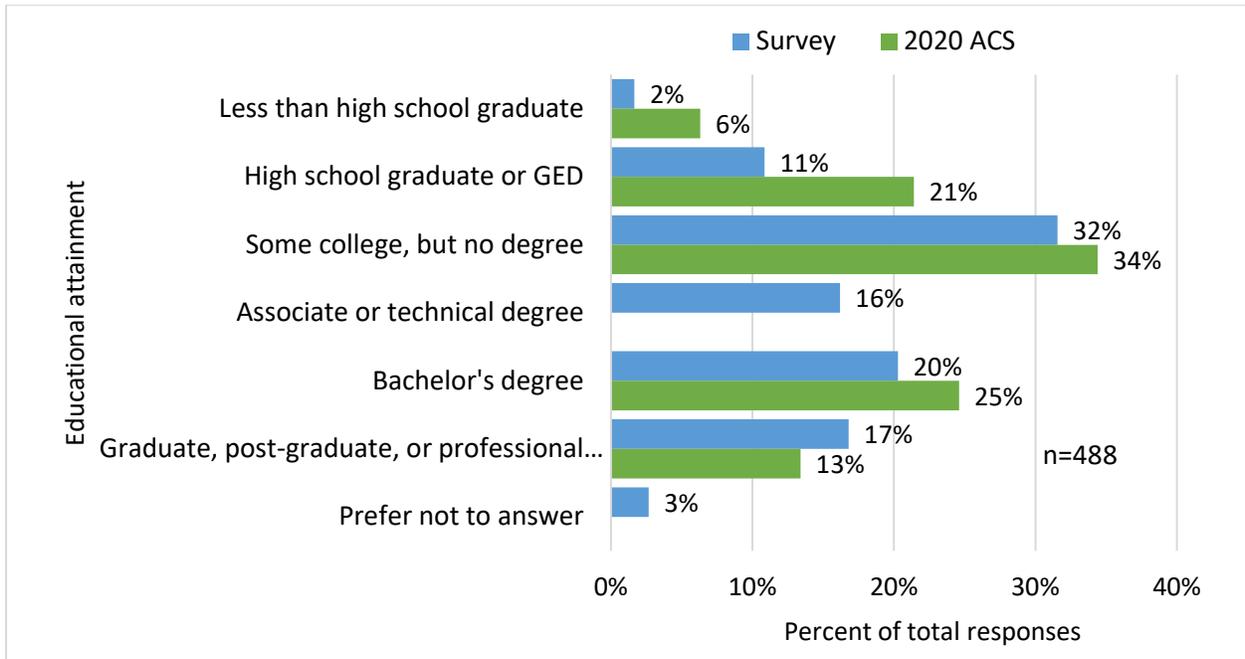
Figure B-2 Race/Ethnicity of Respondents (n=536), Clackamas County, OR, 2022 - Q36



Source: 2020 Clackamas County Community Survey, analysis by OPDR; Q36 - Which description(s) do you identify with? Please select all that apply.; 2020 Decennial Census, US Census Bureau, Social Explorer Table SE: T003. 2020 Total Population-Race by Ethnicity

Survey participants' educational attainment was representative of Clackamas County, when compared to the 2020 ACS data. Eighty-four percent (84%) of respondents have some college education, associate or technical degrees, bachelor's degree, or graduate, post-graduate, or professional degrees. Educated community members were slightly overrepresented when compared to the 2020 ACS data where 72% of respondents indicated they had received some college or higher educational attainment. Educational attainment for survey respondents is shown in Figure B-3.

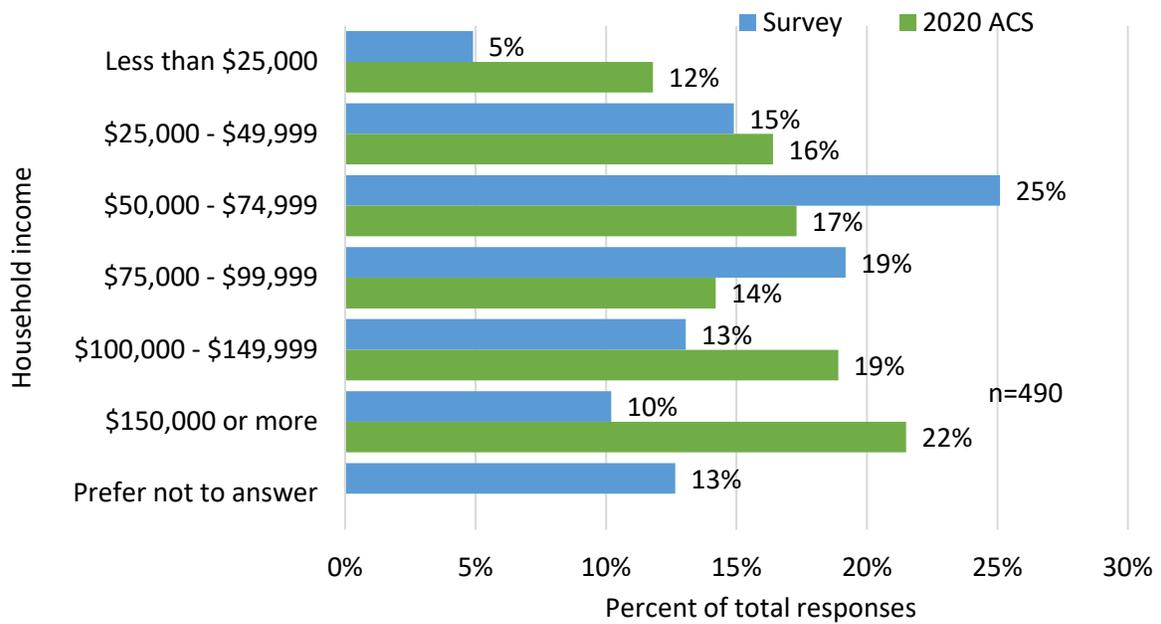
Figure B-3 Educational Attainment for Respondents (n=488), Clackamas County, 2022 – Q32



Source: 2022 Clackamas County Community Survey, analysis by OPDR, Q32 - Which option best describes your highest degree of education?; 2020 American Community Survey (5-year estimates), Social Explorer Table SE: A12001. Educational Attainment for Population 25 Years and Over. US Census Bureau

Respondents’ annual household income is shown in Figure B-4. The majority (30%) of respondents’ households earned between \$50,000 and \$74,999 per year. Lower income respondents (less than \$50,000 per year) represented 24% of total respondents, which was about 8% less than 2020 ACS estimates. Higher income households (more than \$100,000 per year) were underrepresented in the survey when compared to 2020 ACS estimates, where 40% of Clackamas County’s households earned more than \$100,000 per year.

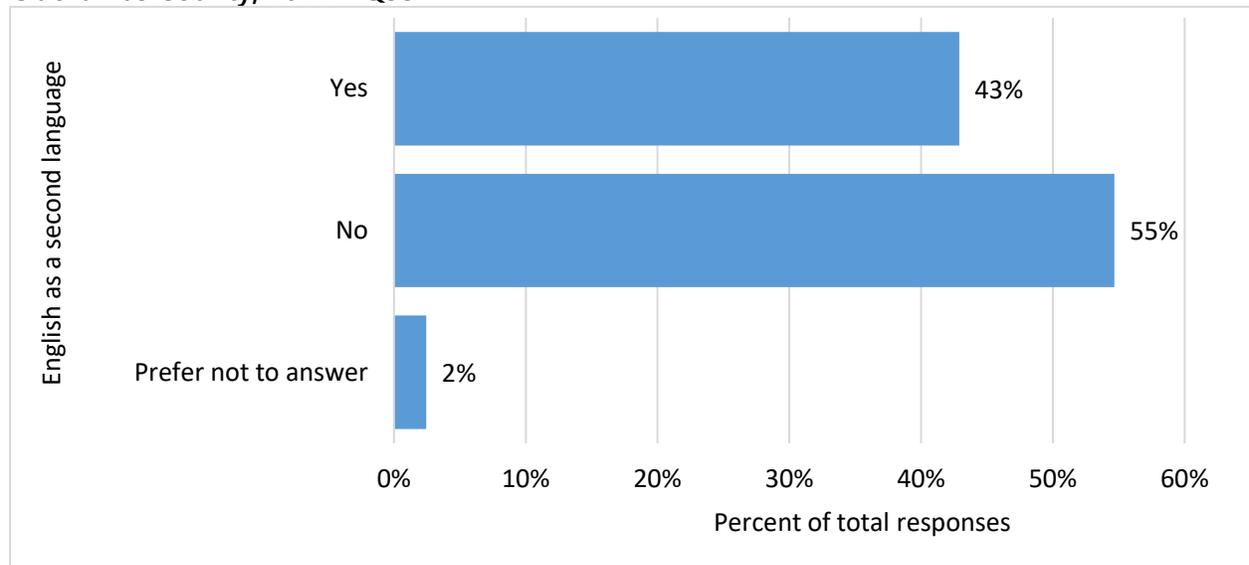
Figure B-4 Respondents Total Annual Household Income (n=490), Clackamas County, OR, 2022 - Q37



Source: 2022 Clackamas County Community Survey, analysis by OPDR, Q37 - Please indicate your total annual household income.; American Community Survey, 2020 (5-year estimates), Social Explorer Table SE:A14001. Household Income (In 2020 Inflation Adjusted Dollars), US Census Bureau

We asked participants if they spoke English as a second language. About 43% indicated that they did. Figure B-5 shows the percent of participants who indicated they spoke English as a second language.

Figure B-5 Percent of Participants Who Indicated They Spoke English as a Second Language, Clackamas County, 2022 – Q33

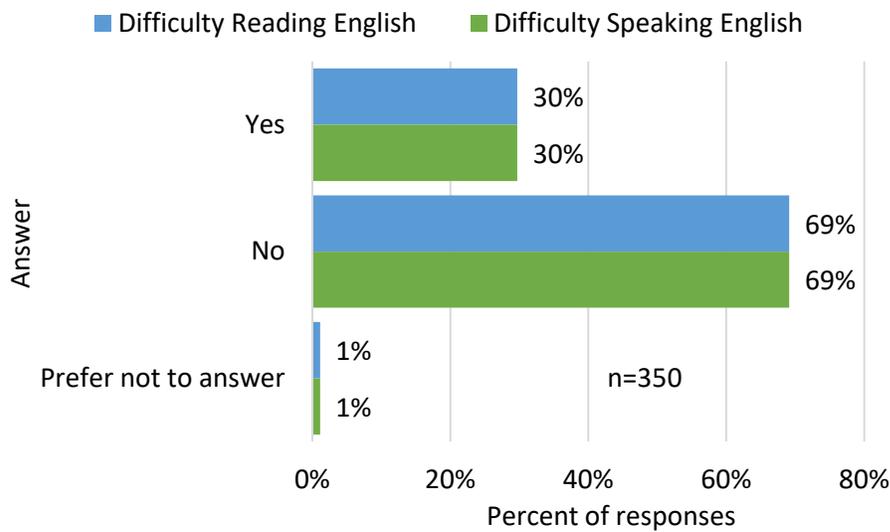


Source: 2022 Clackamas County Community Survey, analysis by OPDR, Q33 – Do you speak English as a second language?

Thirty percent (30%) of respondents indicated that they or someone in their household had difficulty speaking or reading English for day-to-day activities. It should be noted that the previous question, Question 33, asked if the participants spoke English as a second language. Fifty-five percent (55%) of participants indicated that they spoke English as a second language); we assume that this large of a percentage of participants indicates that the wording in the question may have been confusing for some and are not using this finding to inform our recommendations.

Respondents who chose “yes” were then displayed Questions 34 and 35. Because only 350 participants were asked these two questions, these percentages are likely larger than if they had been presented to all participants. We estimate that people who had difficulty speaking or writing English for day-to-day activities was about 16% of all participants. Figure B-6 shows survey respondents with difficulty speaking and reading English for day-to-day activities and formal communications.

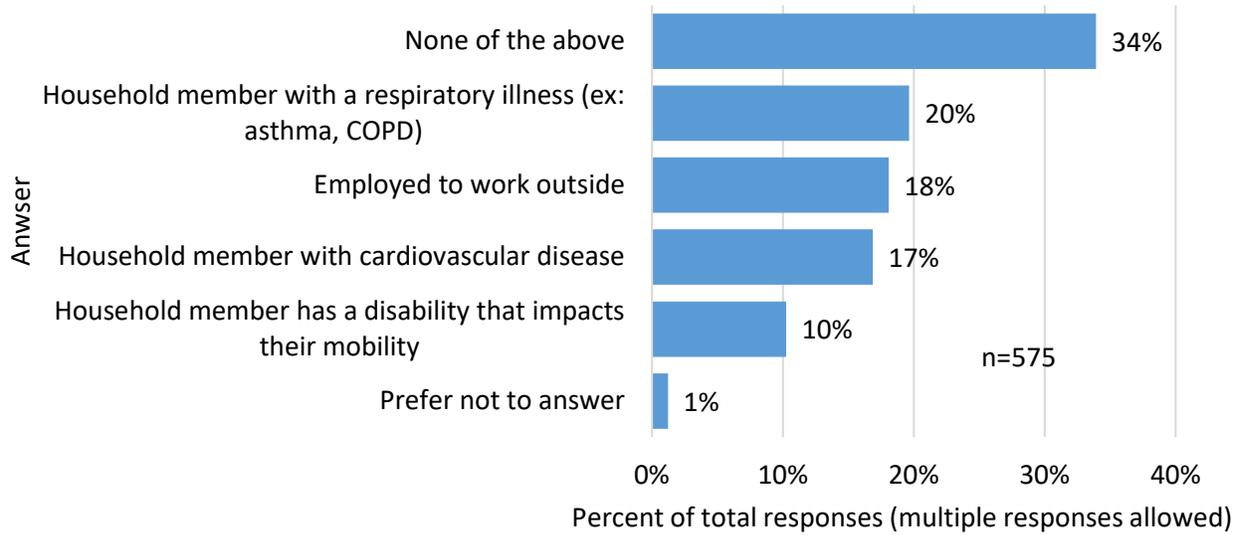
Figure B-6 Difficulty Speaking and Reading English for Day-to-Day Activities of Respondents (n=350), Clackamas County, 2022 – Q34 and Q35



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q34 Do you, or others in your household, have any difficulty speaking English to people for day-to-day activities such as shopping or taking the bus? Q35 – Do you, or others in your household, have any difficulty reading formal letters or documents written in English?

Fifty-seven percent (57%) of respondents indicated that they or members of their household were at an elevated level of risk to wildfire smoke because they or a member of their household had a respiratory illness, cardiovascular disease, or were employed to work outside. Additionally, 10% of respondents indicated that they or a member of their household lived with a disability that impacts their mobility. Figure B-7 shows respondents’ indication of their or a member of their households’ susceptibility to smoke and mobility issues.

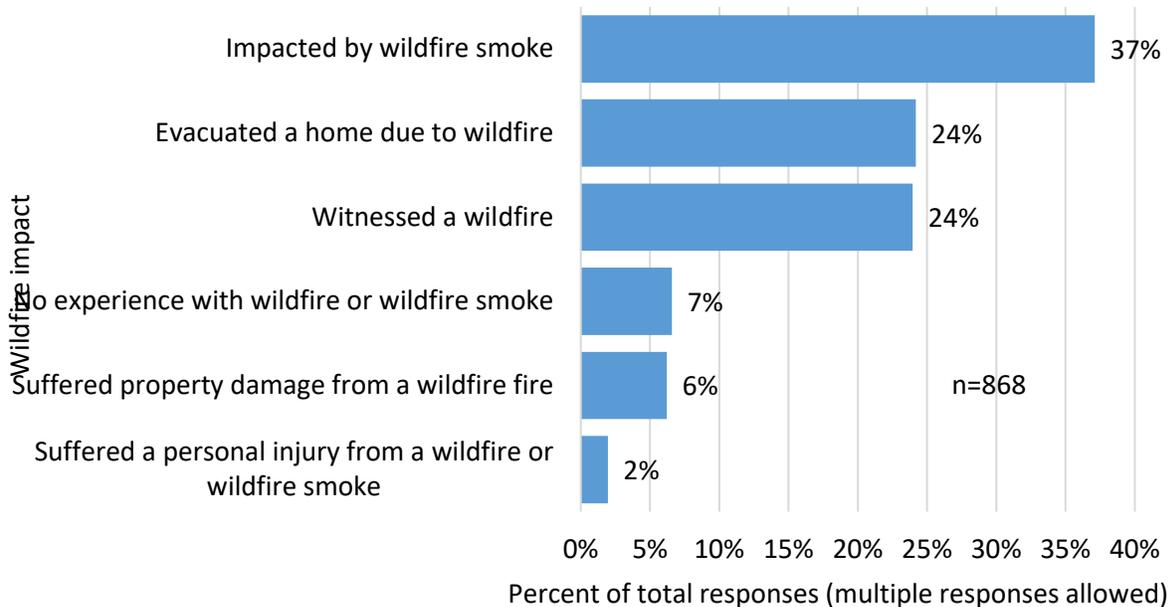
Figure B-7 Respondents or Members of their Household Susceptibility to Smoke and Mobility Issues (n=575), Clackamas County, OR, 2022 – Q30



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q30 – Do any of the following describe members of your household (including yourself)? Please select all that apply.

Seven percent (7%) of responses indicated they did not have any experience with a wildfire related incident. Thirty-seven percent (37%) of responses indicated that they had been impacted by wildfire smoke, 24% indicated they had witnessed a wildfire, and 24% indicated they had been evacuated due to a wildfire. Six percent (6%) of respondents indicated they had suffered personal property damage from a wildfire and two percent (2%) indicated that they had suffered a personal injury due to a wildfire or wildfire smoke. These results are shown in Figure B-8.

Figure B-8 Respondents Experience with Wildfire (n=868), Clackamas County, OR 2022 – Q16



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q16 – Have you or someone in your household personally been impacted by a wildfire? Please select all that apply.

Mulino	97042	9	Los Angeles, CA	90014	2
Lake Oswego	97034	7	Los Angeles, CA	90036	2
Clackamas	97015	7	Bell Gardens, CA	90201	2
Canby	97013	6	Los Angeles, CA	90255	2
Sandy	97055	6	Los Angeles, CA	90744	2
Boring	97009	6	Los Angeles, CA	91367	2
Gladstone	97027	5	Pomona, CA	91766	2

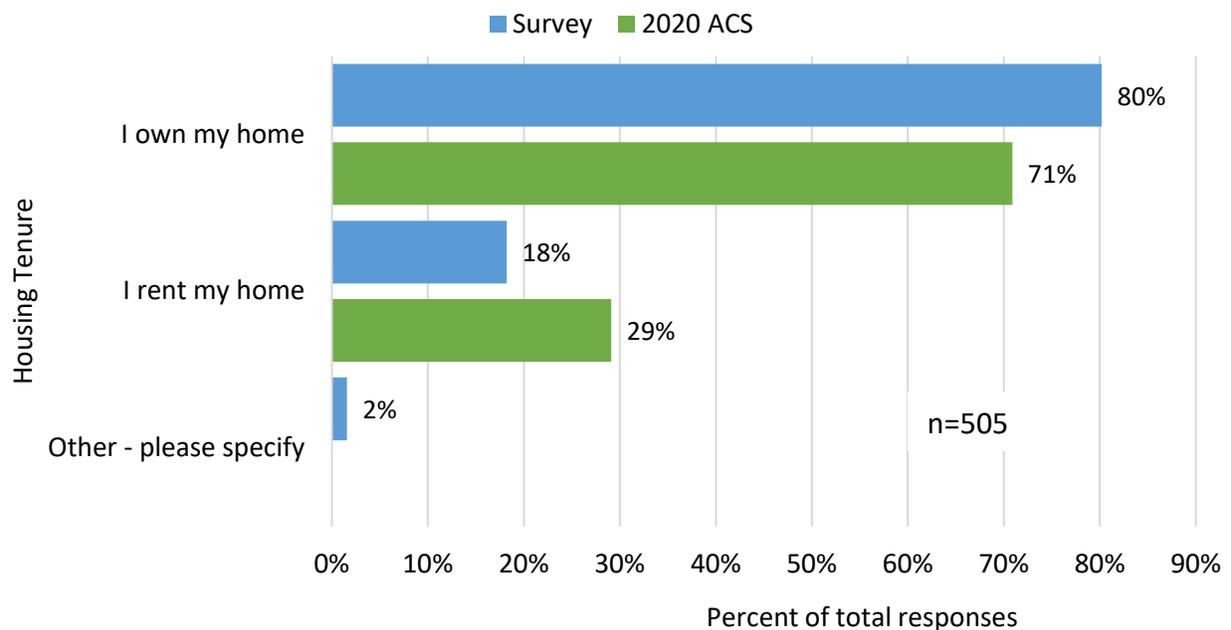
Source: 2022 Clackamas County Community Survey, analysis by OPDR, Q4 - What zip code is your primary home in? Please enter whole numbers (e.g., 97045).

Housing Characteristics

This section outlines the housing characteristics of survey respondents. Generally, most respondents owned their primary home, lived in single-family homes, and had taken some actions to reduce their homes' vulnerability to wildfire.

Respondents' tenure is shown in Figure B-10. Eighty percent (80%) of respondents owned their own home, which was higher than 2020 American Community Survey (ACS) estimates.

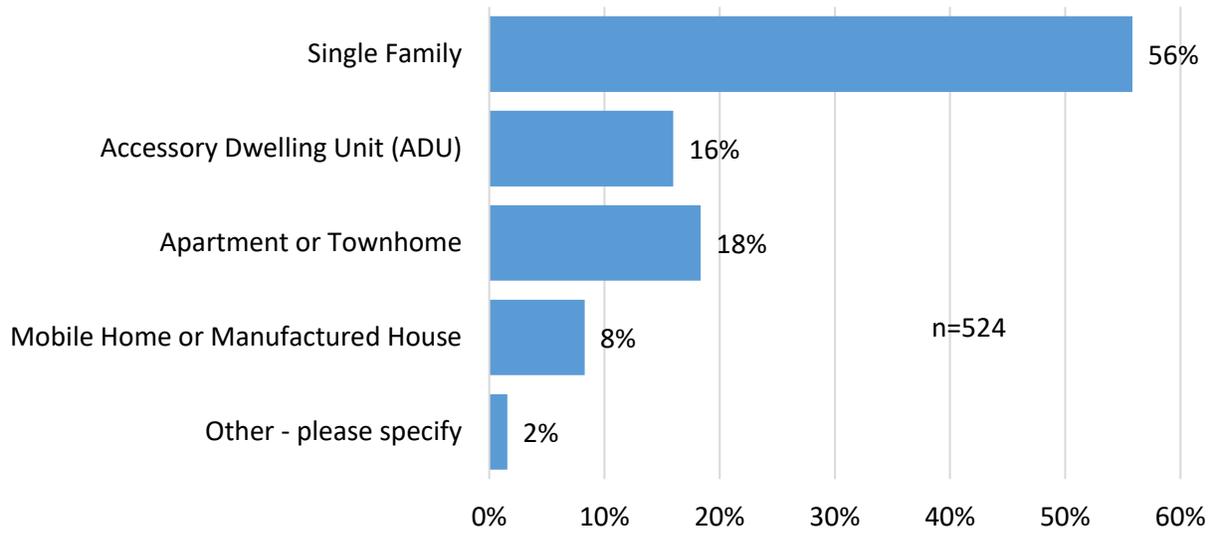
Figure B-10 Respondents Housing Tenure (n=505), Clackamas County, OR, 2022 - Q6



Source: 2022 Clackamas County Community Survey, analysis by OPDR, Q6 - Which option best describes your current living situation?; American Community Survey, 2020 (5-year estimates, Social Explorer Table SE:A10060. Tenure, US Census Bureau

Most respondents (56%) indicated they lived in a single-family home or an accessory dwelling unit. Figure B-11 shows the housing type that respondents indicated they lived in. A comparison to the 2020 ACS estimates was not possible due to the mismatch between the housing type options we offered and the housing types that the ACS estimates.

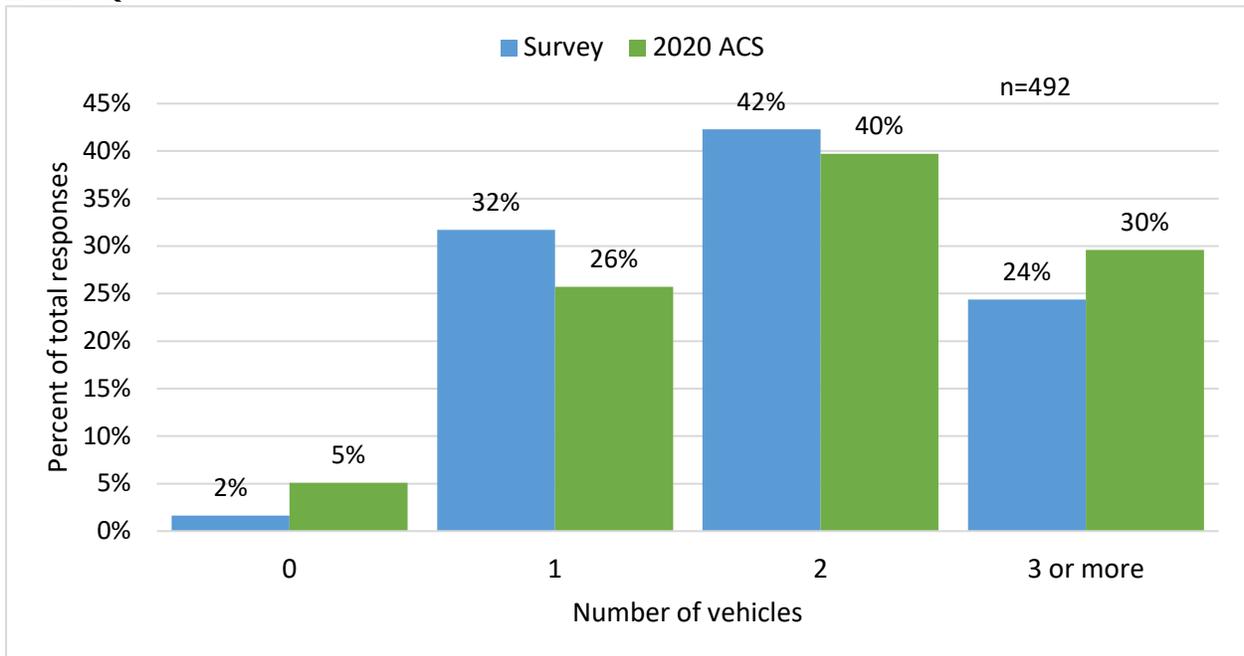
Figure B-11 Respondents' Housing Type (n=524), Clackamas County, OR, 2022 - Q5



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q5 – Which option best describes your current living situation?

Two percent (2%) of participants indicated that they did not own a vehicle. This is less than was estimated in the 2020 ACS (5-year estimates). Most (42%) of survey participants indicated that they owned two vehicles. Figure B-12 shows the number of vehicles available in participants' households.

Figure B-12 Number of Vehicles Available to Members of a Household, Clackamas County, 2022 - Q31



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q31 – How many vehicles are available to members of your household? Please select from the dropdown options.

Table B-2 shows responses to actions taken to reduce structural ignitability as a percent of total participants and the count of responses. The most reported action that participants took to reduce the structural ignitability of their home was removing flammable materials away from the structure (67% of participants), followed by cleaning the roof and gutters during spring and summer months (59% of participants). The least common reported action was using non-combustible siding to protect their homes (31% of participants).

Table B-2 Respondent’s Actions Taken to Reduce Structural Ignitability (n=1,451), Clackamas County, 2022, Q11 (multiple responses allowed)

Answer	Percent of Participants	Response Count
Moved flammable materials away from wall exteriors, such as, mulch, flammable plants, leaves and needles, firewood piles, etc.	67%	331
Keep roof and gutters free of dead leaves and needles during spring and summer months	59%	295
Removed any objects and materials stored underneath decks or porches	52%	258
Use non-combustible roofing (e.g., asphalt, slate, metal, tile, clay, or concrete shingles)	39%	192
Screened or boxed-in areas below patios and decks with wire mesh to prevent debris and combustible materials from accumulating	36%	179
Use non-combustible siding (e.g., Hardiplank, metal sheeting, brick)	31%	155
Unsure	4%	18
None of the above	3%	16
Other - please specify	1%	7
Total	292%	1451

Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q11-Have you taken any of the following actions to reduce the risk of wildfire to your home? Please select all that apply.

Perception of Wildfire Risk

Respondents were moderately or very concerned about wildfire impacting Clackamas County, their own property, their neighborhood, and their community. A small percentage (less than 5%) of respondents indicated that they were not at all concerned about wildfire impacts. Table B-3 shows respondents’ level of concern about wildfire impacts.

Table B-3 Respondents Level of Concern About Wildfire Impacting Clackamas County, Their Property, Their Neighborhood, and Their Community (n=1953), Clackamas County, 2022 – Q15

Answer	Not at all concerned		Slightly concerned		Moderately concerned		Very concerned		Extremely concerned	
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count
the property you live on?	4%	19	26%	128	27%	133	25%	123	19%	92
your neighborhood?	5%	23	19%	91	32%	157	29%	141	15%	74
your community?	2%	10	14%	68	32%	155	38%	184	14%	69
Clackamas County?	1%	3	7%	32	27%	131	43%	207	23%	113

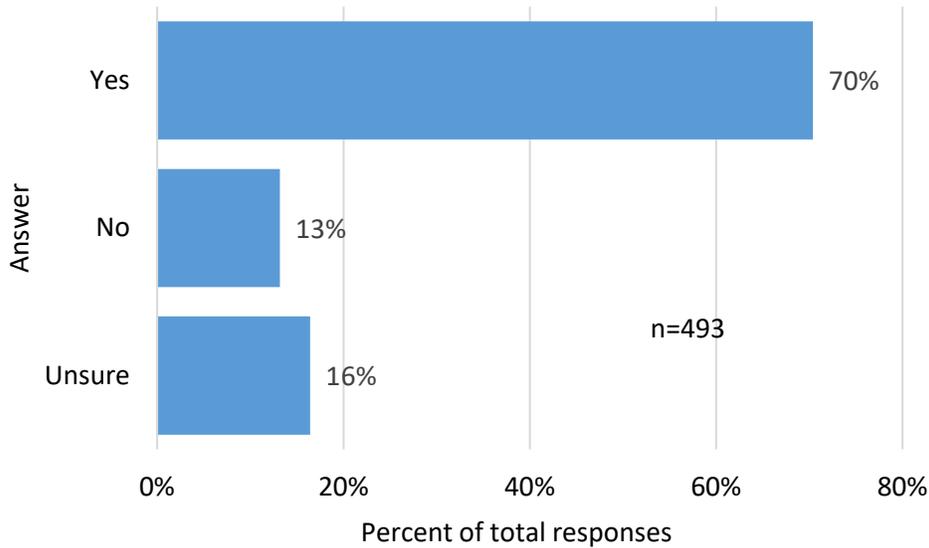
Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q15 – Which option best described your level of concern about wildfire impacting...

Wildfire Preparedness

This section asked questions about respondents’ preparedness for wildfire, including being signed up for ClackCo Public Alert System, having evacuation plans, and their knowledge of the Ready, Set, Go! system. Generally, most responses indicated that they had some level of preparedness, but the responses indicated that additional education and community organizing was still needed to prepare all of Clackamas County residents for the next wildfire.

About three-quarters (70%) of responses indicated that they had signed up for ClackCo Public Alert System. Sixteen percent (16%) of responses indicated that they were unsure if they had signed up or not. The number of responses indicating if they had signed up for ClackCo Public Alert System are shown in Figure B-13.

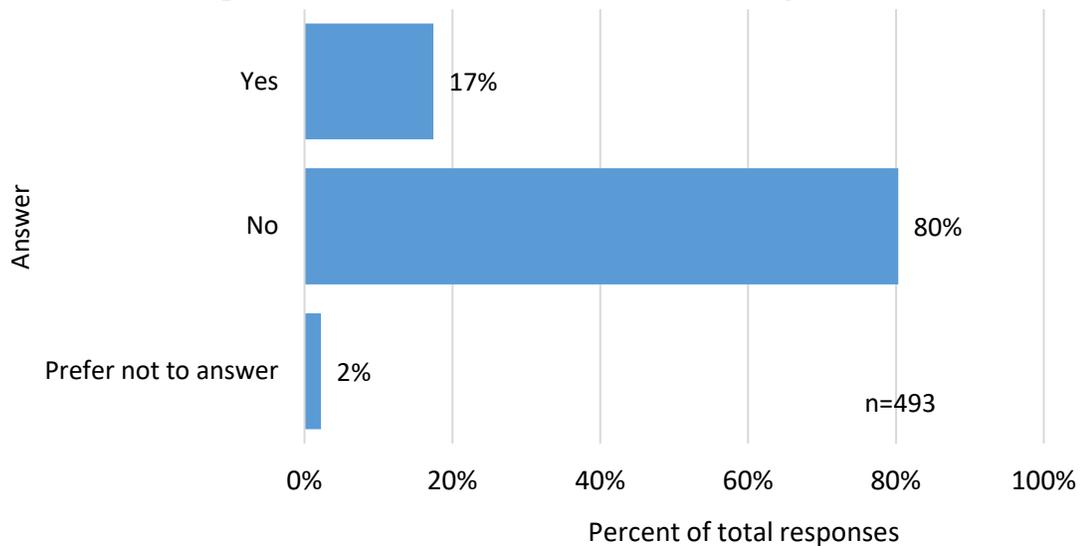
Figure B-13 Percentage of Respondents Signed Up for ClackCo Public Alert System (n=493), Clackamas County, OR 2022 - Q28



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q28 – Are you signed up to receive emergency alerts from ClackCo Public Alert System?

Participants were then asked if they lived with a disability or other condition that would require assistance during an evacuation. Seventeen percent (17%) of participants indicated that they did. Participants' indication that they lived with a disability or other condition that requires assistance during an evacuation are shown in Figure B-14.

Figure B-14 Percentage of Respondents Who Live With a Disability or Other Condition That Requires Assistance During an Evacuation (n=493), Clackamas County, OR, 2022 - Q19



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q19 – Do you live with a disability or other condition that would require assistance during an evacuation?

The “Ready, Set, Go!” program and the three levels for evacuation was explained to participants. They were then asked about their familiarity with the program and their experience. Three percent (3%) of respondents indicated that they were “not familiar at all” with the evacuation levels. Most survey participants (57%) indicated that they were very familiar with the evacuation levels because they had received evacuation notices. Participants’ familiarity with the Ready, Set, Go! program for evacuations are shown in Table B-4.

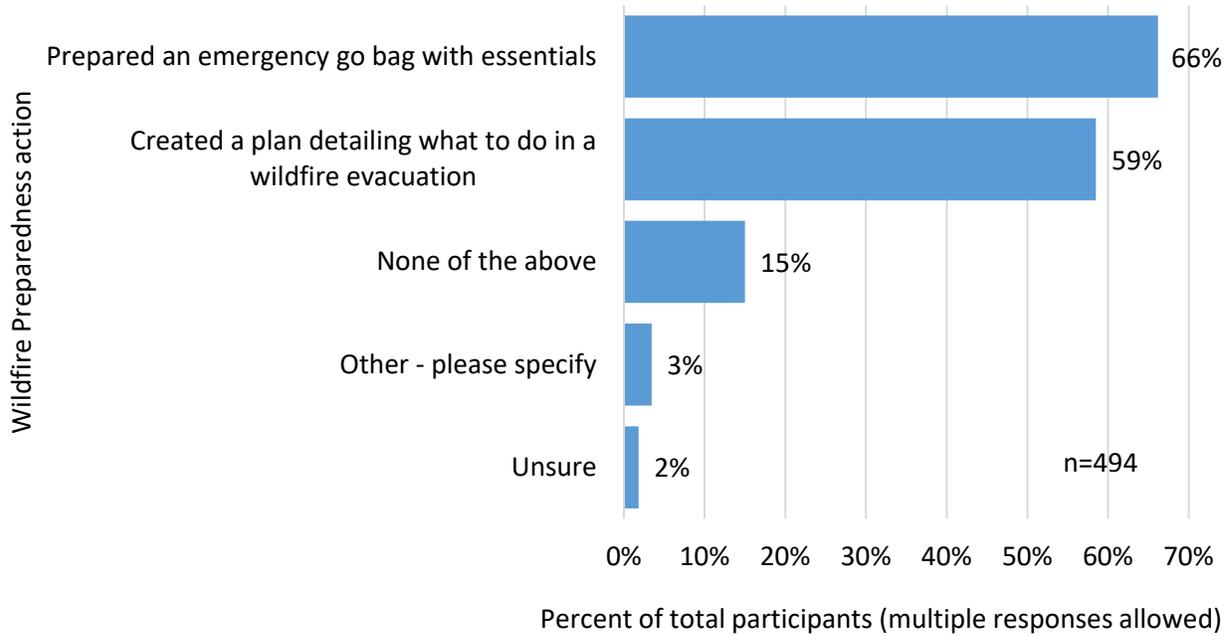
Table B-4 Respondent Familiarity with Evacuation Levels (n=487), Clackamas County, 2022 – Q18

Answer	Percent	Count
I am very familiar with these evacuation levels because I have received one and either evacuated or prepared to evacuate.	57%	278
I am not at all familiar with these evacuation levels. I have never heard of them before.	3%	17
I am somewhat familiar with these evacuation levels because I have seen them referred to on the news or heard about them through other sources (county, friends, family, etc.). But, I have not received an evacuation notice directly.	39%	192
Total	100%	487

Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q18 – Clackamas County uses three notification levels to inform residents about emergency evacuations: Level 1: Be ready: Be Aware, prepare, and stay informed. This is the time to prepare and be ready to evacuate. Older adults, people with special needs, or mobile property owners should take action early. Consider moving pets and livestock early. Level 2: Be Set: Be ready to leave with little notice and relocate to a safe place outside of the affected area. You will have limited time to gather necessary items and it may become unsafe to do so. Level 3: Go: Evacuate Now! Leave immediately! It is unsafe to you to stay in the area. This will be the last notice you receive until officials declare it is safe to return to the area.

Participants were asked which actions they had taken to prepare for an evacuation. The most selected action taken by respondents was preparing an emergency go bag (66% of responses), followed by creating an evacuation plan (59% of responses) (see Figure B-15). These results indicate that most respondents had taken some action to prepare for an evacuation but also indicate that there are still members of the Clackamas County community who are not prepared for the next evacuation.

Figure B-15 Respondents Preparedness for Evacuation (n=494), Clackamas County, OR, 2022 - Q17 (multiple responses allowed)



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q17 – Have you taken any of the following actions to improve your wildfire preparedness? Please select all that apply.

Table B-5 shows participants’ indication of defensible space around their home. The most common (32% of all responses) defensible space characteristic was sparse vegetation between five and 30 feet of the structure without any dead plant material. The grass is mowed and there is no accumulation of blackberries, shrubs, or branches. The next most common response (30% of responses) was that there was only low growing and green vegetation within five feet of the structure. Only 10% of responses indicated that trees and shrubs have space between them 30 to 100 feet away from the structure.

Table B-5 Percent of Participants Indicating Their Defensible Space (n=735), Clackamas County, 2022 – Q13 (multiple responses allowed)

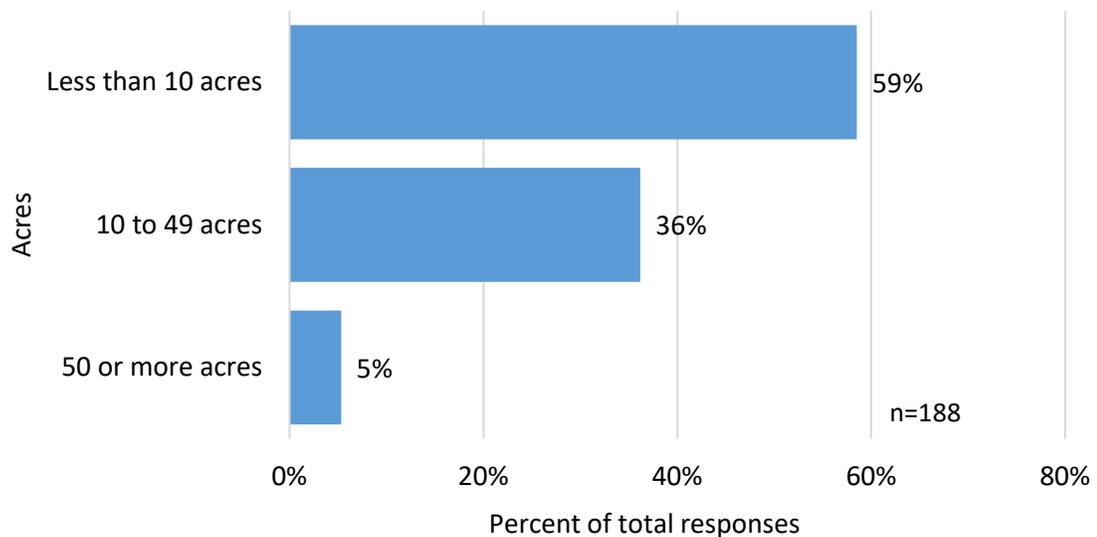
Answer	Percent	Count
Sparse vegetation between 5 and 30 feet of the structure without any dead plant material. The grass is mowed and no accumulation of blackberries, shrubs, or branches.	32%	238
There is no, or only low growing and green, vegetation within five feet of the structure.	30%	217
There is a 5-foot perimeter of gravel (or other fire resistant surface) around my house.	14%	105
Trees and shrubs have space between them 30 and 100 feet away from the structure.	10%	72
The vegetation around the structure is dense.	8%	59
None of the above	6%	44
Total	100%	735

Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q13 – Which option(s) best describes the vegetation around your home? Please select all that apply.

Woodland Owner Preparedness and Needs

This section asked questions tailored for woodland owners in Clackamas County. The first question defined what a woodland was then asked the respondents if they owned woodlands in Clackamas County. One hundred eighty-eight (188) participants indicated that they owned woodlands in Clackamas County. Of those 188 respondents that indicated they owned woodlands in Clackamas County, 59% owned less than 10 acres. Ten (10) respondents owned 50 or more acres of woodlands. Figure B-16 shows the number of acres owned by participants.

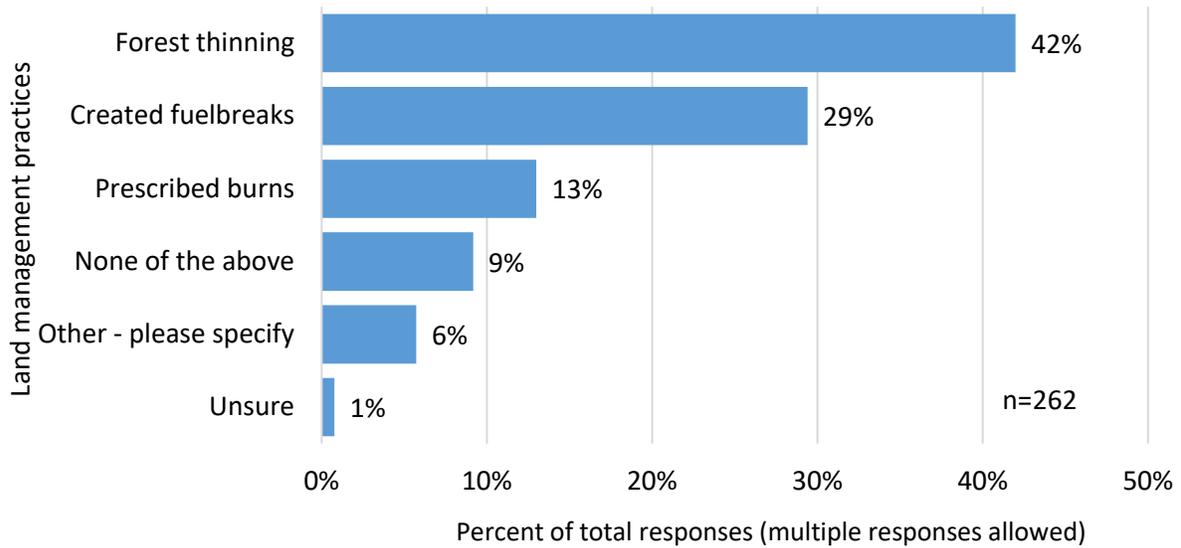
Figure B-16 Number of Acres of Woodland Owned by Respondents (n=188), Clackamas County, OR, 2022 - Q23



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q23- How many acres of woodland property do you own in Clackamas County?

Woodland owners were then asked about the fuel mitigation activities they had taken on their woodland properties. The most common fuel mitigation activity was forest thinning (42% of responses), followed by creating fuel breaks (29% of responses). Of note, prescribed burning was the least common land management practice (13% of responses). Figure B-17 shows land management practices woodland owners have taken in Clackamas County.

Figure B-17 Woodland Owners’ Responses to Land Management Practices on Their Properties, Clackamas County (n=262), OR, 2022 - Q24



Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q24 – Have you done any land management practices in your woodland? Please select all that apply.

About three-quarters of woodland owners who participated in the survey had a water source that was easily accessible for fire trucks and a developed road system. Woodland owners’ responses to questions about easily accessible water sources and developed road systems are shown in Table B-6.

Table B-6 Woodland Owner Responses About Water Sources and Developed Road System on Their Property (n=185 and 188 respectively), Clackamas County, 2022- Q21 and Q22

Question:	Yes	No	Unsure	Total Responses
Do you have a water source on your property that is easily accessible for fire trucks?	76%	21%	3%	185
Is there a developed road system that allows you to access all or most portions of your property?	75%	22%	3%	188

Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q21 – Do you have a water source on your property that is easily accessible for fire trucks? Q22 – Is there a developed road system that allows you to access all or most portions of your property?

Woodland owners were then asked what categories of forest management practices they would be most interested in learning about. The most chosen category was forest health (13% of responses), followed by tree identification and assessment (12% of responses), and insects and diseases (11% of responses). Woodland owners preferred learning opportunities for managing their woodlands are shown in Table B-7.

Table B-7 Woodland Owners Preferred Learning Opportunities for Managing Their Woodlands (n=685), Clackamas County, 2022

Answer	Percent of total choices	Choice Count
Forest health	13%	89
Identify & assess your trees	12%	81
Insects & diseases	11%	77
Soils & nutrients	9%	60
Wildfire	9%	60
Grants and assistance to manage land for wildfire	8%	58
Seedlings & planting	7%	51
Invasive species	6%	43
Water & watersheds	6%	38
Wildlife	5%	33
Forest products	4%	25
Laws & taxes	4%	24
Enjoying & sharing your land	3%	18
After a fire	2%	14
Fire as a tool	2%	13
Other - please specify	0%	1
Total	100%	685

Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q25 – Please select categories from the list below that you would like to learn more about to help manage your woodlands. Please select all that apply.

Preferred Communication Methods

This section of the survey asked respondents to identify their preferred methods for receiving news about community information and if they would like to attend a community wildfire informational forum.

Most respondents (26%) preferred to receive news about community information in an email, followed closely by internet and social media (23%).

The next question (question 40) was only shown to participants who indicated they preferred Internet or social media for communications. Of respondents who preferred internet or social media sources, Facebook was the most highly preferred (33% of those that chose Internet/social media), followed by an Online news source (19% of those that chose Internet/social media). Of note, the survey did not include text messaging as an option, but eight respondents indicated that texts were a preferred method to receive news and community information in the Other category. Table B-8 shows participants’ preferred methods for receiving news and community information.

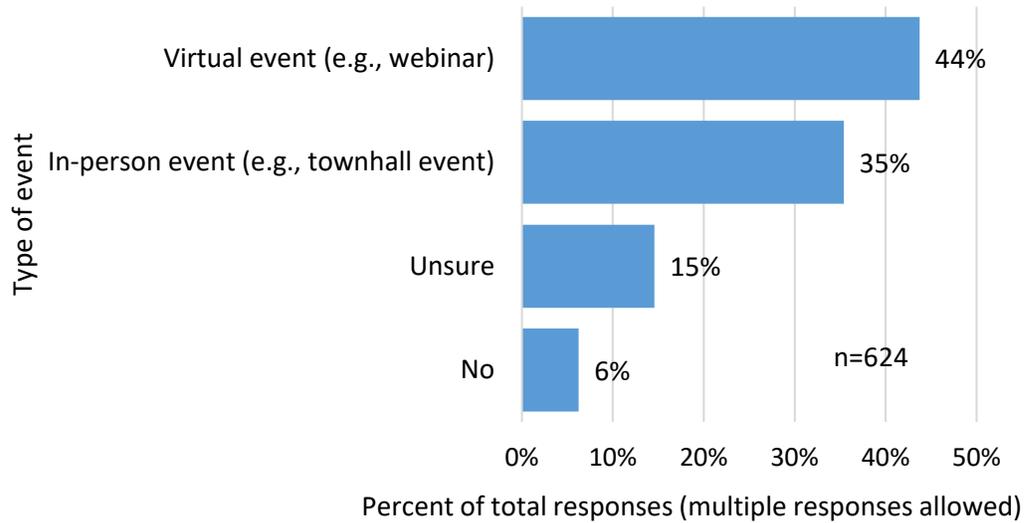
Table B-8 Respondents Preferred Methods for Receiving News About Community Information (n=1,216), Clackamas County, 2022- Q39 and 40 (multiple responses allowed)

Answer	Percent	Count
Email	26%	313
Internet/social media	23%	277
Facebook	33%	220
Online news source	19%	123
Instagram	15%	96
Twitter	14%	94
Youtube	10%	63
Nextdoor	9%	56
Other - please describe.	1%	7
Television	12%	145
Postal mail	12%	141
Newspaper	9%	112
Radio	8%	97
Factsheet/brochure	4%	50
Public meetings	4%	47
Schools	2%	22
Other - please describe	1%	12
Total	100%	1216

Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q39 – What is your preferred method for receiving news about community information? Please select all that apply. Q40 – Which online platforms do you get your information from? Please select all that apply.

When asked what type of wildfire community event participants would prefer to attend, a slight majority preferred a virtual event over an in-person event. These responses suggest that Clackamas County should organize both in-person and virtual wildfire informational sessions. Figure B-18 shows participants willingness to attend such sessions as well as their preferred type of wildfire informational session.

Figure B-18 Respondents’ Interest and Preferred Type of Wildfire Informational Session (n=624), Clackamas County, OR, 2022 – Q26



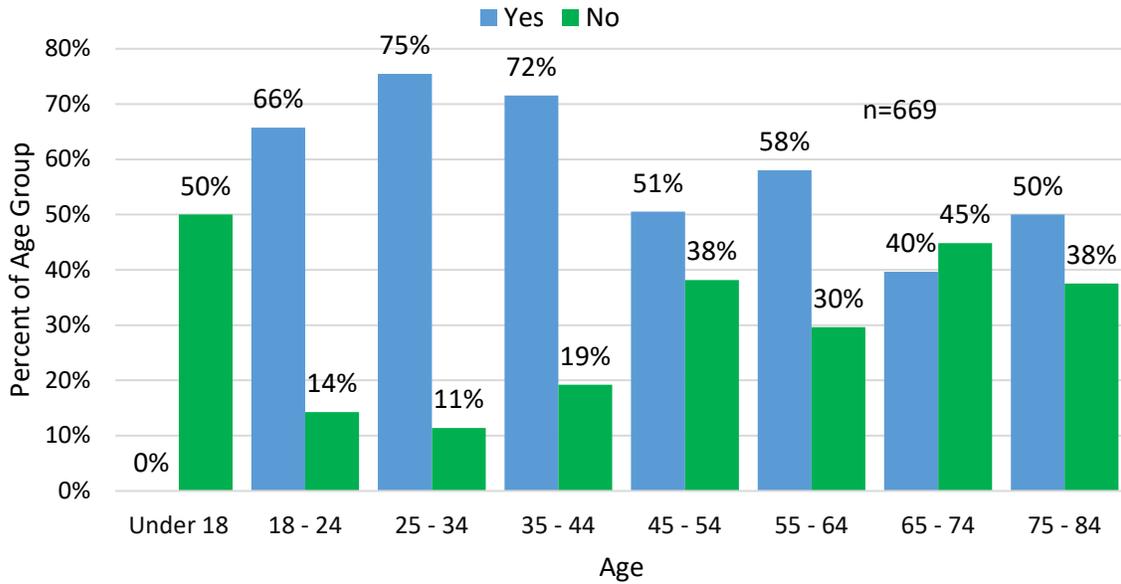
Source: Clackamas County Community Survey, 2022, analysis by OPDR, Q26 – Would you be interested in attending any of the following community wildfire informational sessions? Please indicate all that apply.

Cross-Tabulation

When comparing the results from one question to another, several inequities become apparent between participants. We compared participant’s demographic characteristics to aspects of their wildfire preparedness.

A participant’s ability to clean the air in their homes appeared to be related to their age. Younger participants ages 18 to 44 years old answered “yes” when asked if they had a way to clean or purify the air in their homes at a much higher percentage than people 45 years. Interestingly, older people are more likely to experience negative health implications from wildfire smoke than younger people. Figure B-19 shows participants’ age compared to how they answered when asked if they had the ability to clean or purify the air in their home as a percentage of each age group.

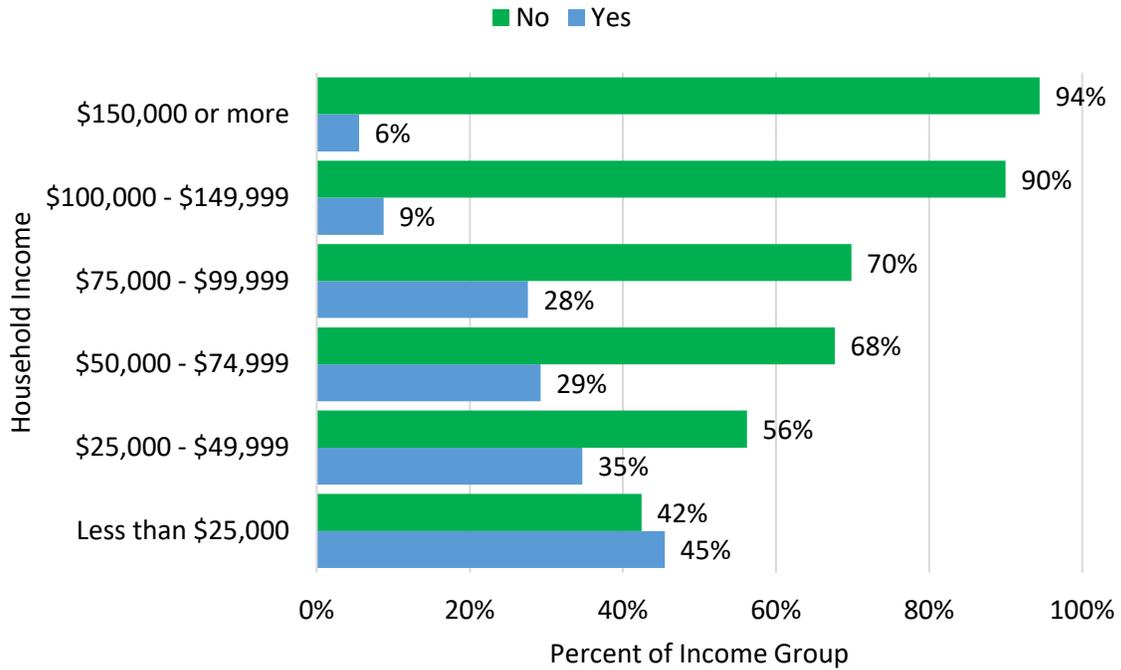
Figure B-19 Participants' Ability to Clean or Purify the Air in Their Home as a Function of Age, Clackamas County, 2022- Q8 and Q29



Source: Clackamas County Community Survey, 2022, Q8.

We then compared household income to answers to “Do you live with a disability or other condition that would require assistance during an evacuation?”. The percentage of people who live with a disability increased as income decreased. Figure B-20 shows participants’ income and if they lived with a disability.

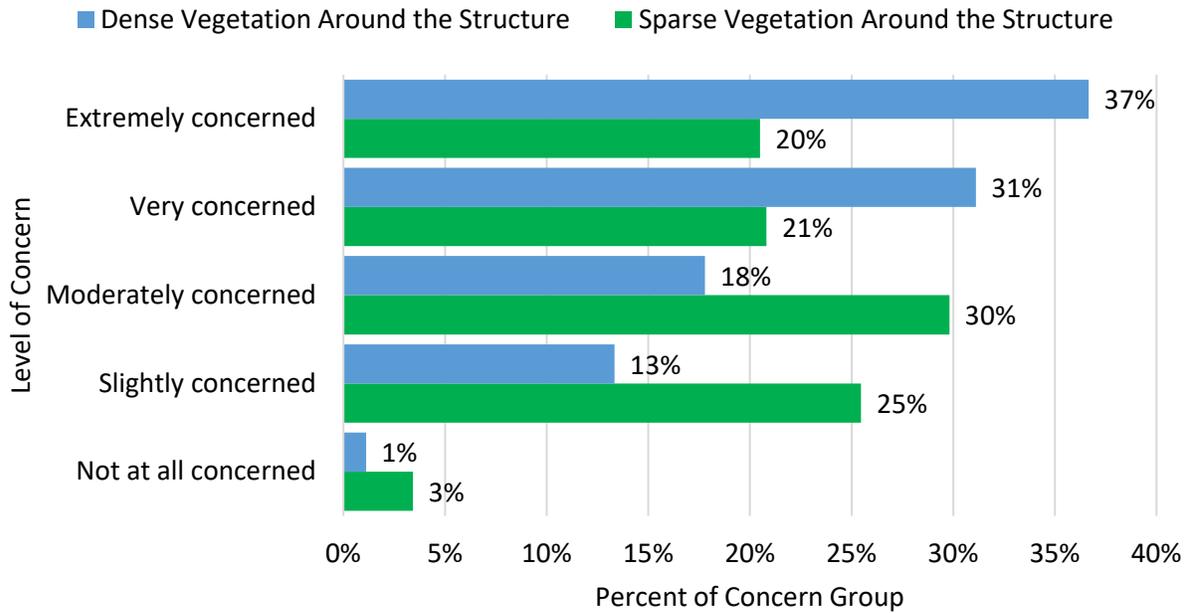
Figure B-20 Percentage of Participants That Live With a Disability and Income verse Participants Who Do Not Live With a Disability and Income (n-599), Clackamas County, 2022



Source: Clackamas County Community Survey, 2022, Analysis by OPDR

Participants were less concerned about wildfire impacting their property if they had sparse vegetation around their home compared to participants who had dense vegetation around their homes. More research would be needed to understand if there is a correlation between people’s level of concern and the density of the vegetation around their home. Figure B-21 shows participants’ level of concern if they had defensible space characteristics around their home.

Figure B-21 Participants Level of Concern About Wildfire Impacting Their Properties With and Without Dense Vegetation Around Their Homes, Clackamas County, 2022- Q15 and Q13



Source: Clackamas County Community Survey, 2022, Analysis by OPDR

Discussion

The demographics of the survey participants largely represented those of Clackamas County when compared to the 2020 US Census and the 2020 American Community Survey (ACS) (5-year estimates). Survey participants were over representative of American Indian and Native Alaskans when compared to Clackamas County as a whole. Conversely, White community members were underrepresented in the survey when compared to 2020 ACS data. Additional outreach should target Black and African American community members.

The age of respondents was generally younger than the overall age of Clackamas County’s population when compared to data from the 2020 ACS (5-year estimates). Future promotion of surveys should target older populations to ensure that their voices are represented in the survey results. The ODRP team hypothesizes that the digital nature of the survey excluded those who do not regularly use the internet and recommends that future surveys include printed versions of the survey that can be mailed to households throughout the county.

Higher income households (more than \$100,000 per year) were underrepresented in the survey. Future surveys should consider ways to include more of their voices as they represent 30% of Clackamas County’s population (US Census Bureau, 2020). Creative incentives may need to be developed to encourage their participation as the \$25 gift card incentive may not have been enough incentive to convince higher income earners to participate. Additionally, future surveys should focus efforts on ways to include more low-income earners as research shows that wildfire inequitably impacts low income households when compared to higher earning households (Masri et al., 2021).

Twenty five percent (25%) of survey respondents indicated that they had difficulty speaking English for day-to-day activities (this number may be inflated due to the nature of the survey as previously discussed). This relatively high percentage highlights the need for future wildfire communications, including evacuation notices, to be produced in languages other than English. While the survey did not ask what languages respondents spoke most fluently, additional research should be conducted to better understand which languages are spoken in Clackamas County.

A small number (7%) of respondents indicated that they had no experience with wildfire. This small number indicates that wildfire impacts the community of Clackamas County and illustrates the need for Clackamas County to improve its wildfire risk reduction and wildfire prevention education and update its land use system to help reduce wildfire impacts on the Clackamas County community.

A significant proportion (55%) of respondents indicated that they or members of their households had an illness or condition that made them vulnerable to wildfire smoke. Clackamas County should create a program to help community members who are at a higher risk to wildfire smoke than other community members. We recommend that Clackamas County consider creating a smoke management plan (also known as a Community Response Plan) to help protect vulnerable community members from the impacts of wildfire smoke.

Two percent (2%) of respondents indicated that they did not own a vehicle and 25% of respondents indicated that they lived with a disability or other condition that would require assistance during an evacuation.

Most participants indicated that they lived in Clackamas County but when asked to provide the zip code of their primary residence, one quarter of participants provided a zip code that was outside of Clackamas County. We hypothesize that this may be the result of people owning second homes or investment homes in Clackamas County but primarily residing in areas outside Clackamas County. Additional research is needed to better understand who these participants are. Based on zip codes that were provided in Clackamas County, there were communities that were not well represented in the survey results. Those communities were: Estacada, Mulino, Lake Oswego, Canby, Sandy, Boring, Gladstone, Eagle Creek, Wilsonville, Happy Valley, Mt. Hood Village, Rhododendron, and Damascus.

Survey participants were generally concerned about wildfire impacting their properties, neighborhoods, communities, and Clackamas County. However, only about two thirds of participants had taken any action to make their homes more fire resistant. Future educational outreach and grant funding should focus on the importance of homeowner's protecting their own properties by removing debris from roofs and gutters, screening or boxing in patios and decks, and removing flammable materials from exterior walls.

A small yet significant portion (17%) of participants indicated that they lived with a disability that would require assistance during an evacuation. Additionally, we received two comments in the open-ended question asking for help during the next evacuations. This included an elder with disabilities who was unable to open their garage door to get their car out when there was no electricity.

Many participants (97%) were familiar with the "Ready, Set, Go!" Program, but only 59% of all participants had created a plan detailing what to do in the event of a wildfire evacuation. Additionally, participants provided 20 comments about their evacuation concerns, most of which were about how congested the roads were.

Less than one-third of the participants indicated that they had defensible space around their homes. Comments received indicated that some participants were interested in learning more about the resources available to them to help them create defensible space. One participant said, "Is there a 'one-stop' site where [I] can go online to find out about grants/services that myself/neighborhood/community could access to help with wildfire mitigation such as brush removal, chipping, etc.?"

Recommendations

Future communications about wildfire in Clackamas County should highlight the importance of community members taking steps to protect themselves by creating evacuation plans, reducing the vulnerability of their homes to wildfire, and creating defensible space. The survey did not specifically ask how seriously participants took their responsibility for reducing their vulnerability to wildfire but based off their indicated level of concern and their preparedness actions, the survey suggests that many participants did not understand their own responsibility for becoming more fire adapted. Clackamas County should create messaging around homeowners and tenant's personal responsibility for becoming more fire adapted. It may also be helpful to highlight the limited ability of Clackamas County, fire departments, and local governments to help them become more fire adapted.

Survey participants did not represent all communities in Clackamas County. Additional outreach should be conducted in Estacada, Mulino, Lake Oswego, Canby, Sandy, Boring, Gladstone, Eagle Creek, Wilsonville, Happy Valley, Mt. Hood Village, Rhododendron, and Damascus. The Oregon Partnership for Disaster Resilience (OPDR) team recommends continued engagement through community meetings, stakeholder forums, and by creating two-way dialogue between fire managers and community members.

Clackamas County has members of its community that live with disabilities that will require assistance during an evacuation. Further research is needed to understand where these individuals are and how to best assist them during an evacuation.

Appendix C: Public Engagement

This Appendix details the public engagement process employed for the 2023 Clackamas County Community Wildfire Protection Plan update. It synthesizes the information gathered through stakeholder interviews conducted during the spring of 2022 and the summer of 2023 into main themes and actionable recommendations. Findings from a Community Forum, where a diverse group of partners shared their unique wildfire experiences, are summarized. Additionally, key recommendations from fire agency and district engagement are captured.

Stakeholder Interviews

Collaboration is one of the key components to creating a community wildfire protection plan. Engaging with a wide range of stakeholders is essential to creating a holistic plan that is informed by experienced land managers, fire responders, community organizations, and community members.

Stakeholder Engagement

Traditionally, CWPPs engage with fire management professionals and forest managers such as fire district chiefs and members of the US Forest Service and Oregon Department of Forestry. To expand the circle of stakeholders and better understand the social and ecological impacts of wildfire in Clackamas County, the 2023 update focused on engaging non-traditional stakeholders in the wildfire planning process. The stakeholders interviewed were organized into different groups based on their organization. The three groups are: Fire and Natural Resource Managers; Government Officials and Utility Providers; and Community Leaders and Organizations.

In collecting this perspective, the project team conducted 20 virtual interviews with stakeholders. Flexible question guides were prepared in advance by the interviewer before the meeting to provide a semi-structured environment for discussion. Most interviews were recorded and synthesized by the interviewer for key messages. The interviews were then sorted into three conceptual groups and qualitatively analyzed for main themes and recommendations.

The following is a list of stakeholder organizations engaged:

Fire and Natural Resource Managers:

- Clackamas Soil and Water Conservation District
- Natural Resource Conservation Service
- U.S. Forest Service
- Mount Hood Natural Forest
- Oregon Department of Forestry
- Sandy Fire District #72

Government/Utilities:

- Clackamas County Department of Public Health
- Clackamas County Department of Sustainability
- Clackamas County Disaster Management
- Clackamas River Water Providers
- City of Molalla
- City of Damascus
- Portland Water Bureau

Community Leaders and Community Organizations:

- Clackamas River Basin Council
- Oregon State University Extension Service
- Todos Juntos

Other informational interviews with fire planning professionals and organizations outside Clackamas County were conducted to better inform the plan in relation to current best fire management practices. Several key stakeholders were unable to be interviewed within the scope of time for this project but whose input would still be valuable to inform this plan. Some examples of missing stakeholders are:

- Pacific Gas and Electric
- Large timberland owners (e.g., Weyerhaeuser)
- The American Red Cross
- Oregon Housing Authority
- City Managers from around the County
- Multnomah County Department of Emergency Management

The stakeholder responses were divided into three groups based on their organizational work. For each group, key messages and recommendations are highlighted then the interview responses briefly synthesized. Prevalent recommendations and needs identified across the three stakeholder groups included:

- There is a need for enhanced communication channels between community leaders, county officials, and fire managers. The need for better communication was noted for all stages of fire planning across all interview groups.
- Public engagement and education in both rural and urban areas is seen as the most effective mitigation action. Education should be centered around understanding the region's fire regime and the factors contributing to risk.
- There is a need for a Clackamas County Fire Collaborative to help with further communication and collaboration on mitigation and recovery projects between a variety of groups.
- A clear need was identified for planning efforts to include recovery from fire events in both the short term and long term. Post-fire planning needs to be incorporated into county operations.

The following tables detail the recommendations made by the three stakeholder groups. They are presented as both recommendation and elaborative comment. Suggestions from stakeholder interviews have been incorporated into the implementation chapter.

Land and Fire Managers

Table C-1 outlines the key takeaways from interviews of land and fire managers. These recommendations were selected by the OPDR team based on their content and applicability to the Clackamas County CWPP update. Additionally, many of their recommendations were institutionalized by the team and are threaded throughout the CWPP update.

Table C-1 Land and Fire Manager Recommendations, Clackamas County, 2022

Recommendation	Comments
Clear project definition: location, opportunities, barriers, and risks (both social and quantitative).	It is important the CWPP have clear project definitions in the implementation chapter. This will help in assigning project participants as well as receiving funding and support in completing the project.
Measurable metrics for success on projects.	A significant need for the creation of action item steps is the use of measurable metrics of success. This is an important component of adaptive management as well as important for grant reporting.
Increased communications for inter-agency teams and collaboration.	Interagency collaboration can increase the efficiency of fuels reduction projects. It is recommended that there be a creation of interagency “Strike teams,” including: a designated project manager; loggers, (preferably locally owned) to assist in thinning and fuel breaks while also generating a profit; road crews to address roadside fuels; and arborists to plan and identify forest areas in need of thinning.
Evaluate and plan based on watersheds.	A transition should be made to evaluating fire threat based on watershed areas rather than the community for fire district level.
Education programs about the nature of fire on the west side of the cascades.	The best mitigation technique is to empower and educate landowners to make themselves resilient to fire events. This means public education events should be prioritized in both rural and urban areas.
Increase capacity for organizations coordinating fuels projects.	There is a clear need for increased capacity for organizations facilitating fuels reduction projects. More funds needed for staffing.
Focus on treating roads.	Roads should be prioritized as they are evacuation routes as well as often at a high risk of ignition.
Put more resources in post-fire planning: evaluating which areas would benefit from burns and what areas should be stabilized or left alone.	Post-fire planning on the community and watershed level is vital for recovery, resiliency, and ecological stability. More county resources should be directed at recovery planning.
Utilizing the 80th percentile risk as the new norm for risk analysis.	Using the 80 th percentile for risk assessments is important to adjust for the expected changes in climate increasing fire risk.

Source: Interviews with Land and Fire Managers, 2022, Analysis by OPDR

Government Workers and Civil Servants

Table C-2 highlights the recommendations and comments the OPDR team gathered through interviews with government and civil servants. These recommendations were selected by the OPDR team based on their content and applicability to the Clackamas County CWPP update. Additionally, many of their recommendations were institutionalized and are threaded throughout the CWPP update.

Table C-2 Local Government and Civil Servant Recommendations, Clackamas County, 2022

Recommendation	Comments
Coordination between water providers and fire responders.	It is important to have clear communication channels between fire emergency managers and water providers. In the short term, responders need the continued production of water to fight the fire, putting water treatment staff in a vulnerable position if within an evacuation area. The use of flame retardants on municipal watersheds can create water quality concerns in the long term.
Connect local community leaders (city managers, mayors) with communication networks and resources for debris cleanup post-fire.	The county should help connect local leaders with resources to assist in cleanup and recovery post-fire, especially in rural areas.
Smoke from wildfire is a public health concern. There is a need for operating and running clean air shelters during fire events.	Air quality impacts are the most widely experienced hazard of wildfire. Clean air shelters need to be made available during fire events. Public education about the hazard should be conducted.
Coordination with adjacent counties on the Multnomah County Bull Run Watershed	The coordination of efforts with resources that span county boundaries is important for effective mitigation.
Climate predictions should be the basis for risk assessment.	Climate change poses new conditions on wildfire events, increasing the likelihood of a fire event. The risk assessments on landscapes should be created using the most recent predications for climate change in the county.
Considerations for rural towns in evacuating.	Rural communities often have livestock that they will need to take with them if they need to evacuate. The current evacuation warning system may not provide enough time for them to collect their livestock and there is little coordination on where the animals are to be taken during an evacuation. As Clackamas County is primarily rural, this is an important planning consideration.
Provide fire training for rural communities.	Firefighting volunteer training should be offered for rural communities often as they have access to equipment and are more willing to stay to protect their properties than evacuate. Creating civilian wildfire responders can assist with the lack of capacity during a fire event.

Source: Interviews with Local Government and Civil Servants, 2022, Analysis by OPDR

Community Leaders and Community Organizations

OPDR interviews with community leaders and organizations are summarized in Table C-3. Their recommendations range from normalizing bilingual translations in emergency notifications to preparing for post-fire-soil-stabilization before a fire occurs.

Table C-3 Community Leaders and Community Organization Recommendations, Clackamas County, 2022

Recommendation	Comments
Need for bilingual translations for evacuation notices and fire alerts.	There is an established Spanish speaking population in Clackamas County. Evacuation notices and emergency alerts need to be available in multiple languages.
Post-fire stabilization is important for ecology and public health. Focus on replanting riparian areas and upland areas around municipal watersheds.	In the wake of a fire event, certain areas around waterways need to be stabilized to prevent spikes in sedimentation levels that could affect water infrastructure. Similarly, after a fire some areas of a watershed need to be allowed to recover naturally for the health of the ecosystem and specifically endangered salmon populations. Replanting in riparian zones should be coordinated with watershed councils, land trusts, and other conservation organizations.
Coordinate invasive plant species mitigation with community organizations.	Invasive plant species such as blackberry that grow in riparian and forest areas are a significant contributor to fire risk. Conservation groups are already engaging in these projects individually, but increased coordination and collaboration could help focus efforts in priority areas.
Emergency housing for displaced people needs to be planned before a wildfire event.	Temporary shelters need to be established for people forced to evacuate in advance of the fire event. Additionally, transitional housing for people who lost their residences to fire should be made available.
Community members are concerned about smoke.	Many community members are concerned about the impact of smoke on health. Access to air filters and clean air shelters should be facilitated on a community level.
Need for more engagement from county after the fire in rural areas.	Rural communities do not feel supported by the county during or after fire events. County should increase outreach to rural areas through partnerships.

Source: Interviews with Local Government and Civil Servants, 2022, Analysis by OPDR

Priority Risk Areas

Through stakeholder interviews, the OPDR team was able to identify priority areas at risk of wildfire in Clackamas County. Table C-4 summarizes the areas that were identified by stakeholders. Areas ranged from watersheds to specific communities throughout Clackamas County.

Table C-4 Stakeholder Identified Risk Areas, Clackamas County, 2022

Area	Comments
Eagle Creek Area (Clackamas Basin)	The Eagle Creek area was identified as a vulnerable area due to a prevalence of private timber land and Christmas tree farms as well as a single route of entry and exit. The area also has a potential impact on the water quality of the Clackamas River if burned.
Sandy River Watershed	The watershed is in a rural part of Clackamas County and does not have an active watershed council working on invasive species mitigation and fuels treatment. The combination of wildfire risk and lack of capacity to coordinate mitigation or recovery actions makes it a higher risk area.
Estacada Area	Interviews identified an area east of Estacada within Mount Hood National Forest with a highly vulnerable community of 15-20 people. For more details the County should contact Anna Menon at Clackamas County Department of Public Health.
Highway 26	As a major transportation corridor to the Mount Hood National Forest, Highway 26 is an important evacuation route but at an elevated risk of being an ignition area. It is also near the Bull Run Watershed, making it a high priority area. Fuels treatment along the highway is critical.
Bull Run Watershed	<p>The primary watershed of Portland, Bull Run is arguably the most critical resource in the County. Coordination with Multnomah County, the Portland Water Bureau, and the Forest Service is needed to coordinate protection of the area.</p> <p>Risk of fire ignition and spread is very low within the Bull Run watershed due to: typical wet conditions, low frequency of lightning strikes during the fire season, low numbers of human-caused ignitions due to public access restrictions, and strong fire prevention and management policies and partnerships. Hotter, drier summers associated with climate change are expected to increase the risk of wildfire in the future, but the overall risk of a large fire occurring inside the Bull Run watershed is expected to remain low, particularly when compared to many other forest types across the western United States.</p>

Area	Comments
Clear Creek Watershed	This tributary joins the Clackamas River below the dams and could cause a spike in sedimentation in the water source if impacted by fire. Sedimentation would pose technical issues on the Clackamas River water providers.
Sandy, Molalla, Estacada, and Canby	These areas were identified as having Spanish speaking communities, indicating a higher prevalence of socially vulnerable populations as well as the need for enhanced outreach services such as bilingual resources.

Source: Stakeholder Interviews, 2022, Analysis by OPDR

Community Partner Forum

A community partner forum was held virtually on May 17, 2022, from 9 to 11 am. The purpose of the forum was to provide a space for social learning, build and strengthen community relations, and identify priority actions for achieving wildfire resiliency. By bringing together a group of traditional and nontraditional partners, Clackamas County can facilitate productive dialogue to encourage robust and innovative wildfire resiliency actions and priorities. The results from this forum were used to inform the entire plan, but specifically the implementation and post-fire recovery chapters.

The outreach process for this event involved reaching out to partners that were identified from the stakeholder interviews. The project team relied on connections made during the interviews as well as existing partners of Clackamas County. Partners were invited via email and encouraged to share the event details with other interested parties. The forum served as a springboard for future meetings and for the formation of a Clackamas County wildfire collaborative group. The project team recognizes that there were gaps in forum participants and recommends future meetings include a more diverse and reflective range representative of the entire county.

Representatives were present from the following organizations:

Table C-5 List of Community Forum Participants by Geographic Scale

Federal	State	Regional	Local
US Forest Service	Oregon Department of Forestry	Portland Water Bureau	AntFarm
FEMA	Oregon Office of Emergency Management	Clackamas River Basin Council	City of Molalla
Natural Resource Conservation Service		Clackamas River Water Providers	City of Molalla Police Department
			Damascus Community Planning Organization

Source: Community Partner Forum, 2022, Clackamas County

To enable a wide range of participation, the forum was held virtually and broken into three parts.

Part 1: Introductions

Introductions and framing of meeting. Ample time was spent on participants sharing their role, organizational mission, and their experience with wildfire. The purpose of this activity was to ground everyone in the meeting and support participant bonding.

Part 2: Breakout Sessions

Small group discussions via Jamboard (an online collaborative tool administered by Google). During part 2, participants were asked to respond to two questions:

- What impacts are you most concerned about as a community leader/natural resource manager?
- How did you respond after the 2020 wildfires? Did you identify any gaps?

Participants were given three to four minutes to individually populate the Jamboard. Results are summarized below.

Key Findings

Community partners had a wide range of concerns about wildfire impacts. With a variety of community partners with varying professional and lived experience, concerns varied by topic. The most prevalent concerns were focused on natural resources, communication, technical, wildfire effects, and equity (see Table C-6). Each concern is of equal importance, but natural resources and communication were the most prevalent topics.

Table C-6 Wildfire Impact Concerns by Category, Clackamas County, 2022

Recommendation	Comment
Natural Resources	<ul style="list-style-type: none">• Invasive species• Water quality• Erosion and soil loss• Loss or degradation of habitat
Communication	<ul style="list-style-type: none">• Communication between fire agencies, government agencies, community partners, and constituents• The need for clear instructions / directions and a distribution strategy
Technical	<ul style="list-style-type: none">• Lack of funding• Lack of staff capacity
Wildfire Effects	<ul style="list-style-type: none">• Smoke• Safety of firefighters and community members• Loss of infrastructure and homes
Equity	<ul style="list-style-type: none">• Displaced populations• Emergency response to individuals with barriers

Source: Community Partner Forum, 2022, Clackamas County, analysis by OPDR, Question 1: What wildfire impacts are you most concerned about as a community leader/natural resource manager?

Community partners played a crucial role in recovery after the 2020 wildfires. Participants were asked “how did you respond after the 2020 wildfires? Did you identify any gaps?” Participants highlighted the post 2020 wildfire work they have done in their communities. Work ranged from hazardous tree removal to restoration assistance to landowners. The reoccurring theme in gaps after 2020 was the need for better communication (see Table C-7). Communication takes on various forms, such as: addressing misinformation, lack of information, and source of communication. In a disaster, everyone needs to have the same information in a timely manner and from a source they trust.

Table C-7 Identified Gaps After the 2020 Wildfire Season by Category, Clackamas County, 2022

Recommendation	Comment
Natural Resources	<ul style="list-style-type: none"> • Replanting plan for after fires
Communication	<ul style="list-style-type: none"> • Need for centralized information sharing • Lack of post-fire learning experience conversation • Understanding differing organizational roles in wildfire response • Gap in communication as to what programs and resources were available to the community • Mental health support
Technical	<ul style="list-style-type: none"> • Lack of funding • Lack of staff capacity • Updating or creating formal plans, such as emergency operations or wildfire recovery strategies

Source: Community Partner Forum, 2022, Clackamas County, analysis by OPDR, Question 2: How did you respond after the 2020 wildfires? Did you identify any gaps?

Part 3: Large Group Discussion

During part 3 of the forum, facilitators shared key findings from the small group discussion. **Almost all participants agreed that they need better pre- and post-disaster communication, understanding of communication roles, community education, and additional funding to make Clackamas County more fire resilient.** Groups cited as being missing from the meeting were Portland General Electric (PGE), Natural Resources Conservation Service (NRCS), watershed representatives, farmworkers, and immigrant community organizations.

To the larger group, we asked:

- What would be helpful for your work in the CWPP?
- Who is missing from the meeting?
- How do we make Clackamas County more fire resilient?

Our main takeaways from the larger group discussion were communication and educational suggestions aimed at improving relationships and trust between Clackamas County and their community partners. The suggestions provided are as follows:

Communication Suggestions

- Create a county wildfire collaborative to share centralized information and build relationships across the county.
- Develop a communication strategy that addresses community trust.

- Support a multi-language communication effort.
- Conduct outreach to non-traditional partners, such as churches and social organizations.
- Coordinate across boundaries.

Community Education Suggestions

- Encourage grassroots education that comes from within the community.
- Support of Firewise program.
- Perform more fire prevention education.

Summary of Community Partner Forum

In summary, the community partner forum created a space for social learning and relationship building. There were partners in the room who had not been able to debrief about the 2020 wildfire season where those in power were listening. The forum provided a space where a diverse group of partners could share their unique wildfire experiences, allowing others to be reflective and open to differing perspectives. Based on the community partner forum analysis, the project team has determined that communication is the biggest gap in Clackamas County wildfire resiliency.

Fire District and Agency Engagement

The Oregon Partnership for Disaster Resilience Team held three steering committee meetings with fire district and agency staff from around Clackamas County during the CWPP update process in the spring of 2022. The steering committee meetings were not well attended, and overall participation was low.

Due to the COVID-19 pandemic and OPDR Team constraints, the team visited Clackamas County one time in person. The visit was led by Clackamas County Disaster Management. During the visit, the team met with the Sandy Fire District Chief and heard about their issues and concerns. They also toured parts of Clackamas County and the Riverside Fire burn scar.

To better understand how the Clackamas County Community Wildfire Protection Plan (CWPP) was used by local fire districts and agencies, the OPDR Team created a six-question survey. The survey was administered digitally using the Qualtrics' Digital Survey Platform.

Key Takeaways

Not all fire departments and agencies responded to the survey. 12 out of 16 fire departments and agencies responded. Districts and agencies that did not complete the survey were:

- Gladstone Fire Department
- Monitor Rural Fire Protection District
- Silverton Rural Fire Protection District
- Oregon Department of Forestry

Seventy-seven percent of fire departments and agencies in Clackamas County were very familiar or moderately familiar with the Clackamas County CWPP. One department indicated that they were not familiar at all with the CWPP.

Most fire departments and agencies had integrated elements of the 2018 CWPP into their work plans. Some departments and agencies had not integrated the CWPP with their work plan and cited staff turnover and the COVID-19 pandemic as barriers to integration.

Fire departments and agencies need updated, clearly defined projects, and relevant information to be successful in implementing the CWPP. To clearly define projects and include relevant information, some responses indicated the need for open dialog with fire district personnel and indicated that in-person meetings would be the best way to have this dialog.

The most cited challenge for wildfire planning in the past five years was lack of capacity and resources. Additionally, a few responses indicated that the changing climate and increased wildfires were a particular challenge that their department or agency was facing.

Department and agency priorities were diverse, but the most indicated priority was community wildfire risk reduction in areas of high-risk. Additional priorities of note were aligning department and agency priorities with SB 762, Oregon Department of Forestry's Forest Action Plan.

Appendix D: Annual Review Table

The following table should be used to conduct the annual review of wildfire mitigation actions as identified in the 2024 Clackamas County Community Wildfire Protection Plan update. This process will be led by Clackamas County Disaster Management and carried out in conjunction with the Clackamas Fire Defense Board and local, state, and federal fire and forestry agencies that operate in Clackamas County.

The annual review is expected to take place from April to May each year. Each agency should review their own mitigation action plan as described in Chapter 9: Clackamas County Fire Agencies of the CWPP and recommend edits to Clackamas County Disaster Management as needed.

Table D-1 Annual Review Table Template

Action Item ID	Action Item Description	Progress Made	Recommended Changes	New Item?
AGENCY NAME HERE – Action Plan				
<i>The ID of the action item being reviewed.</i>	<i>Description of the action item as written in the CWPP.</i>	<i>Describe progress made on this action item, if any.</i>	<i>Describe any recommend changes to the description, timeline, partners, CAR, or status.</i>	<i>Fill in “Yes” here if the item is new and should be added to the action plan.</i>

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Appendix E: Maps

The following Clackamas County maps are attached as part of Appendix E:

Map E-1 Base Map with Land Management, Road Networks, and Hydrology

Map E-2 Fire Protection Districts

Map E-3 Social Vulnerability

Map E-4 Wildfire Risk and Fire History

Map E-5 Wildfire Risk

Map E-6 Fire History

Map E-7 Priority Wildfire Mitigation Areas

Map E-8 Integrated Conditional Net Value Change

Map E-9 Integrated Expected Net Value Change

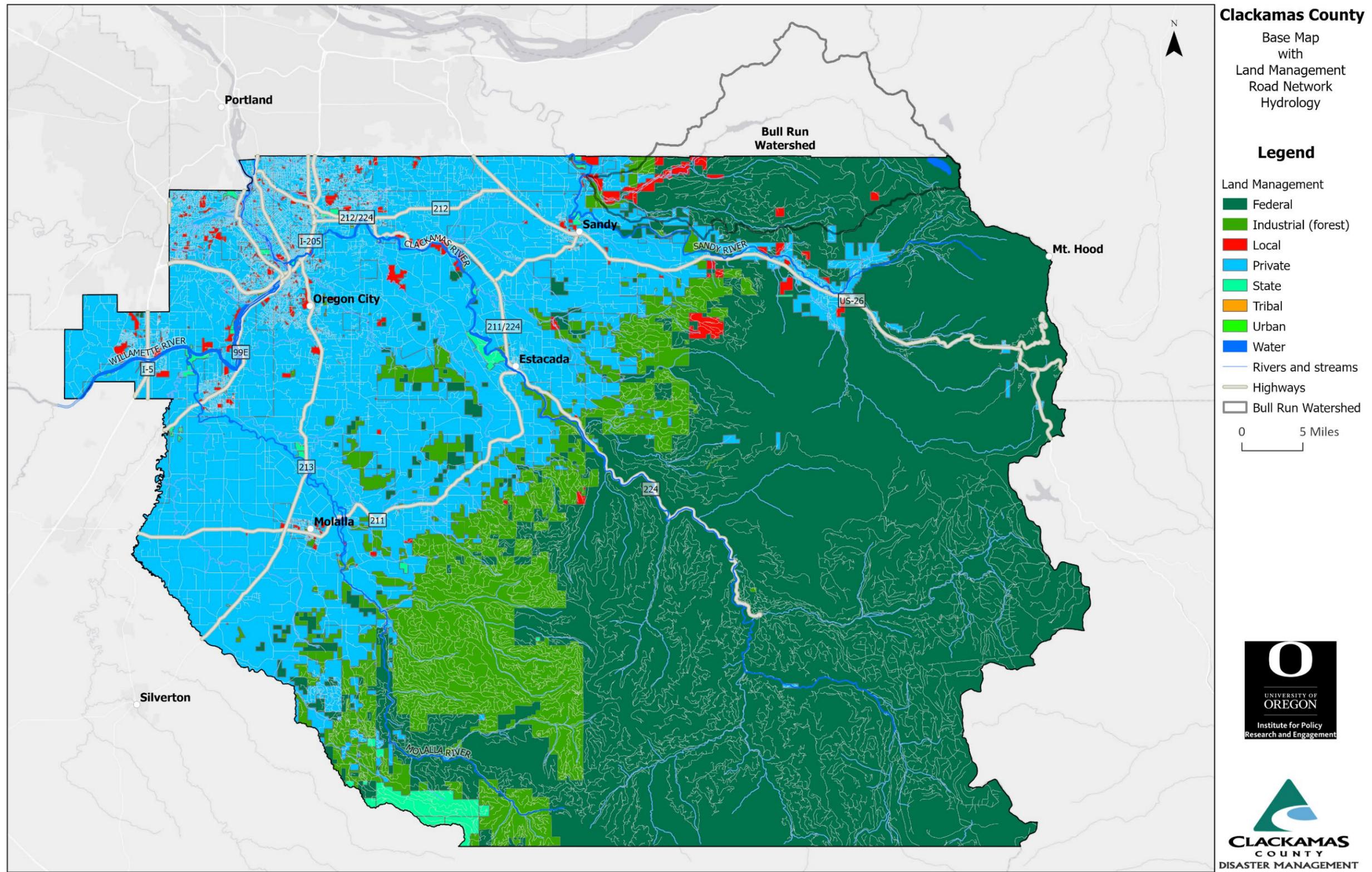
Map E-10 People and Property Conditional Net Value Change

Map E-11 Drinking Water Conditional Net Value Change

Map E-12 Timber Conditional Net Value Change

Note: Conditional net value change maps show the estimated change in a resource's value if a wildfire were to occur. Thus, **conditional net value change** can show high loss even if the actual risk of a wildfire igniting is low. Both negative and positive effects are mapped. **Expected net value change** shows estimated change in the resource's value if a wildfire were to occur weighted by the probability of a fire occurring (the burn probability). Thus even if the conditional net value change is high, expected net value change can be low, if the probability of wildfire occurring is low.

Map E-1 Base Map with Land Management, Road Networks, and Hydrology

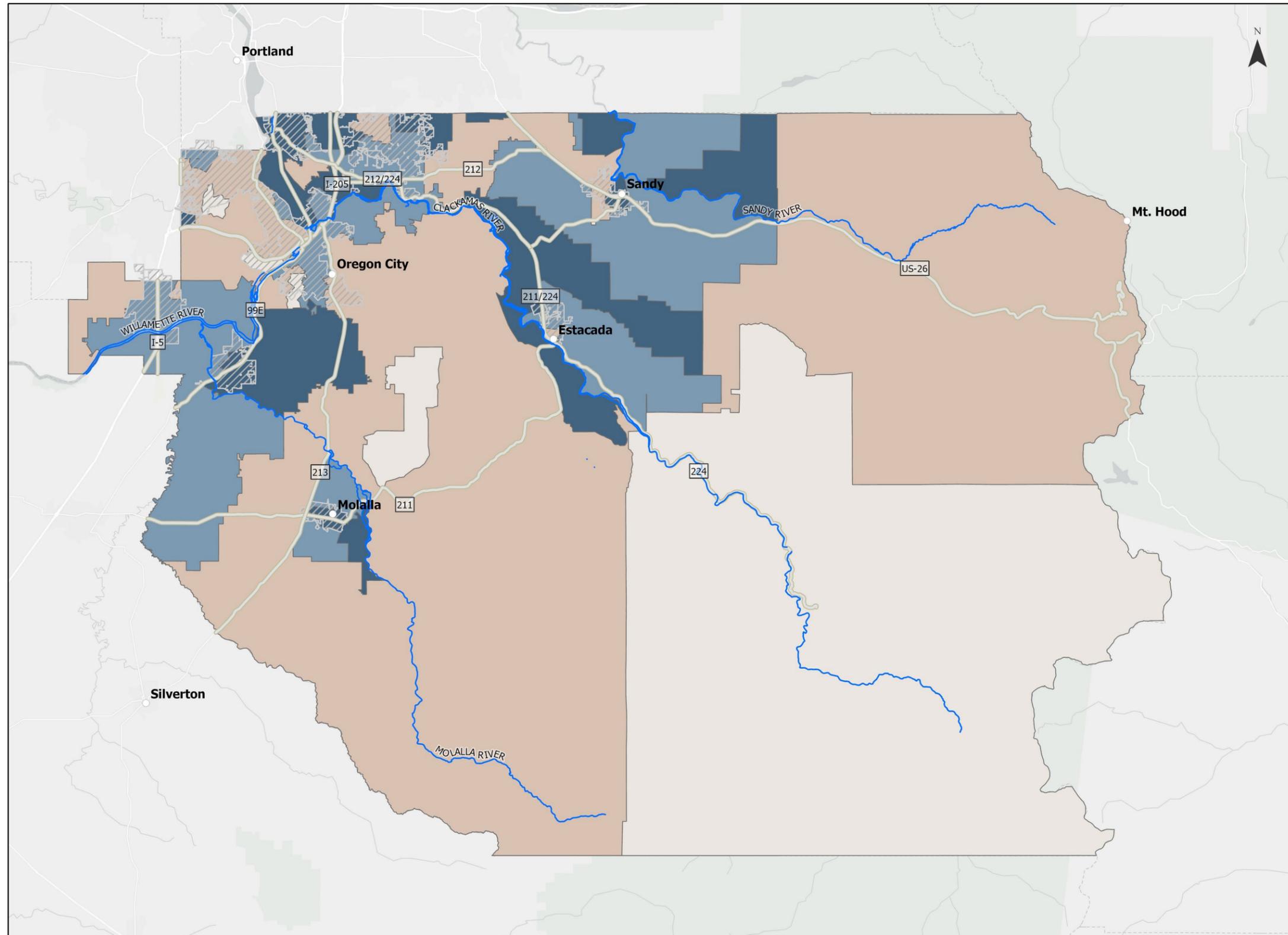


Esri, HERE, Garmin, USGS, EPA, NPS

, Esri, HERE, Garmin, USGS, EPA, NPS



Map E-3 Social Vulnerability



Clackamas County

Social Vulnerability

Legend

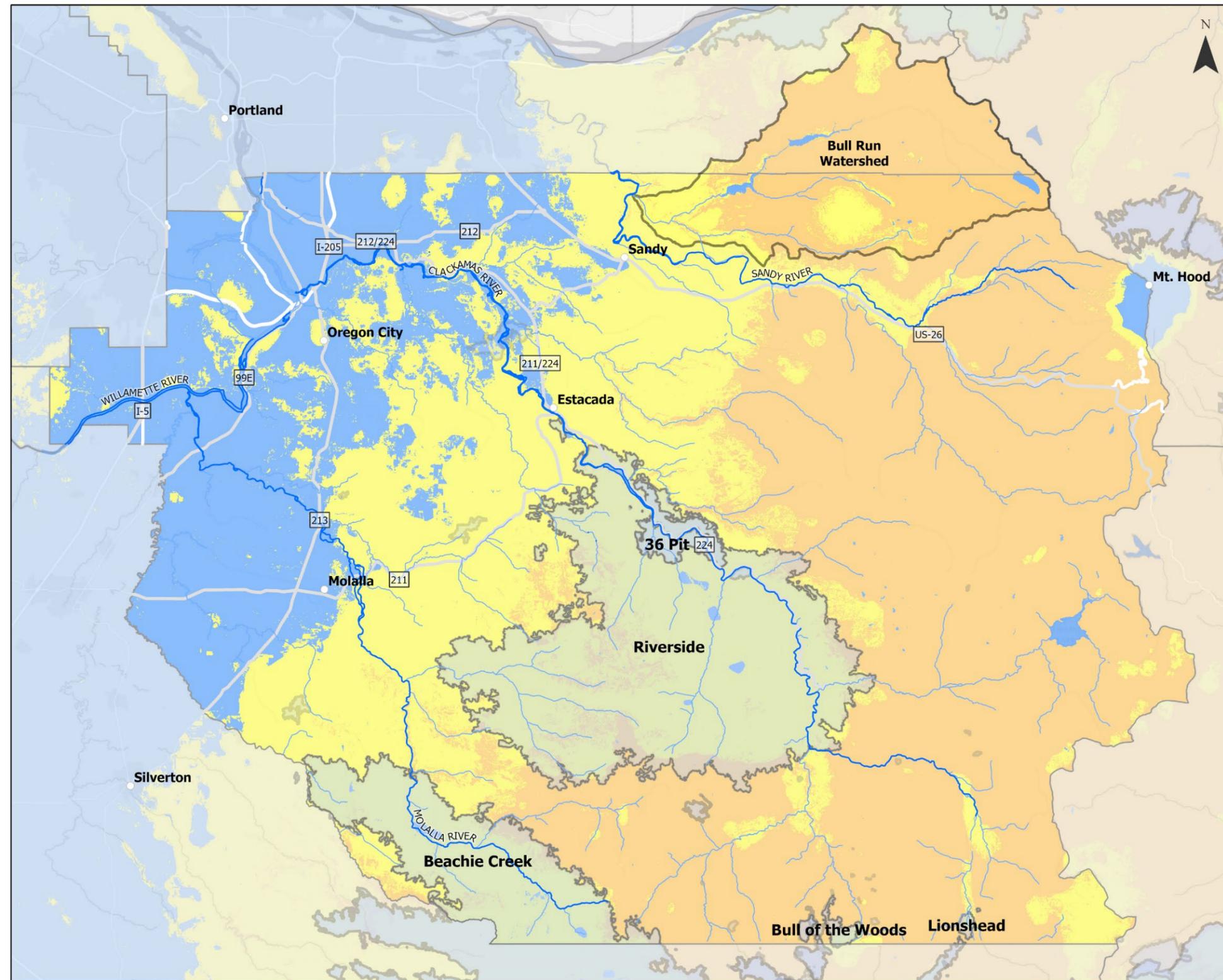
- Social Vulnerability
 - Low
 - Low-Moderate
 - Moderate-High
 - High
- City Footprint
- Rivers
- Highways

0 5 Miles



Oregon Metro, Oregon State Parks, State of Oregon GEO, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS

Map E-4 Wildfire Risk and Fire History



Clackamas County

Overall Wildfire Risk
&
Recent Wildfires

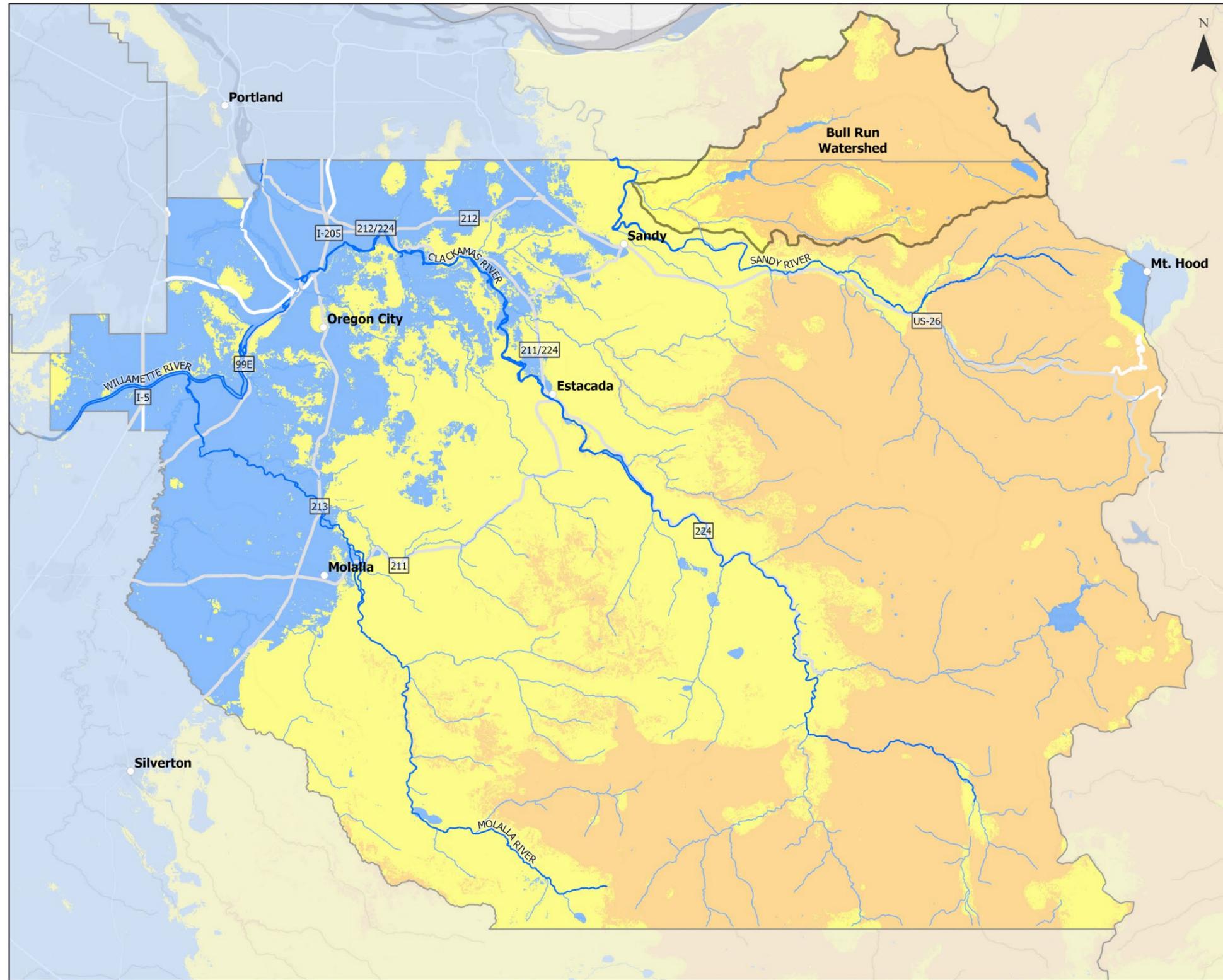
Legend

-  Rivers
-  Highways
-  Wildfire Boundaries
-  Bull Run Watershed
- Wildfire Risk**
-  Low
-  Moderate
-  High

0 10 Miles



Map E-5 Wildfire Risk



Clackamas County

Overall Wildfire Risk

Legend

- Rivers
- Highways
- Bull Run Watershed

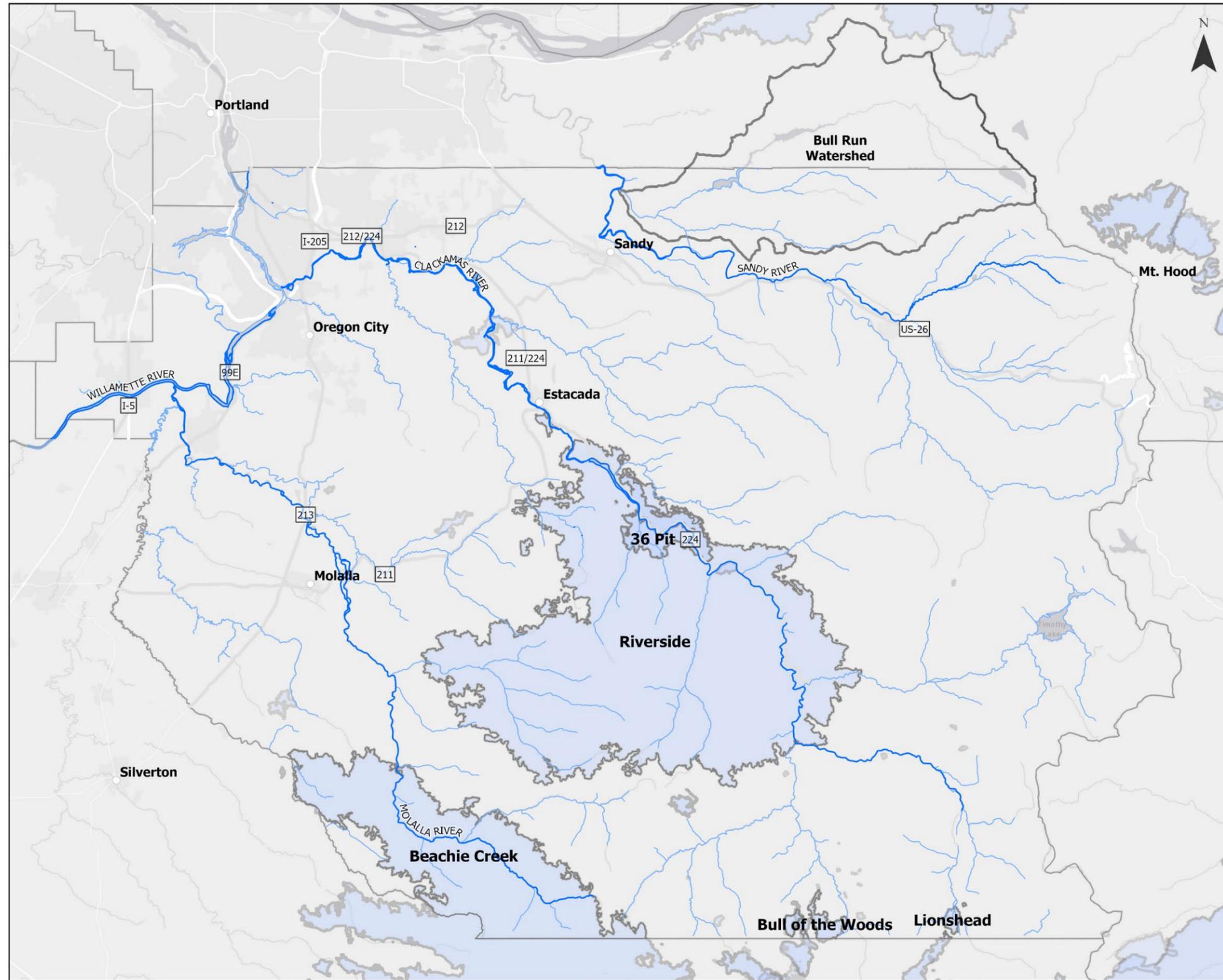
Wildfire Risk

- Low
- Moderate
- High

0 10 Miles



Map E-6 Fire History



Clackamas County

Recent Wildfires

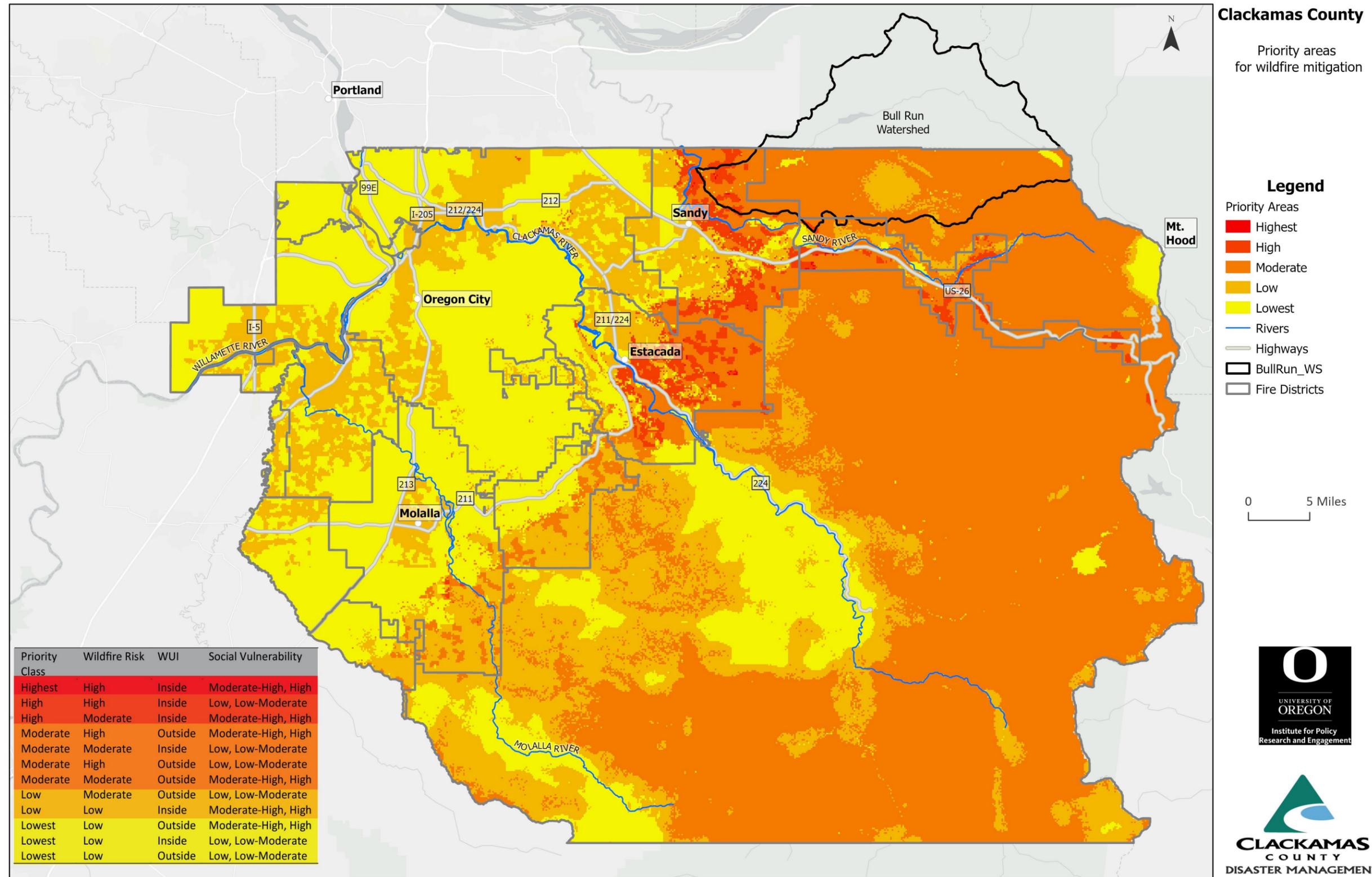
Legend

- Rivers
- Highways
- Wildfire Boundaries

0 10 Miles

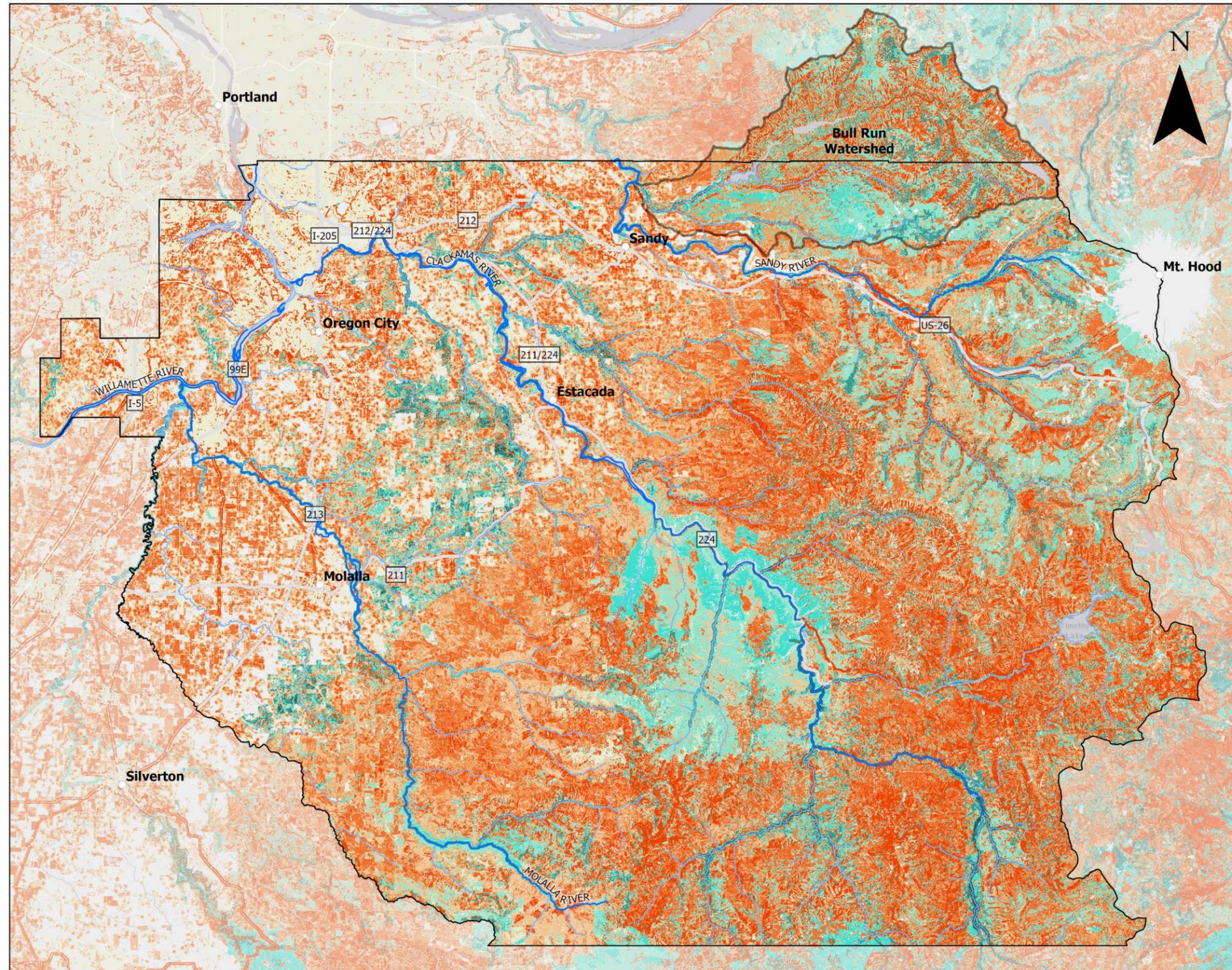


Map E-7 Priority Wildfire Mitigation Areas



Oregon Metro, Oregon State Parks, State of Oregon GEO, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS

Map E-8 Integrated Conditional Net Value Change



Clackamas County

Integrated
Conditional Net Value
Change

Legend

- County Boundary
- Rivers
- Highways
- Bull Run Watershed

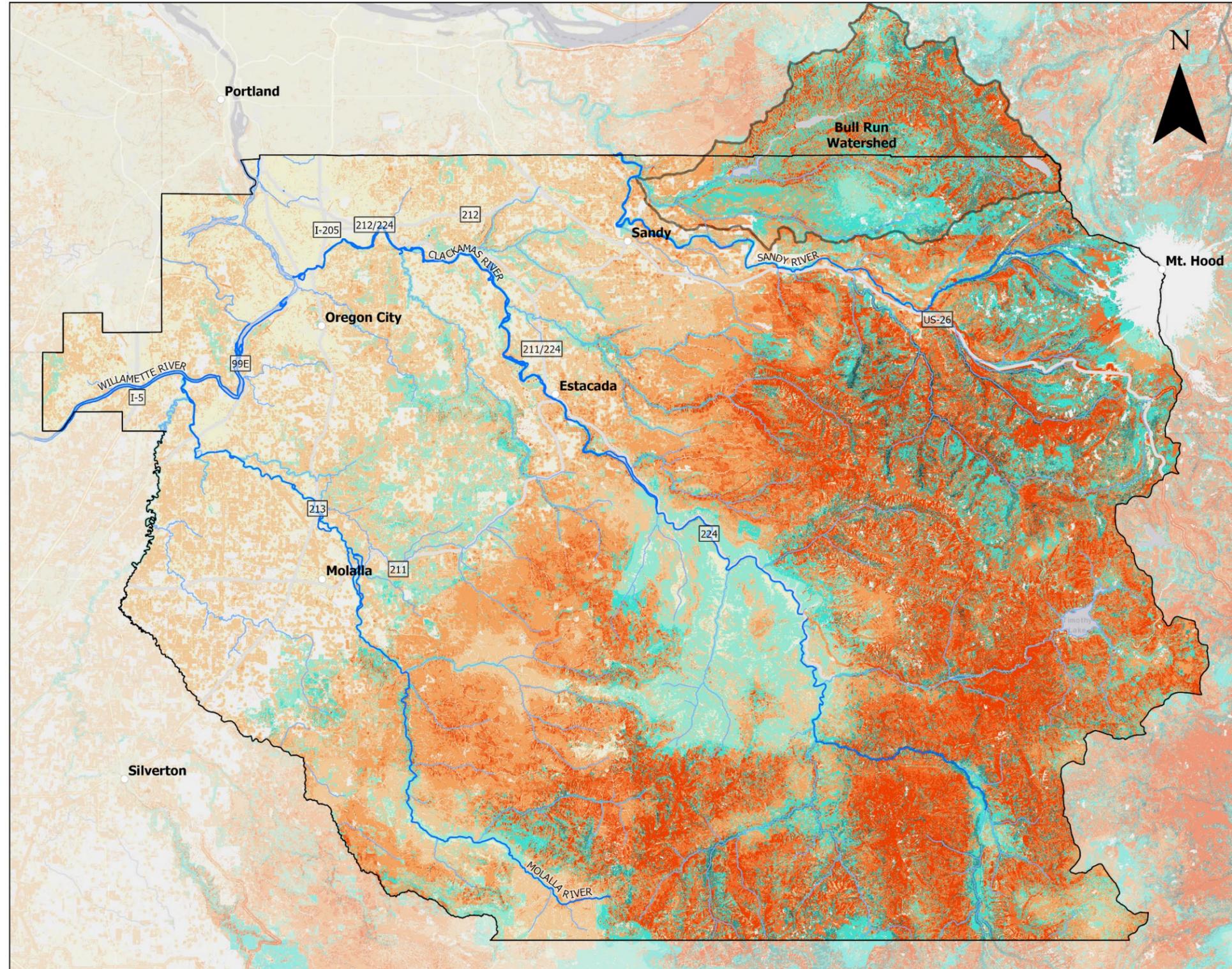
Integrated Conditional Net
Value Change

- Very High Loss
- High Loss
- Moderate Loss
- Low Loss
- Neutral
- Low Benefit
- Moderate Benefit
- High Benefit
- Very High Benefit

0 10 Miles



Map E-9 Integrated Expected Net Value Change



Clackamas County

Integrated
Expected Net Value
Change

Legend

- County Boundary
- Rivers
- Highways
- Bull Run Watershed

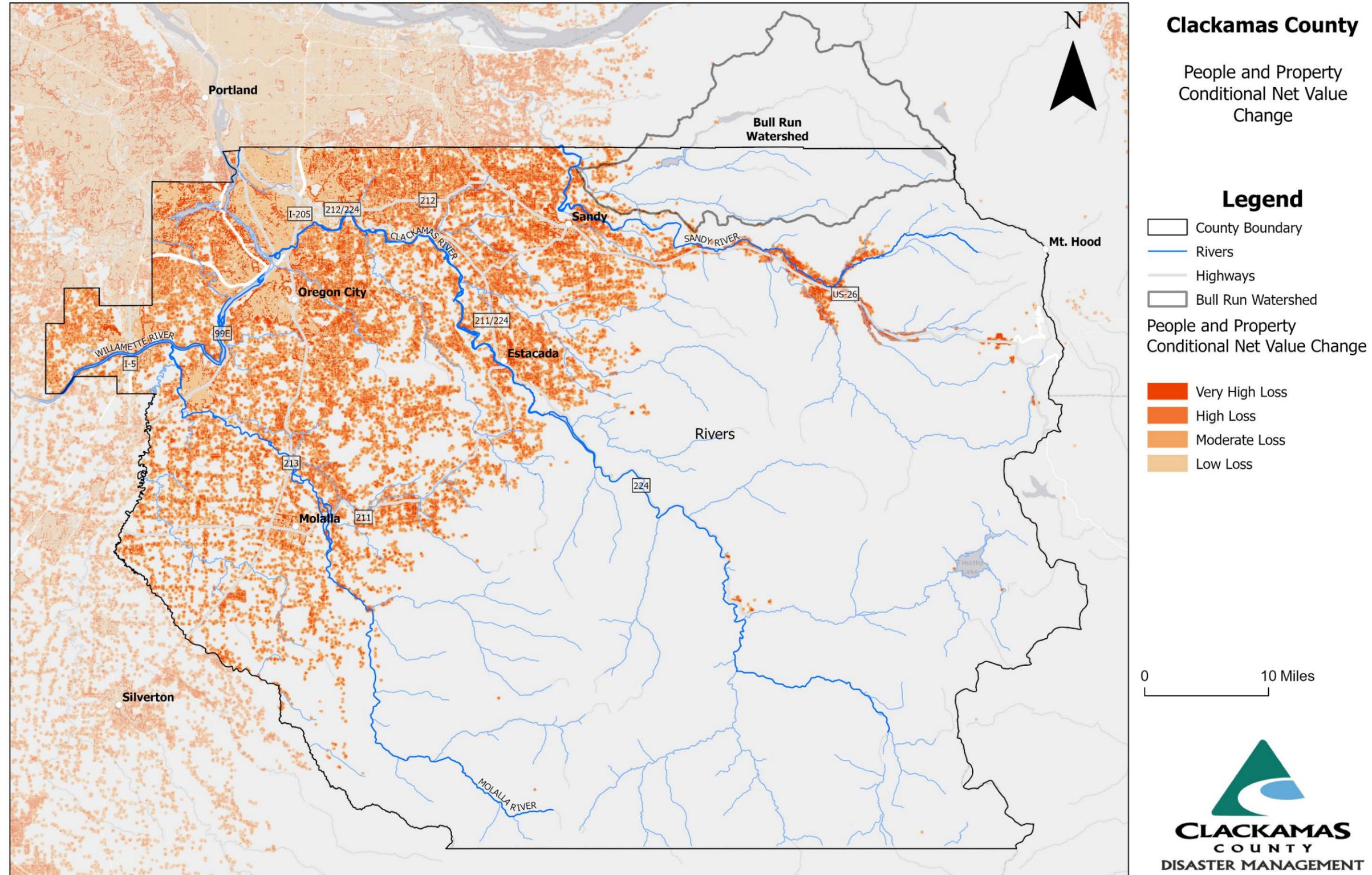
Integrated Expected
Net Value Change

- Very High Loss
- High Loss
- Moderate Loss
- Low Loss
- Neutral
- Low Benefit
- Moderate Benefit
- High Benefit
- Very High Benefit

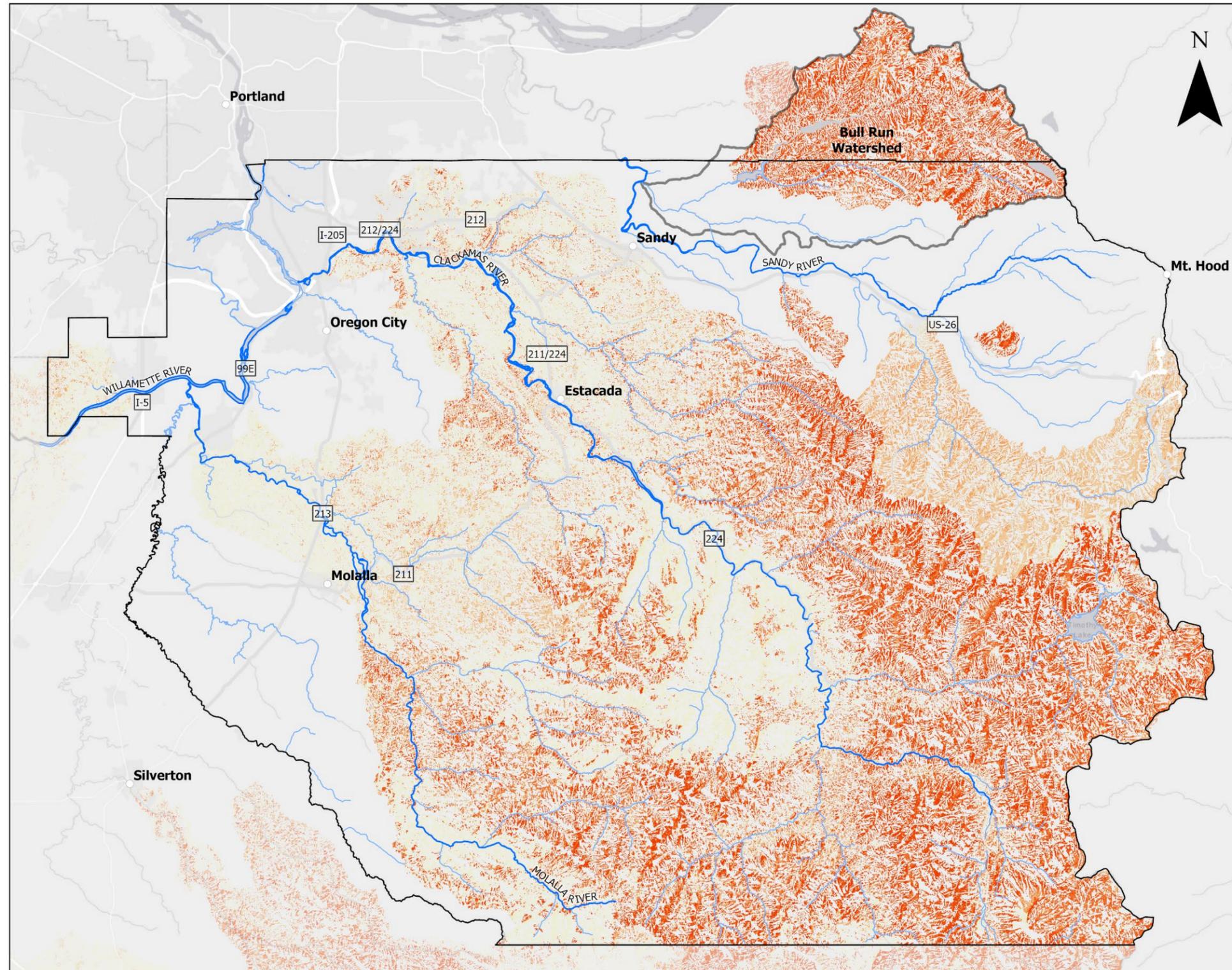
0 10 Miles



Map E-10 People and Property Conditional Net Value Change



Map E-11 Drinking Water Conditional Net Value Change



Clackamas County

Drinking Water
Conditional Net Value
Change

Legend

County Boundary

Rivers

Highways

Bull Run
Watershed

Drinking Water
Conditional Net Value
Change

Very High Loss

High Loss

Moderate Loss

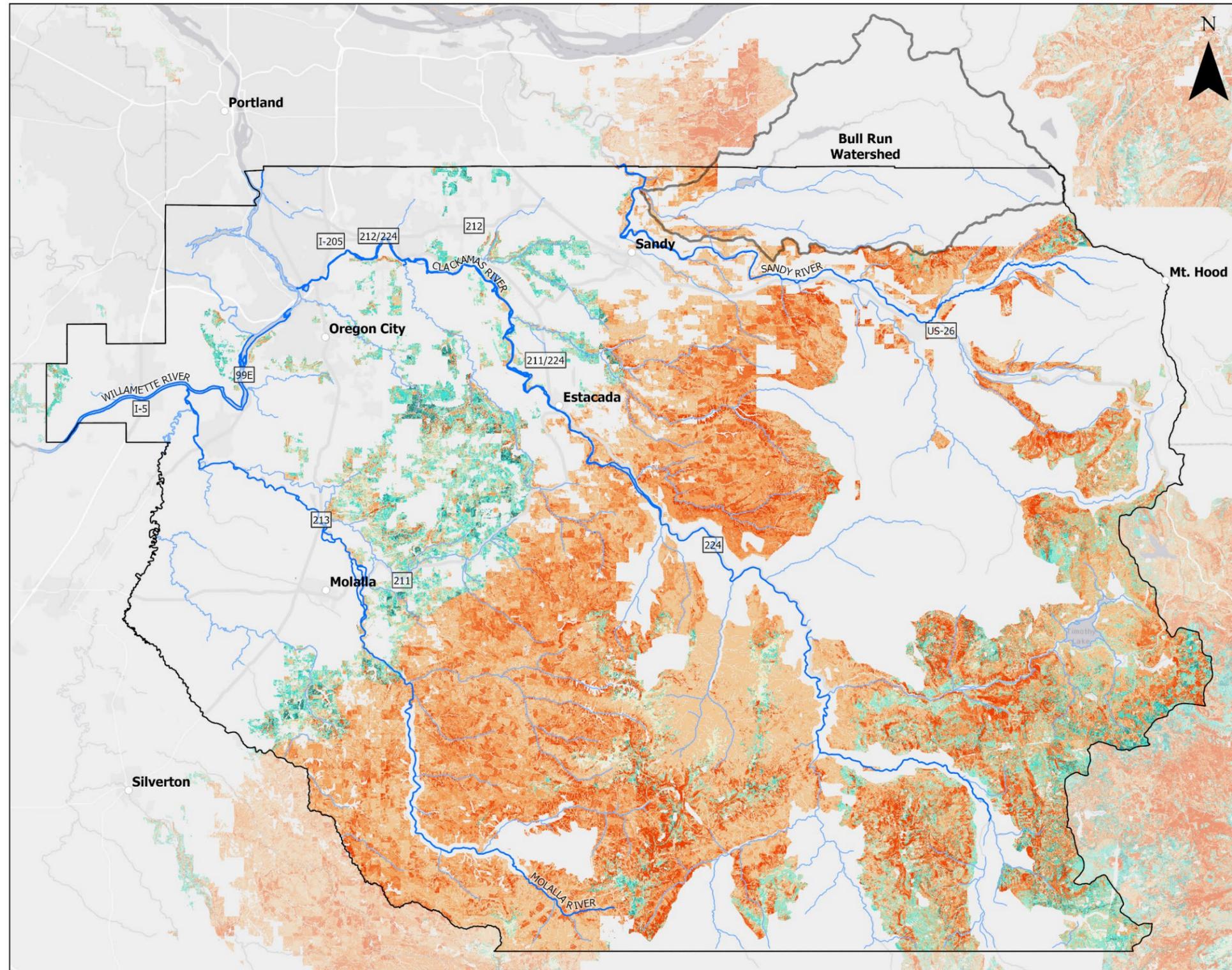
Low Loss

Neutral

0 10 Miles



Map E-12 Timber Conditional Net Value Change



Clackamas County

Timber
Conditional Net Value
Change

Legend

- County Boundary
- Rivers
- Highways
- Bull Run Watershed

Timber Conditional Net Value Change

- Very High Loss
- High Loss
- Moderate Loss
- Low Loss
- Neutral
- Low Benefit
- Moderate Benefit
- High Benefit
- Very High Benefit

0 10 Miles

