Wildfire Mitigation Advisory Committee Final Report

April 17, 2020

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I. EXECUTIVE SUMMARY

The Board of County Commissioners (Board) appointed the Wildfire Mitigation Advisory Committee (WMAC) in September 2019 to undertake the following objectives:

1. Recommend an updated Wildfire Hazard Zone (WHZ) based on the Oregon Department of Forestry's (ODF) criteria in Oregon Administrative Rules (OAR) 629-044-0200 (weather, slope, fuel hazard, fuel distribution);

2. Review and recommend whether and how to apply the Oregon Building Codes Division's (BCD) updated Wildfire Hazard Mitigation standards, i.e., ORSC - R327, in areas under Deschutes County's building jurisdiction; and

3. Review and recommend whether and where to propose new land use regulations based on the University of Oregon's Community Service Center (CSC) audit of Deschutes County Code and best practices from other jurisdictions.

The WMAC made two recommendations pertaining to the WHZ and two recommendations in determining where R327 should apply:

- Six (6) members recommended the WHZ continue to apply to the entire County; and

- Five (5) members recommended the WHZ be updated based on a landscape approach informed by Community Wildfire Protection Plan (CWPP) sub-regions.[1]

- Six (6) members recommended R327 apply to the entire County and all existing and new lots, regardless of zone.

- Five (5) members recommended utilizing the WHZ based on CWPP sub-regions to inform where R327 should be implemented. From there, the group recommended R327 apply to newly created lots and replacement dwellings in the Forest Use (F1 and F2) and Rural Residential (RR-10) zones.

A majority of the WMAC also recommended requiring throughout the County's jurisdiction:

- Defensible space, steep slope setbacks, and access standards for all new development;

- Defensible space for all properties, vacant and developed;

- Establishing a program that shares best practices of wildfire mitigation to the public.

[1] Several CWPP sub-regions would not be within the WHZ because the hazard level score was below the prescribed threshold. See Attachments C & D for more details.

II. OVERVIEW & BACKGROUND

Community Development Department (CDD) staff and the Board began discussing a 2015 University of Oregon Community Service Center (CSC) code audit in the fall of 2018. The timing coincided with the State Building Codes Division's (BCD) consideration of an amendment – referred to as Appendix W – to the Oregon Residential Specialty Code (ORSC) to prescribe fire hardening standards, i.e., building codes to increase resiliency to fire. The Board directed staff to track Appendix W and revisit options in 2019.

Possible options were:

- Comment on any proposed wildfire hardening measures considered by BCD[2]
- Adopt the CSC's recommendations resulting from their code audit
- Create a working group to review and recommend options for the County to mitigate the risk of wildfire losses

Appendix W officially became part of ORSC R327 – Wildfire Hazard Mitigation once it was approved by the BCD in January 2019. The BCD structured the amendments of R327 to permit jurisdictions the flexibility to decide whether and how to implement the new wildfire hardening regulations.

The following outcomes occurred in 2019:

- **January** – BCD revises R327 – Wildfire Hazard Mitigation in ORSC.
- **February** – Board directs staff to explore how and where the updated R327 might be implemented and to identify potential impacts and issues.
- **March / April** – Staff obtains data and creates various maps based on ODF criteria.
- **May** – Staff conducts a stakeholder meeting with fire districts, building officials, and County planning commissioners, in addition to building and real estate associations.
- **June** – Staff shares WHZ data, potential maps, and stakeholder feedback with the Board.
- **July** – One of the Board's Fiscal Year 2019-2020 Goals was to *"Protect the community through planning, preparedness and delivery of coordinated services."* An objective to achieve this goal was to *"Collaborate with partners to prepare for and respond to emergencies and disasters."*

  Based on this input, CDD's 2019-20 Work Plan included an action item to: *"Consider implementing wildfire mitigation recommendations from the University of Oregon's Community Service Center (CSC) code audit, coordinate with the Deschutes County Forester, and consider adopting a new Wildfire Hazard Zone."*

  Board agrees to create a working group to review and recommend if the County's WHZ should be updated and where/how it should apply.

[2] The Board submitted comments to the BCD to encourage local jurisdiction's the option to implement Appendix W instead of such regulations being mandated by the State.

- **August** – Staff initiates an open recruitment for working group, i.e., WMAC, volunteers.
- **September** – Board appoints WMAC and sets objectives.
- **October** – WMAC convenes biweekly meetings.

Wildfire Mitigation Advisory Committee

Table 1 lists the WMAC membership:

Table 1 - Membership

Name	Organization / Background	Region
Brent Landels	Realtor – Re/Max	Bend
Brian Braddock	Farmers Insurance (Retired)	Bend
Geoffrey Reynolds	Home Owner	Bend
Jim Beeger	Planning Commissioner	Bend
Jim Figurski	Landscape Architect	Bend
Joe Foran	Fuels Management – BLM (Retired)	La Pine
Karna Gustafson	Central OR Builders Association	Bend
Ken Kehmna	Redmond Fire and Rescue	Redmond
Martha Meeker	Home Owner	Sisters
Matt Van Coutren	Hayden Homes	Redmond
Roger Johnson	Sisters-Camp Sherman Fire Dist.	Sisters
Tyler Neese	Central OR Assoc. of Realtors	Bend

The WMAC met a total of nine (9) times between October 2019 and January 2020. General information, meeting agendas, minutes and supporting documents were available online at a project specific website: www.deschutes.org/wildfirecommittee.

Figure 1 - Initial WMAC meeting. County Legal Counsel summarizes public meeting laws.

III. WILDFIRE HAZARD ZONE

BACKGROUND

WHZs, defined in OAR Chapter 629, Division 44, are determined by specific ODF criteria.[3] In 2001, Deschutes County adopted a WHZ based on these criteria to prohibit shake-roofs.[4] The WHZ encompassed the entire County, as depicted in Figure 2.

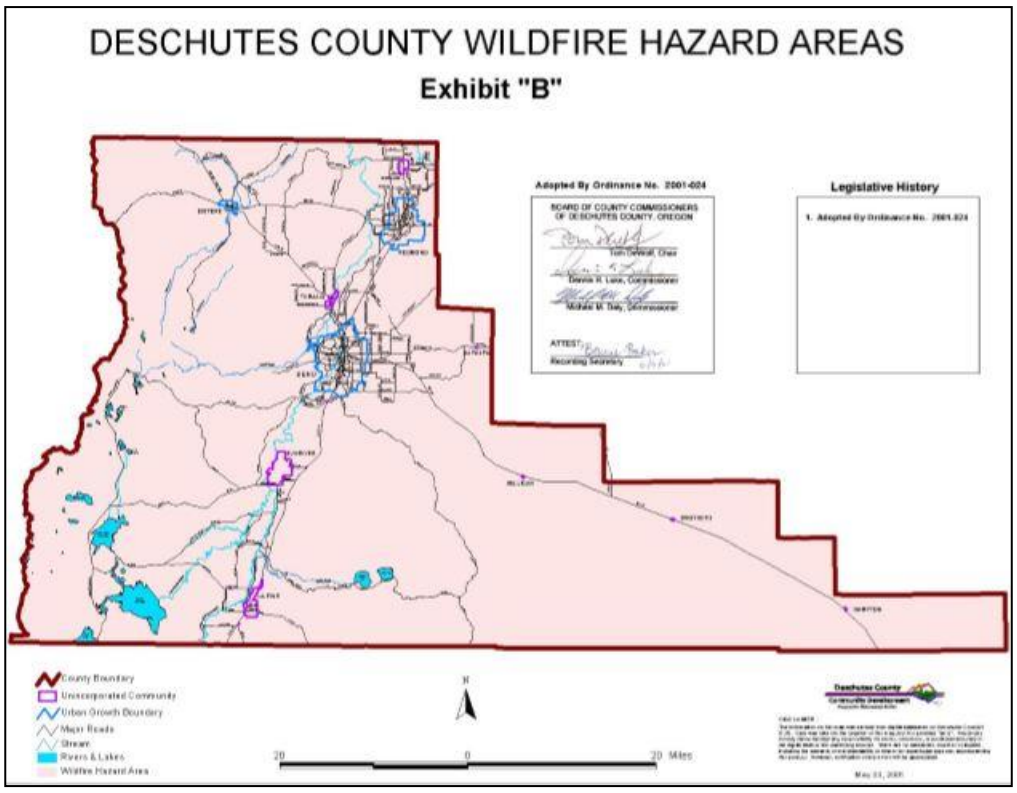


Figure 2 – Existing Wildfire Hazard Zone (in light pink), adopted in 2001.

The BCD revised R327 on January 24, 2019 to allow jurisdictions the ability to require additional wildfire hardening measures for residential structures. These standards apply to qualifying lots of record as defined in the rule using the ODF criteria. This caused the County to consider updating the WHZ to inform where R327 may be implemented.[5]

This section summarizes the ODF criteria, including the:

1. Hazard rating factors and values necessary to establish WHZs; and
2. The geographic area for the WHZ.

[3] OAR 629-044-0220.
[4] Ordinance 2001-024 adopted a WHZ.
[5] R327 can only be implemented within a designated Wildfire Hazard Zone.

ODF CRITERIA – HAZARD RATING FACTORS & VALUES

OAR Chapter 629 Division 44 prescribes specific hazard rating factors that determine how a WHZ shall be established. The "Summary of Wildfire Hazard Zones," Attachment A, describes each factor. The criteria are:

- Weather
- Topography
- Vegetative Fuel Type
- Vegetative Fuel Distribution

Each factor is assigned a value from 0-3, with three (3) the most hazardous value**. Wildfire hazard zones are those areas where the cumulative value of the hazard rating of all four factors is seven (7) or above.** Geographic Information Systems (GIS) served as a tool to collect and map federal/national data, assign values to each factor, display information at a variety of geographical scales, and summarize the information into an overall hazard value.

Fire Weather Hazard Factor

The State assigns each county a fire weather hazard value, from 0-3, with the three (3) the highest value. Deschutes County is assigned a score of three (3).[6]

Topography Hazard Factor

United States Geological Survey (USGS) topographical maps are assigned points based on slope percentage:

Table 2 - Topography Hazard Values

Slope	Value
0-3%	0
3-12%	1
12-20%	2
>20%	3

Natural Vegetative Fuel Type Hazard Factor

Vegetative fuel type values are assigned based on fuel type(s) existing across a landscape.[7] Fuel hazards are categorized generally into grass, shrub, and timber and further divided into fuel types. Of the 13 total fuel types described in the General Technical Report INT-122, OAR 629-044-0250

[6] For comparison, Columbia County, northwest of Portland, is categorized as a two (2) for weather hazard.

[7] *"Aids to Determining Fuel Models For Estimating Fire Behavior"* published by the Forest Service, USDA Intermountain Forest and Range Experiment Station in 1982 as General Technical Report INT-122 was used as the reference for establishing the natural vegetative fuel hazard factor. Staff acquired the latest data for the fuel models from LANDFIRE.

considers fuel types 1-6 and 8-10. Fuel type 7 is not present in Oregon and fuels types 11-13 are slash fuel types.

Natural Vegetative Fuel Distribution Hazard Factor

Fuel distribution varies throughout the County. Points are assigned based on the fuel distribution as a percent of cover:[8]

Table 3 - Vegetative Fuel Distribution Hazard Values

Percent of Cover	Value
0-10%	0
10-25%	1
25-40%	2
40-100%	3

Figure 3 is a composite map that overlays each criterion.[9] The red areas indicate a hazard area, i.e., combined score of seven (7) and above.

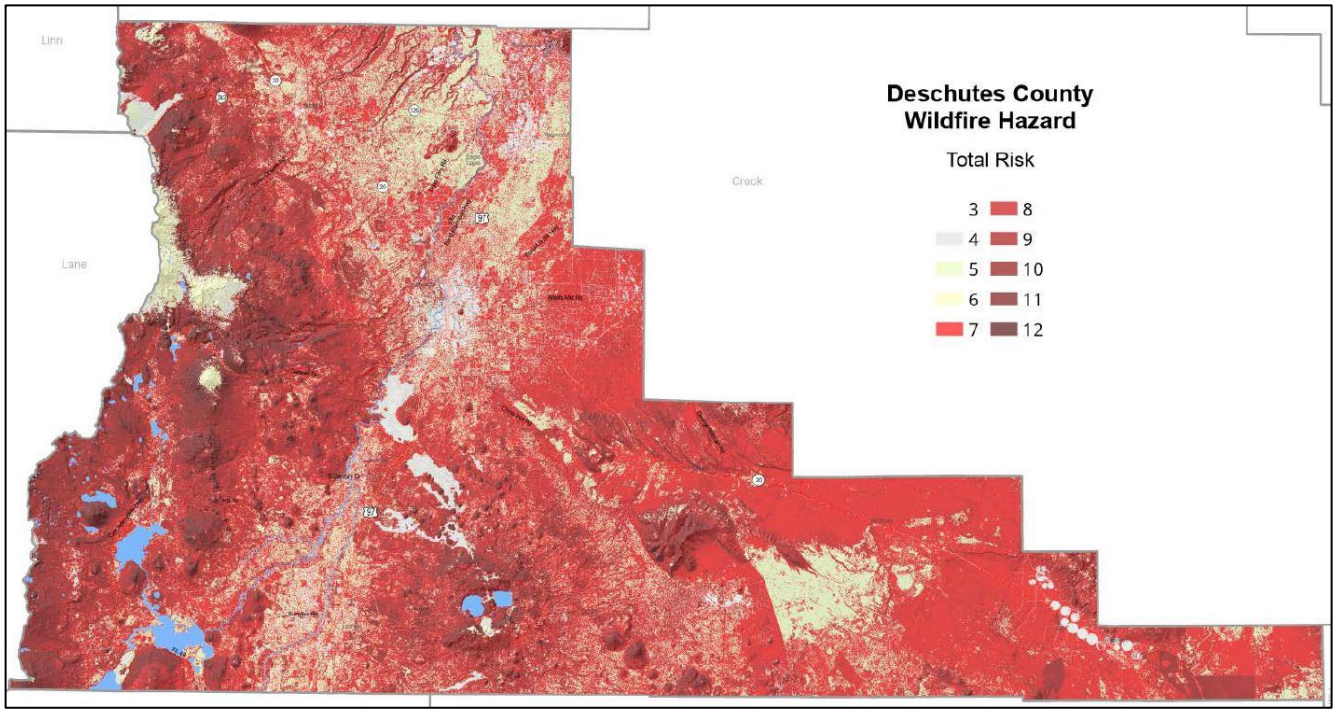


Figure 3 - Wildfire hazard throughout County according to prescribed ODF criteria.

[8] Landfire data was used for fuel distribution analysis.

[9] Figure 3 is also provided as Attachment I for easier readability.

ODF – GEOGRAPHIC AREA

OAR Chapter 629-044-0200 sets forth the fire hazard factors (above) while allowing jurisdictions to determine the "appropriate geographic areas and associated hazard values." The geographic area may be the entire jurisdiction or a smaller segment based on natural geographic features,[10] land features[11] or another landscape approach.[12] The OAR defines:

> "'Geographic Area' [as an] area which results from the partitioning of all or portions of a jurisdiction into smaller segments, based on the presence of differing values."

The WMAC considered seven (7) potential geographic areas based on landscape approaches as the basis for determining the WHZ. The hazard values depicted in Figure 3 could be structured to provide a hazard level for any number of landscape approaches. The Committee reviewed the following options to determine an appropriate landscape approach:

- School districts
- Fire districts
- Community Wildfire Protection Plan (CWPP) boundaries
- CWPP Sub-regions
- County boundary

In addition, members considered the appropriate methodology to establish values for each area, i.e., raw numbers or rounding. For example, 23 CWPP sub-regions have hazard values above seven (7), meaning they qualify as a WHZ. Alternatively, if values are rounded up from a half point (0.5) to the next full value, a total of 33 CWWP sub-regions would qualify as WHZs.

RECOMMENDATIONS

Table 4 lists the WMAC's votes on seven (7) landscape approaches. Voting options for each map included: green – support; yellow – unsure; red – do not support.

Table 4 – Votes on Seven Landscape Approaches

Map Type	Vote		
	Red	Yellow	Green
CWPP Sub- regions (rounded values)	**4**	**3**	**5**
CWPP Sub-regions (raw values)	**3**	**4**	**5**

[10] The OAR defines "Natural Geographic Features" as "streams, ridge lines and other features naturally occurring."

[11] The OAR defines "Land Features" as "roads, jurisdictional boundaries and other features created by human activity."

[12] The OAR does not define "landscape approach".

Fire District Boundaries (rounded values)	**5**	**3**	**4**
Fire District Boundaries (raw values)	**5**	**3**	**4**
CWPP (with no Sub-regions)	**11**	**0**	**1**
School District Boundaries	**12**	**0**	**0**
Status-quo (entire County as WHZ)	**5**	**2**	**5**

The top three (3) landscape approaches were:

1. Status quo - entire County (7.27 hazard value)
2. Community Wildfire Protection Plan Sub-regions – raw values
3. Community Wildfire Protection Plan Sub-regions – rounded values

The WMAC voted a second time on the top three (3) landscape approaches. Table 5 summarizes the second round of votes.

Table 5 – Votes for Top 3 Draft WHZ Maps

Map Type	Vote		
	Red	Yellow	Green
CWPP Sub-regions (rounded values)	**7**	**3**	**1**
CWPP Sub-regions (raw values)	**5**	**1**	**5**
Status-quo (entire County as WHZ)	**4**	**1**	**6**

Keeping the status quo for the WHZ landscape approach, where the entire County is considered a wildfire hazard, received the most votes (Attachment B), followed by the CWPP Sub-regions (raw values) approach (Attachment C). The CWPP Sub-regions (rounded values) approach received the least amount of support (Attachment D).

WMAC members supporting the status quo said:

- It best depicts the hazard threat across the entire county;
- The other approaches are based on arbitrary standards (no reasonable basis to exempt certain areas, such as the CWPP sub-regions); and
- Concern of losing one of the only wildfire mitigation code requirements in effect today, i.e., prohibition of shake roofs.[13]

[13] Deschutes County's existing prohibition of wood shake roofs may be compromised if the WHZ is amended to exempt some areas. The ordinance prohibiting shake roofs (2001-024) is tied to the WHZ.

IV. ORSC R327 – Wildfire Hazard Mitigation

BACKGROUND

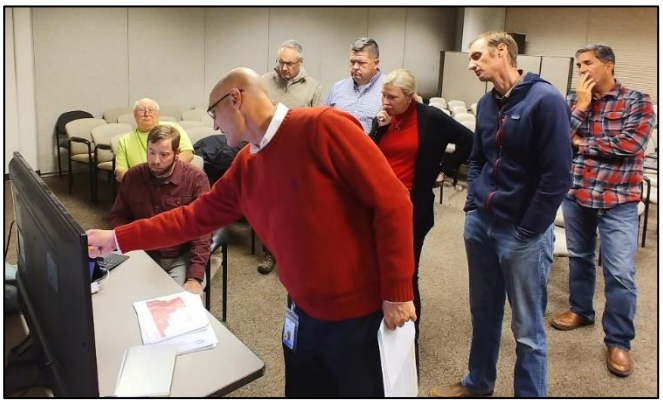


Figure 4 - Staff utilizes live GIS to facilitate a discussion.

The BCD amended ORSC R327 – Wildfire Hazard Mitigation in January 2019 (Attachment E). R327 is optional for local governments to implement; it is not mandatory. The amendments require new construction in a WHZ to use certain types of materials and incorporate specific requirements for roofing, ventilation, exterior wall coverings, overhanging projections, decking surfaces, and glazing in windows/skylights and doors.[14] Political subdivisions within Deschutes County's building jurisdiction, such as the cities of La Pine and Sisters, may locally adopt or opt-out of such rules independently from the County. The WMAC recommendations on R327 were focused on the unincorporated areas of the County.

A primary objective of the WMAC was to review and recommend whether and how to apply R327 construction standards in areas under Deschutes County's building jurisdiction. R327 has several built-in exceptions and allows local control to implement wildfire hardening standards. For example, subdivisions more than 50-percent built out are automatically exempted from the requirements. Further, a jurisdiction can exempt parcels over/under a certain size or limit the new standards to specific zoning districts.

COST IMPACTS

WMAC members discussed cost impacts to implement R327 throughout the process. Project Management Team members and WMAC members shared information on the potential costs of requiring specific construction materials and hardening standards. Comparing costs from a standard single-family residential dwelling to one built to comply with the R327 standards ranged from $0 to $15,000.[15] The WMAC recognized that building a single-family residence to R327 standards would likely increase construction costs, but did not agree on how much it would cost. The WMAC was split in determining whether added construction costs outweighed the increase in public safety, which resulted in two recommendations on the WHZ and R327 implementation standards.

[14] In addition to the actual ORSC R327 code, a written summary of the requirements was provided to the WMAC (Attachment H).

[15] Cost estimates from BCD, Headwater Economics, County staff and WMAC members can be found on the project website: www.deschutes.org/wildfirecommittee.

RECOMMENDATIONS

WMAC members separated into two groups based on the preferred WHZ recommendation (the CWPP Sub-regions or the entire County) to recommend exceptions to the R327 standards:[16]

1. The CWPP Sub-region WHZ group recommended R327:

    a. Apply to newly created lots in the Rural Residential (RR-10), Forest Use 1 and Forest Use 2 zones. Attachment F depicts the area where newly created lots would be subject to R327.

    b. Exclude all existing lots County wide, and new lots in the zones not mentioned above.[17]

2. The entire County WHZ group recommended applying R327 to all existing and new lots under the County's building jurisdiction.[18] Attachment G depicts the existing and new lots subject to R327.

[16] For information regarding the decisions and factors WMAC members considered in developing the recommendations, see the December 16, 2019 meeting materials: https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/11797/wmac_meeting_packet_2019-12-02.pdf

[17] Initially, the group considered implementing R327 to a certain buffer around a UGB, as well as a set distance from unincorporated communities. However, the group decided not to pursue this option due to the shortcomings and complications of such an approach because UGBs are expected to expand.

[18] This group explained that using an arbitrary distance from a UGB would be meaningless. There was some consideration of exempting the requirements in the County's resource zones (Exclusive Farm Use and Forest Use), but the group determined such areas are also hazardous.

V. LAND USE

BACKGROUND

Deschutes County utilizes several regulatory programs to address wildfire hazards. The following list summarizes the County's current approach to wildfire mitigation:

- Consistent with State law, the Forest Use 1 and 2 zones require compliance with defensible space, access, and water supply standards (DCC 18.36.070 – 18.36.080 / 18.40.070 – 18.40.080).[19]
- Destination resorts are required to implement a wildfire management plan to ensure safe evacuations and that hazards are minimized 18.113.070(H).[20]
- The Board declared Deschutes County a WHZ in its entirety in 2001, consistent with ORS 93.270(4) in order to require a minimum Class C roofing and to prohibit the use of untreated wood roof coverings (Ordinance 2001-024).[21]
- Defensible space requirements for unprotected lands were adopted in 2011, in DCC Chapter 8.21 (Ordinance 2011-011).[22]
- In October 2016, conditional use permit criteria were applied to Tree Farm, LLC, a cluster development, requiring wildfire mitigation standards including defensible space and residential sprinklers (file nos. 247-14-000242-CU / 243-TU / *et al*).[23]
- The Westside Transect Zone, approved in January 2019, requires all land divisions to submit a master plan that contains a wildfire mitigation plan (file nos. 247-18-000612-ZC / 613-PA / 614-TA).[24]

In 2015, CDD contracted with the University of Oregon's Community Service Center (CSC) to conduct a review of the Deschutes County Code consistent with direction in Comprehensive Plan Section 3.5 (Rural Growth/Natural Hazards). The review focused on improving development regulations that address wildfire and flooding. The intent of the work was to help the County

[19] https://weblink.deschutes.org/Public/DocView.aspx?id=4021&dbid=0&repo=LFPUB
[20] https://weblink.deschutes.org/Public/DocView.aspx?id=4006&dbid=0&repo=LFPUB
[21] Ordinance 2001-024 is available here: https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/12190/ordinance_2001-024.pdf
[22] Ordinance 2011-011 is available here: https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/12190/ordinance_2011-011.pdf
[23] The Board's decision on the Tree Farm proposal is available here: https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/12190/boc_approval_tree_farm_1.pdf
[24] The Board's decision on the Westside Transect Zone is available here: https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/12190/2019-40-ordinance_no._2019-001_recorded_1222019.pdf

understand the implications of land use regulations on development in areas affected by natural hazards and to develop a set of programmatic options on how to best manage those impacts. The project focused on researching model ordinances and best management practices for mitigating the effects of wildfire and flood on development.[25] The final report highlighted potential changes to update Deschutes County's zoning code.[26]

Best practices have evolved since the report's completion in 2015. The WMAC considered updated best practices from a variety of sources, including jurisdictions across the West, to supplement the 2015 CSC report.

KEY ISSUES

The WMAC evaluated establishing new or strengthening existing land use code provisions pertaining to:

- Defensible space
- Steep slopes
- Access
- Water supply
- Signs / property addresses
- Gate requirements

Figure 5 - Staff explains implementation options.

The WMAC determined that several options were adequately addressed in the Oregon Fire Code and/or the ORSC, i.e., water supply, signs / property address, gate requirements.

Additionally, the WMAC considered potential costs associated with implementing each land use approach. For example, defensible space treatment costs vary widely ($125 - $3,000 an acre) based on density and type of vegetation, and whether or not annual maintenance is regularly completed. Cost estimates for other possible land use regulations were either not available or not discussed in detail.

[25] DCC was amended in 2019 in part to implement recommendations pertaining to flood hazards (reference file nos. 247-19-000530-TA / 532-TA / 533-PA).

[26] The CSC Deschutes County Natural Hazards Code and Program Review is available online at www.deschutes.org/wildfirecommittee.

RECOMMENDATIONS

A majority of the WMAC recommended the following land use regulations to the Board for further consideration.

Defensible Space

Expand defensible space requirements beyond unprotected lands as currently required by DCC 8.21 to all lands throughout the County, with some exceptions. Further details of a potential defensible space regulation are summarized below:

- Standards should be applied to all new and existing structures.[27]
- Vacant properties less than five (5) acres in size should be subject to defensible space requirements.[28]
- Fuel break requirements should apply to driveways greater than 150 feet in length.

The WMAC also recommended the County educate (not require) property owners to use non-combustible fencing attachments to structures and locate other combustible items such as firewood, building materials, furniture, etc. away from residential structures.

Steep Slopes

A majority of WMAC members recommended an ordinance that would require building setbacks from steep slopes and limit development on slopes in excess of a specific grade.[29] Details should be determined at a later date with feedback from the public and fire representatives.

Access

The WMAC unanimously supported requiring wildfire-safety specific access requirements to all new developments. Such standards should include specific surface(s) capable of supporting a minimum gross vehicle weight, minimum widths, maximum grade, road clearance, and turnaround options. The WMAC **did not** support requiring access standards to existing developments, but did support the County encouraging such standards as best practices.

[27] The WMAC supported the concept of an implementation grace period and recommended the County explore incentives and/or an outreach program.

[28] There was less support for requiring defensible space to all vacant lots, regardless of size (5 in favor – 3 unsure – 2 opposed).

[29] Four (4) members supported such a standard throughout the County, three (3) opposed, and two (2) voted for such a standard to be advisory only.

IMPLEMENTATION

The WMAC discussed the following implementation strategies for the three (3) recommended land use approaches summarized above:

- Regulations should be easily understood by the average property owner.
- Application costs for County review should be kept to a minimum.
- Property owners should not be required to hire a professional, e.g., land use consultant, attorney, engineer, to complete and/or submit an application demonstrating compliance with the standards. In addition, hand-drawn site plans should be acceptable.
- Regulations should have an inspection component to ensure compliance.
- Establish a process that can only be appealable by the applicant and no other parties.
- Seek education and voluntary compliance prior to enforcement penalties.
- Seek grants and other financial aid to help property owners with limited incomes comply with the regulations.

Figure 6 - WMAC group photo. (Committee member Brian Braddock not pictured.)

ATTACHMENTS

ATTACHMENT A

Summary of Wildfire Hazard Zones

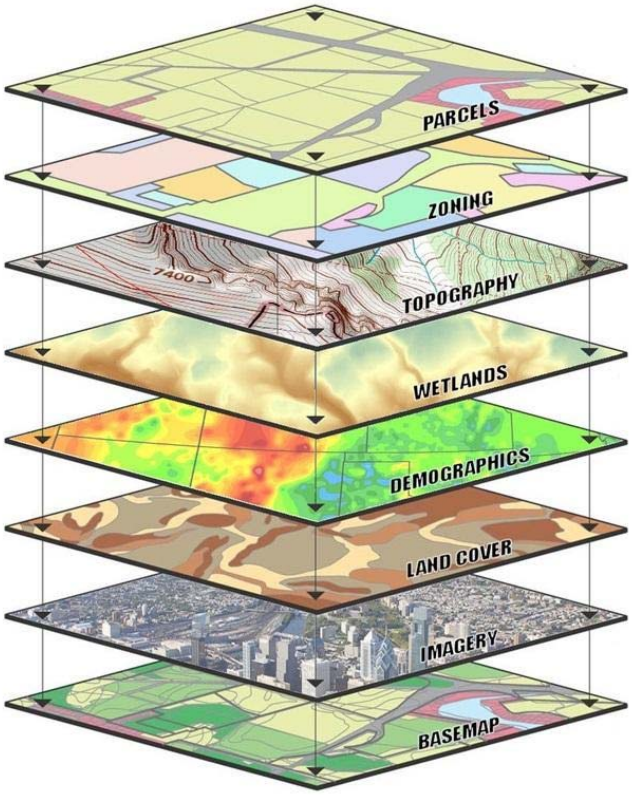
Based on OAR 629-044-0200 to 629-044-0260 (1996)

1) Overview

Determination of wildfire hazard zones are based on four criteria. Each of the four factors is ranked 0-3 with 3 being the most hazardous value. **Wildfire hazard zones are those areas where the sum of all the hazards totals 7 or more.** The four factors are:

- Fire weather hazard
- Topography hazard
- Vegetative fuel hazard
- Fuel distribution hazard

We can use a Geographic Information System (GIS) to collect this data into layers, assign the related points to each factor, display it at a variety of scales and summarize it into an overall hazard score. Deschutes County has done preliminary work to acquire and summarize this data in GIS. This data can be displayed in committee meetings. Before we look at the actual data and how it could be summarized the committee should first have an understanding of each factor and how they interact to create potential wildfire hazard zones.



2) Wildfire Hazard Zones 629-044-0220

(1) For the convenience of administration, when practical, a jurisdiction may utilize nearby natural geographic features or land features to delineate the boundaries of Wildfire Hazard Zones.

(2) It is not the intent of OAR 629, division 044 that Wildfire Hazard Zones be determined on a tax lot or an ownership specific basis, but rather that a landscape approach be used.

Decision point: The committee will be asked to seek consensus or provide input on what is the appropriate scale (using a landscape approach) and what geographic features or land features should be used, considering the administration of the associated rules the map will be related to (e.g. do not split tax lots, neighborhoods).

3) Fire Weather Hazard Factor 62-044-0230

Deschutes County is assigned one factor, 3, for the entire County. This is assigned by statute. A factor of 3 is the highest risk level for weather hazard. For comparison, Columbia County, northwest of Portland, is categorized as a 2 for weather hazard.

4) Topography Hazard Factor 629-044-0240

Slopes vary throughout the County, USGS topography maps are used to assign points based on the steepness of slopes.

- *Slopes 00–03% = 0*
- *Slopes 03–12% = 1*
- *Slopes 12–20% = 2*
- *Slopes 20+% = 3*

5) Natural Vegetative Fuel Hazard Factor 629-044-0250

Fuel types vary throughout the County. Points are assigned based on the fuel type(s) present, as described beginning on the next page.

The reference for establishing the natural vegetative fuel hazard factor shall be the "Aids to Determining Fuel Models For Estimating Fire Behavior" published by the Forest Service, USDA Intermountain Forest and Range Experiment Station in 1982 as General Technical Report INT-122.

The County has acquired the latest Landfire™ data for the fuel models described in INT-122. This data is available at a 30 meter resolution, meaning there is a fuel model estimated for every 30 meter square across the entire county. This data can be summarized over a larger geographic area. This is likely the most consistent and objective data available for use and can be used to inform this hazard factor.

"LANDFIRE (LF) delivers vegetation, fuel, disturbance, and fire regimes geospatial data products for the entire nation. Methods are based on peer-reviewed science from multiple fields. LF products are consistent, comprehensive, and standardized, resulting in multiple applications to fire, fuel, and natural resources." Link to metadata

ATTACHMENT A

<u>Decision point:</u> The committee will be asked to seek consensus or provide input on if this data set should be used. If so, how should it be summarized consistent with the decision called for under section 2? If not, what alternate data should be used?

Points are assigned by fuel type. Fuel hazards are categorized generally into grass, shrub, and timber and further divided into fuel types. Of the 13 total fuel types described in INT-122, OAR 629-044-0250 considers fuel types 1-6 and 8-10. Fuel type 7 is not present in Oregon and fuels types 11-13 are slash fuel types.

- *Little or no natural vegetative fuels present* – ***0 points***

- *Grass. Very little shrub or timber is present, generally less than one-third of the area. Main fuel is generally less than two feet in height. Fires are surface fires that move rapidly through cured grass and associated material. (Fuel model 1)* — ***3 points***

Photo 1. Western annual grasses such as cheatgrass, medusahead ryegrass, and fescues.

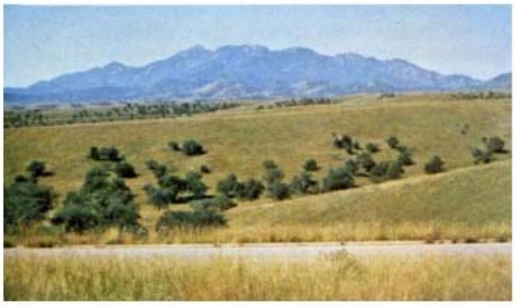


Photo 2. Live oak savanna of the South-west on the Coronado National Forest.

Photo 3. Open pine—grasslands on the Lewis and Clark National Forest.

- *Grass. Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area. Main fuel is generally less that two feet in height. Fires are surface fires that spread primarily through the fine herbaceous fuels, either curing or dead. (Fuel model 2)* ***— 3 points****.*

Photo 4. Open ponderosa pine stand with annual grass understory.

Photo 5. Scattered sage within grasslands on the Payette National Forest.

- *Grass. Beach grasses, prairie grasses, marshland grasses and wild or cultivated grains that have not been harvested. Main fuel is generally less than four feet in height, but considerable variation may occur. Fires are the most intense of the grass group and display high rates of spread under the influence of wind. (Fuel model 3)* ***— 3points.***

Photo 7. Meadow foxtail in Oregon prairie and meadowland.

- *Shrubs. Stands of mature shrubs have foliage known for its flammability, such as gorse, manzanita and snowberry. Main fuel is generally six feet or more tall. Fires burn with high intensity and spread very rapidly. (Fuel model 4) — **3 points**.*

Photo 10. Chaparral composed of manzanita and chamise near the Inaja Fire Memorial, Calif.

- *Shrubs. Young shrubs with little dead material and having foliage not known for its flammability, such as laurel, vine maple and alders. Main fuel is generally three feet tall or less. Fires are generally carried in the surface fuels and are generally not very intense. (Fuel model 5) — **1 point**.*

Photo 13. Green, low shrub fields within timber stands or without overstory are typical. Example is Douglas-fir–snowberry habitat type.

Photo 14. Regeneration shrublands after fire or other disturbances have a large green fuel component, Sundance Fire, Pack River Area, Idaho.

- *Shrubs. Older shrubs with foliage having a flammability less than fuel model 4, but more than fuel model 5. Widely spaced juniper and sagebrush are represented by this group. Main fuel is generally less than six feet in height. Fires will drop to the ground at low wind speeds and in stand openings. (Fuel model 6) —* ***2 points.***

Photo 15. Pinion-juniper with sagebrush near Ely, Nev.; understory mainly sage with some grass intermixed.

- *Timber. Areas of timber with little undergrowth and small amounts of litter buildup. Healthy stands of lodgepole pine, spruce, fir and larch are represented by this group. Fires will burn only under severe weather conditions involving high temperatures, low humidities and high winds. (Fuel model 8) —* ***1 point.***

Photo 22. Surface litter fuels in western hemlock stands of Oregon and Washington.

Photo 23. Understory of inland Douglas-fir has little fuel here to add to dead-down litter load.

Photo 24. Closed stand of birch-aspen with leaf litter compacted.

- *Timber. Areas of timber with more surface litter than fuel model 8. Closed stands of healthy ponderosa pine and white oak are in this fuel model. Spread of fires will be aided by rolling or blowing leaves. (Fuel model 9) — **2 points.***

Photo 27. Long-needle forest floor litter in ponderosa pine stand near Alberton, Mont.

- *Timber. Areas of timber with heavy buildups of ground litter caused by overmaturity or natural events of wind throw or insect infestations. Fires are difficult to control due to large extent of ground fuel. (Fuel model 10) — **3 points**.*

Photo 29. Mixed conifer stand with dead-down woody fuels.

Photo 30. Spruce habitat type where succession or natural disturbance can produce a heavy downed fuel load.

6) Natural Vegetative Fuel Distribution Hazard Factor 629-044-0260

Fuel distribution varies throughout the County. Points are assigned based on the fuel distribution as a percent of cover as follows.

- 0 to 10% of the area = 0
- 10 to 25% of the area = 1
- 25 to 40% of the area = 2
- 40 to 100% of the area = 3

The County has acquired the latest Landfire™ data for fuel distribution. This data is available at a 30 meter resolution, meaning there is a fuel distribution estimated for every 30 meter square across the entire county. This data can be summarized over a larger geographic area. This is likely the most consistent and objective data available for use.

"LANDFIRE (LF) delivers vegetation, fuel, disturbance, and fire regimes geospatial data products for the entire nation. Methods are based on peer-reviewed science from multiple fields. LF products are consistent, comprehensive, and standardized, resulting in multiple applications to fire, fuel, and natural resources." Link to metadata

Decision point: The committee will be asked to seek consensus or provide input on if this data set should be used? If so, how should it be summarized consistent with the decision called for under section 2? If not, what alternate data should be used?

ATTACHMENT B

1" = 6.5 Mi

Wildfire Hazard Zone Option - Entire County (status quo)

Proposed Wildfire Hazard Zone

* As proposed, there would be no change to the county's Wildfire Hazard Zone.
See Ordinance 2001-024.

Jefferson

Wheeler

Linn

Lane

Crook

Klamath

Lake

Harney

Black Butte Ranch

Terrebonne

Sisters

Redmond

Eagle Crest

Three Creeks Rd

Cline Falls Rd

Old Bend-Redmond Hwy

Tumalo

Powell Butte Hwy

Alfalfa Mkt Rd

Bend

Century Dr

China Hat Rd

George Millican Rd

Millican

Sunriver

S Century Dr

FS 40

Cascade Lakes Hwy

Burgess Rd

La Pine

FS 44

Brothers

Hampton

20 242 126 97

DISCLAIMER:
The information on this map was derived from digital databases on Deschutes County's G.I.S. Care was taken in the creation of this map, but it is provided "as is". Deschutes County cannot accept any responsibility for errors, omissions, or positional accuracy in the digital data or the underlying records. There are no warranties, express or implied, including the warranty of merchantability or fitness for a particular purpose, accompanying this product. However, notification of any errors will be appreciated.

December 31, 2019
File: N:\Custom\County\CDD\WildfireRiskAssessment

ATTACHMENT C

1" = 6.5 Mi

Wildfire Hazard Zone Option - CWPP Sub-regions (raw values)

Weighted Average Risk

- 0.00 - 3.69
- 3.70 - 5.49
- 5.50 - 5.99
- 6.00 - 6.49
- 6.50 - 6.99
- 7.00 - 7.49
- 7.50 - 7.99
- 8.00 - 8.49
- 8.50 - 9.10

Jefferson
Wheeler
Linn
Crook
Lane
Klamath
Lake
Harney

8.39 7.68 6.92 6.62 5.97 6.48
Black Butte Ranch
Terrebonne
Sisters
5.25
Redmond
5.61 5.44
6.26
Eagle Crest
5.15 4.94
6.4
8.3
Three Creeks Rd
Cline Falls Rd
6.52
6.02
8.39
6.5
Old Bend-Redmond Hwy
Powell Butte Hwy
Tumalo
7.84
Bend
5.43
6.22
6.85
Alfalfa Mkt Rd
3.69
9.1
7.27
Century Dr
6.78
6.6
China Hat Rd
George Millican Rd
7.27
7.01
Sunriver
Millican
7.96
S Century Dr
7.28
FS 40
7.18
7.51
Brothers
Cascade Lakes Hwy
7.17
6.82
6.54
7.12
6.4
5.89
7.27
7.19
Burgess Rd
7.44
7.16
7.27
7.96
La Pine
6.11
5.91
Hampton
FS 44
8.16
6.75
7.1

May 15, 2019
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ATTACHMENT D

1" = 6.5 Mi

Wildfire Hazard Zone Option - CWPP Sub-regions (rounded values)

Weighted Average Risk

4	7
5	8
6	9

Jefferson

Wheeler

Linn

Crook

Lane

Klamath

Lake

Harney

Black Butte Ranch

Sisters

Terrebonne

Redmond

Eagle Crest

Cline Falls Rd

Old Bend-Redmond Hwy

Three Creeks Rd

Tumalo

Powell Butte Hwy

Bend

Alfalfa Mkt Rd

Century Dr

China Hat Rd

George Millican Rd

Millican

Sunriver

S Century Dr

FS 40

Cascade Lakes Hwy

Burgess Rd

La Pine

FS 44

Brothers

Hampton

20 242 126 97

May 15, 2019

File: N:\Custom\County\CDD\WildfireRiskAssessment

SECTION R327
WILDFIRE HAZARD MITIGATION

R327.1 Purpose. The purpose of this section is to provide minimum standards for dwellings and their accessory structures located in or adjacent to vegetated areas subject to wildfires, to reduce or eliminate hazards presented by such fires.

R327.2 Scope. The provisions of this section shall apply to all dwellings required to be protected against wildfire by a jurisdiction which has adopted wildfire zoning regulations. The additional provisions of Section R327.4 shall apply when a local *municipality* has adopted a local ordinance specifically recognizing Section R327.4 and consistent with Sections R327.4 through R327.4.8.

R327.3 Determination. ~~**Wildfire hazard zone.** A wild fire hazard zone is an area legally determined by a jurisdiction to have special hazards caused by a combination of combustible natural fuels, topography and climatic conditions that result in a significant hazard of catastrophic fire over relatively long periods each year.~~ Wildfire hazard zones shall be determined using criteria established by the Oregon Department of Forestry.

R327.3.1 Wildfire hazard zone requirements. Dwellings and their accessory structures shall be protected against wildfire by the following requirement in addition to other requirements of this code. The provisions of Section R327.4 apply only to qualifying lots identified in Section R327.4.1.

Exception: Nonhabitable detached *accessory structures,* with an area of not greater than 400 square feet, located at least 50 feet from all other structures on the *lot*.

R327.3.1.1 Roofing. Roofing shall be asphalt shingles in accordance with Section R905.2, slate shingles in accordance with Section R905.6, metal roofing in accordance with Section R905.4, tile, clay or concrete shingles in accordance with Section R905.3 and other approved roofing which is deemed to be equivalent to a minimum Class C rated roof covering. Untreated wood shingle and shake roofs are not permitted when the construction site is in a wildfire hazard zone as determined by Section R327.3.

R327.3.1.2 Reroofing or repair of roofing of existing buildings. When 50 percent or more of the roof covering of any building is repaired or replaced within one year, the roof covering shall be made to comply with this section and attic ventilation shall be made to comply with this code. Ventilation openings shall be protected with corrosion-resistant wire mesh, not greater than $^1/_2$-inch (12.7 mm) or less than $^1/_8$-inch (3.2 mm) in any dimension.

R327.4 Scope of additional wildfire hazard mitigation requirements. The provisions of Section R327.4 shall apply to new dwellings and their *accessory structures* located in a wildfire hazard zone on a qualifying lot of record created on or after the effective date in the local adopting ordinance.

R327.4.1 Qualifying lots of record. Qualifying lots of record shall meet all the following:

1. Be located in a wildfire hazard zone as identified by the local *municipality* using criteria established by the Oregon Department of Forestry. The local *municipality* is not required to include all areas identified by the Oregon Department of Forestry as wildfire hazard zones. The zone shall be detailed in the local adopting ordinance.
2. The local *municipality* shall determine in the adopting ordinance whether qualifying lots of record shall consist of individual lots or whether qualifying lots must be part of a development that contains a minimum number of lots.
3. The local *municipality* shall make a determination that the lot of record is either located within the identified wildfire hazard zone as determined by the *jurisdiction* or that it is located outside of the wildfire hazard zone as determined by the jurisdiction. Notification shall be provided in conjunction with the land use approval under ORS 197.522.
4. Application:
   - 4.1 Lots created prior to the effective date of the local ordinance, that would otherwise qualify under the local adopting ordinance, are exempt from the requirements of the ordinance for a period of three years from the creation date of the land use approval under ORS 197.522.
   - 4.2 For a lot created after the effective date of the local ordinance that receives notification under this section, the determination in the notification shall be valid for three years from the date of the land use approval under ORS 197.522. At the expiration of the three years, a lot of record shall be re-evaluated under the current version of the adopting ordinance prior to the issuance of a building *permit*.

Infill exception: *Dwellings* or *accessory structures* constructed on a lot in a subdivision, do not need to comply with Section R327.4 when at least 50 percent of the lots in the subdivision have existing dwellings that were not constructed in accordance with Section R327.4.

Nothing in the code or adopting ordinance prevents a local *municipality* from waiving the requirements of Section R327.4 for any lot, property or *dwelling*, or the remodel, replacement or reconstruction of a *dwelling* within the *jurisdiction*.

The local *municipality* must include a process for resolving disputes related to the applicability of the local ordinance and this section.

R327.4.2 Definitions. The following words and terms shall, for purposes of Section R327.4, have the meanings shown herein. Refer to Chapter 2 for general definitions.

Heavy Timber. For the use in this section, *heavy timber* shall be sawn lumber or glue laminated wood with the smallest minimum nominal dimension of 4 inches (102 mm). *Heavy timber* walls or floors shall be sawn or glue-laminated planks splined, tongue- and-grove, or set close together and well spiked.

Ignition-Resistant Material. A type of building material that resists ignition or sustained flaming combustion sufficiently so as to reduce losses from wildland-urban interface conflagrations under worst-case weather and fuel conditions with *wildfire exposure* of burning embers and small flames. Such materials include any product designed for exterior exposure that, when tested in accordance with ASTM E84 or UL 723 for surface burning characteristics of building materials, extended to a 30-minute duration, exhibits a flame spread index of not more than 25, shows no evidence of significant progressive combustion, and whose flame front does not progress more than 10½ feet (3.2 m) beyond the centerline of the burner at any time during the test.

Noncombustible Material. Any material that in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat in accordance with ASTM E136.

Wildfire. Any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property, or resources.

Wildfire Exposure. One or a combination of circumstances exposing a structure to ignition, including radiant heat, convective heat, direct flame contact and burning embers being projected by a vegetation fire to a structure and its immediate environment.

R327.4.3 Roofing. Roofing shall be asphalt shingles in accordance with Section R905.2, slate shingles in accordance with Section R905.6, metal roofing in accordance with Section R905.4, tile, clay or concrete shingles in accordance with Section R905.3 or other *approved* roofing which is deemed to be equivalent to a minimum Class B rated roof assembly. Wood shingle and shake roofs are not permitted in a wildfire hazard zone.

Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be fire-blocked with *approved* materials, or have one layer of minimum 72 pound (32.4 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909 installed over the combustible decking.

Where valley flashing is installed, the flashing shall be not less than 0.019-inch (0.48 mm) No. 26 gage galvanized sheet corrosion-resistant metal installed over not less than one layer of minimum 72 pound (32.4 kg) mineral-surfaced non-perforated cap sheet complying with ASTM D3909 at least 36-inch-wide (914 mm) running the full length of the valley.

R327.4.3.1 Gutters. When required, roof gutters shall be constructed of *noncombustible materials* and be provided with a means to prevent accumulation of leaves and debris in the gutter.

R327.4.4 Ventilation. Where provided, the minimum net area of ventilation openings for enclosed attics, enclosed soffit spaces, enclosed rafter spaces, and underfloor spaces shall be in accordance with Sections R806 and R408.

All ventilation openings shall be covered with noncombustible corrosion-resistant metal wire mesh, vents designed to resist the intrusion of burning embers and flame, or other *approved* materials or devices.

Ventilation mesh and screening shall be a minimum of $^{1}/_{16}$-inch (1.6mm) and a maximum of $^{1}/_{8}$-inch (3.2mm) in any dimension.

R327.4.4.1 Eaves, soffits, and cornices. Ventilation openings shall not be installed on the underside of eaves, soffits, or cornices.

Exceptions:

1. The *building official* may *approve* special eave, soffit, or cornice vents that are manufactured to resist the intrusion of flame and burning embers.
2. Ventilation openings complying with the requirements of Section R327.4.4 may be installed on the underside of eaves, soffits, or cornices where the opening is located 12 feet or greater above *grade* or the surface below.

R327.4.5 Exterior walls. The *exterior wall covering* or wall assembly shall comply with one of the following requirements:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. *Heavy timber* assembly.
4. Log wall construction assembly.
5. Wall assemblies that have been tested in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in ASTM E2707, complying with the conditions of acceptance listed in Section R327.4.5.2.

Exception: Any of the following shall be deemed to meet the assembly performance criteria and intent of this section:

1. One layer of $^{5}/_{8}$-inch Type X exterior gypsum sheathing applied behind the *exterior wall covering* or cladding on the exterior side of the framing.
2. The exterior portion of a 1-hour fire resistive *exterior wall* assembly designed for exterior fire exposure including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.

R327.4.5.1 Extent of exterior wall covering. *Exterior wall coverings* shall extend from the top of the foundation to the roof, and terminate at 2 inch (50.8 mm) nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves or soffits, shall terminate at the underside of the enclosure.

R327.4.5.2 Conditions of acceptance. ASTM E2707 tests shall be conducted in triplicate and the conditions of acceptance below shall be met. If any one of the three replicates does not meet the conditions of acceptance, three additional tests shall be conducted. All additional tests shall meet the following conditions of acceptance:

1. Absence of flame penetration through the wall assembly at any time during the test.
2. Absence of evidence of glowing combustion on the interior surface of the assembly at the end of the 70-minute test.

R327.4.6 Overhanging projections. All exterior projections (exterior balconies, carports, decks, patio covers, porch ceilings, unenclosed roofs and floors, overhanging buildings and similar architectural appendages and projections) shall be protected as specified in this section.

R327.4.6.1 Enclosed roof eaves, soffits, and cornices. The exposed underside of rafter or truss eaves and enclosed soffits, where any portion of the framing is less than 12 feet above *grade* or similar surface below, shall be protected by one of the following:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. One layer of $^{5}/_{8}$-inch Type X exterior gypsum sheathing applied behind an exterior covering on the underside of the rafter tails, truss tails, or soffit.
4. The exterior portion of a 1-hour fire resistive *exterior wall* assembly applied to the underside of the rafter tails or soffit including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.
5. Soffit assemblies with an underside surface that meets the performance criteria in Section R327.4.6.5 when tested in accordance ASTM E2957.

Exceptions: The following materials do not require protection required by this section:

1. Eaves and soffits where all portions of the framing members are 12 feet or greater above *grade*, and 2-inch nominal eave fireblocking is provided between roof framing members from the wall top plate to the underside of the roof sheathing.
2. Gable end overhangs and roof assembly projections beyond an *exterior wall* other than at the lower end of the rafter tails.
3. Fascia and other architectural trim boards.

R327.4.6.2 Exterior patio and porch ceilings. The exposed underside of exterior patio and porch ceilings greater than 200 square feet in area and less than 12 feet above *grade* shall be protected by one of the following:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. One layer of $^{5}/_{8}$-inch Type X exterior gypsum sheathing applied behind the exterior covering on the underside of the ceiling.
4. The exterior portion of a 1-hour fire resistive *exterior wall* assembly applied to the underside of the ceiling assembly including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.
5. Porch ceiling assemblies with a horizontal underside that meet the performance criteria in Section R327.4.6.5 when tested in accordance with the test procedures set forth in ASTM E2957.

Exception: Architectural trim boards.

R327.4.6.3 Floor projections. The exposed underside of cantilevered floor projections less than 12 feet above *grade* or the surface below shall be protected by one of the following:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. One layer of $^{5}/_{8}$-inch Type X exterior gypsum sheathing applied behind an exterior covering on the underside of the floor projection.
4. The exterior portion of a 1-hour fire resistive *exterior wall* assembly applied to the underside of the floor projection, including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.
5. An assembly that meets the performance criteria in Section R327.4.6.5 when tested in accordance with ASTM E2957.

Exception: Architectural trim boards.

R327.4.6.4 Underfloor protection. The underfloor area of elevated structures shall be enclosed to *grade* in accordance with the requirements of Section R327.4, or the underside of the exposed underfloor shall be protected by one of the following:

1. *Noncombustible material*.
2. *Ignition-resistant* material.
3. One layer of $^{5}/_{8}$-inch Type X exterior gypsum sheathing applied behind an exterior covering on the underside of the floor assembly.
4. The exterior portion of a 1-hour fire resistive *exterior wall* assembly applied to the underside of the floor, including assemblies using exterior gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.
5. An assembly that meets the performance criteria in Section R327.4.6.5 when tested in accordance with ASTM E2957.

Exception: *Heavy timber* structural columns and beams do not require protection.

R327.4.6.5 Conditions of acceptance. ASTM E2957 tests shall be conducted in triplicate, and the conditions of acceptance below shall be met. If any one of the three replicates does not meet the conditions of acceptance, three additional tests shall be conducted. All additional tests shall meet the following conditions of acceptance:

1. Absence of flame penetration of the eaves or horizontal projection assembly at any time during the test.
2. Absence of structural failure of the eaves or horizontal projection subassembly at any time during the test.
3. Absence of sustained combustion of any kind at the conclusion of the 40 minute test.

R327.4.7 Walking surfaces. Deck, porch and balcony walking surfaces located greater than 30 inches and less than 12 feet above *grade* or the surface below shall be constructed with one of the materials listed below.

Exception: Walking surfaces of decks, porches and balconies not greater than 200 square feet in area, where the surface is constructed of nominal 2-inch lumber.

1. Materials that comply with the performance requirements of Section R327.4.7.1 when tested in accordance with both ASTM E2632 and ASTM E2726.
2. *Ignition resistant* materials that comply with the performance requirements of Section R327.4.2 when tested in accordance with ASTM E84 or UL 723.
3. Exterior fire retardant treated wood.
4. *Noncombustible material*.
5. Any material that complies with the performance requirements of Section R327.4.7.2 where tested in accordance with ASTM E2632, where the *exterior wall covering* of the structure is noncombustible or *ignition-resistant* material.
6. Any material that complies with the performance requirements of ASTM E2632, where the *exterior wall covering* of the structure is noncombustible or *ignition-resistant* material.

   Exception: *Wall covering* material may be of any material that otherwise complies with this chapter when the decking surface material complies with the performance requirements ASTM E84 with a Class B flame spread rating.

R327.4.7.1 Requirements for R327.4.7, item 1. The material shall be tested in accordance with ASTM E2632 and ASTM E2726, and shall comply with the conditions of acceptance below. The material shall also comply with the performance requirements of Section R327.4.2 for ignition resistant material when tested in accordance with ASTM E84 or UL 723.

R327.4.7.1.1 Conditions of acceptance. ASTM E2632 tests shall be conducted in triplicate and the conditions of acceptance below shall be met. If any one of the three replicates does not meet the conditions of acceptance, three additional tests shall be conducted. All additional tests shall meet the following conditions of acceptance:

1. Peak heat release rate of less than or equal to 25 kW/ft^2 (269 kW/m^2)
2. Absence of sustained flaming or glowing combustion of any kind at the conclusion of the 40-minute observation period.
3. Absence of falling particles that are still burning when reaching the burner or floor.

R327.4.7.1.2 Conditions of acceptance. ASTM E2762 tests shall be conducted in triplicate and the conditions of acceptance below shall be met. If any one of the three replicates does not meet the conditions of acceptance, three additional tests shall be conducted. All of the additional tests shall meet the following conditions of acceptance:

1. Absence of sustained flaming or glowing combustion of any kind at the conclusion of the 40-minute observation period.
2. Absence of falling particles that are still burning when reaching the burner or floor.

R327.4.7.2 Requirements for R327.4.7, item 6. The material shall be tested in accordance with ASTM E2632 and shall comply with the following condition of acceptance. The test shall be conducted in triplicate and the peak heat release rate shall be less than or equal to 25 kW/ft^2 (269 kW/m^2). If any one of the three replicates does not meet the conditions of acceptance, three additional tests shall be conducted. All of the additional tests shall meet the conditions of acceptance.

R327.4.8 Glazing. Exterior windows, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block, or have a fire resistance rating of not less than 20 minutes.

ATTACHMENT F

1" = 6.5 Mi

Recommended R327 Implementation Map

Implementation Area (F1, F2 & RR10 Zone)

* Would only apply to replacement dwellings or dwellings permitted **on newly created parcels**.
Excludes subdivisions more than 50% built out.

Jefferson

Wheeler

Linn

Lane

Crook

Deschutes

Klamath

Lake

Harney

Black Butte Ranch

Sisters

Terrebonne

Redmond

Eagle Crest

Cline Falls Rd

Old Bend-Redmond Hwy

Three Creeks Rd

Tumalo

Powell Butte Hwy

Alfalfa Mkt Rd

Bend

Century Dr

China Hat Rd

George Millican Rd

Millican

Sunriver

S Century Dr

FS 40

Cascade Lakes Hwy

Brothers

Burgess Rd

La Pine

Hampton

FS 44

20

242

126

97

December 31, 2019
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ATTACHMENT G

1" = 6.5 Mi

Recommended R327 Implementation Map

Implementation Area

* Excludes subdivisions more than 50% built out.

Jefferson

Wheeler

Linn

Lane

Crook

Deschutes

Klamath

Lake

Harney

Black Butte Ranch

Terrebonne

Sisters

Redmond

Eagle Crest

Three Creeks Rd

Cline Falls Rd

Old Bend-Redmond Hwy

Tumalo

Powell Butte Hwy

Bend

Alfalfa Mkt Rd

Century Dr

China Hat Rd

George Millican Rd

Millican

Sunriver

S Century Dr

FS 40

Cascade Lakes Hwy

Brothers

Burgess Rd

La Pine

Hampton

FS 44

20

242

126

97

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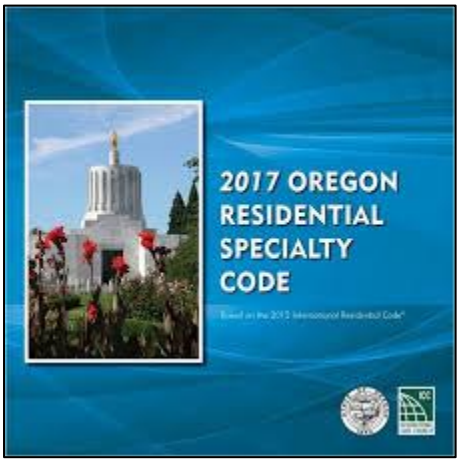
ATTACHMENT H

Summary of Oregon Residential Specialty Code R327.4-Wildfire Hazard Mitigation

1) Introduction

In 2018, the Oregon Building Codes Division (BCD) engaged stakeholders from the fire service, local government, and homebuilders to develop wildfire mitigation code standards that have a consistent and predictable application. BCD amended the Oregon Residential Specialty Code (ORSC) section R327 (Wildfire Hazard Mitigation) in January 2019 and made it available for local adoption.



2) Scope

If adopted by a local jurisdiction, the new provisions of ORSC R327.4 shall apply to new dwellings and their accessory structures, with some exceptions, located in a wildfire hazard zone on a *qualifying lot of record*.

What is a qualifying lot of record?

R327.4.1 requires qualifying lots of record to meet all of the following:

1. Be located in a wildfire hazard zone as identified using Oregon Department of Forestry (ODF) criteria (OAR 629-044-0200 through OAR 629-044-0260).
2. The local municipality shall determine if qualifying lots of record consist of individual lots or lots that must be part of a development that contain a minimum number of lots.
3. The local municipality shall determine whether a lot of record is either located within or outside of a wildfire hazard zone. Notification of the finding shall be provided in conjunction with a land use approval.
4. Lots created prior to the effective date of the local ordinance are exempt from the requirements for a period of 3 years from the date of the land use approval.
5. Requirements for lots created after the effective date of the local ordinance shall be valid for 3 years. After 3 years, the lot shall be re-evaluated under the current provisions of the adopting ordinance prior to issuing a building permit.

Exceptions: Dwellings and accessory structures constructed in a subdivision, do not need to comply with R327.4 when at least 50% of the lots have existing dwellings that were not constructed in accordance with R327.4.

The municipality may waive the requirements of R327.4 for any lot, property or dwelling, or the remodel, replacement or reconstruction of a dwelling within the jurisdiction.

The municipality must include a process for resolving of disputes related to the applicability of R327.4.

ATTACHMENT H

3) Overview of code requirements

Adoption of ORSC section R327.4 will provide additional wildfire hazard mitigation provisions that affect the following construction materials and/or methods of construction:

(A) Roofing/Gutters R327.4.3

- Roofing shall be asphalt shingles, slate shingles, metal roofing, tile, clay, or concrete shingles or other approved roofing which is equivalent to a minimum Class B rated roof assembly.
  WOOD SHINGLE AND SHAKE ROOFS ARE NOT PERMITTED.
- Roof gutters, when required, shall be constructed of non-combustible materials and be provided with a means to prevent accumulation of leaves and debris in the gutter.

ATTACHMENT H

(B) Ventilation R327.4.4

- Openings shall be covered with non-combustible corrosion resistant metal wire mesh (openings 1/16”-1/8”) or approved alternate.
- Ventilation openings shall not be installed on the underside of eaves, soffits, or cornices.

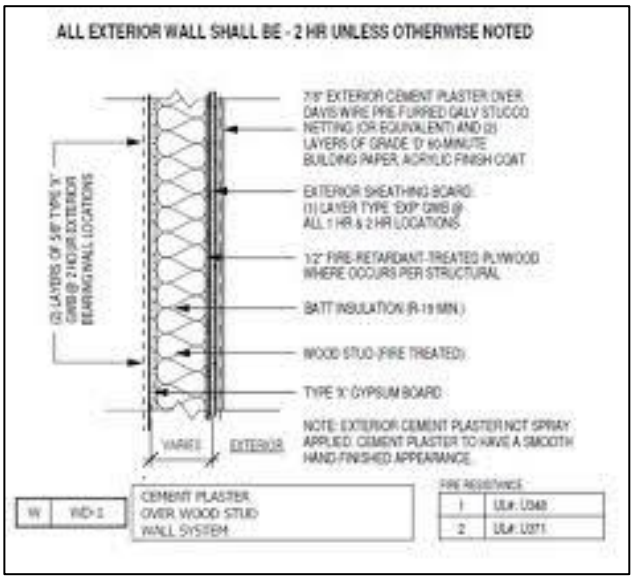
Exceptions: Special vents manufactured to resist intrusion of flame and burning embers **OR** vent openings located at least 12’ above grade or surface below.

ATTACHMENT H

(C) Exterior Walls R327.4.5

- Exterior wall coverings shall comply with one of the following requirements:
  - Non-combustible material
  - Ignition-resistant material
  - Heavy timber assembly
  - Log wall construction assembly
  - Wall assemblies tested in accordance with ASTM E2707 and ORSC section R327.4.5.2

Exceptions: Install one layer of 5/8" Type X exterior gypsum sheathing behind the exterior wall covering on the exterior side of the framing **OR** install the exterior portion of a 1-hour fire resistive exterior wall assembly.



ATTACHMENT H

(D) Overhanging projections (e.g. exterior balconies, carports, decks, patio covers porch ceilings, unenclosed roofs and floors, overhanging buildings, and similar projections) R327.4.6

1. Enclosed roof eaves, soffits, and cornices shall be protected by one of the following:
   - Non-combustible material
   - Ignition-resistant material
   - One layer of 5/8" Type X exterior gypsum sheathing applied behind an exterior covering on the underside of the rafter/truss tails or soffit
   - Exterior portion of a 1-hour fire resistive exterior wall assembly applied to the underside of the rafter/truss tails or soffit
   - Assemblies tested in accordance with ASTM E2957 and section R327.4.6.5

   Exception: Protection not required when all framing members are at least 12' above grade.

2. Exterior patio and porch ceilings
   - Exposed underside of exterior patio and porch ceilings greater than 200 sq. ft. in area and less than 12' above grade shall be protected by one of the methods described in (D)(1) above.

3. Floor projections
   - The exposed underside of cantilevered floor projections less than 12' above grade or surface below shall be protected by one of the methods described in (D)(1) above.

4. Underfloor protection
   - The underfloor area of elevated structures shall be enclosed to grade OR the underside of the exposed underfloor shall be protected by one of the methods described in (D)(1) above.

   Exception: Heavy timber columns and beams do not require protection.

ATTACHMENT H

(E) Walking surfaces R327.4.7

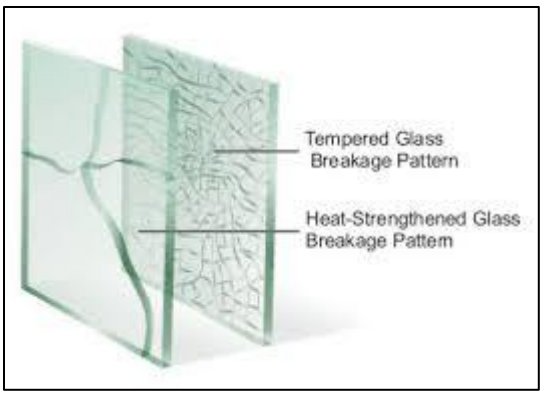
1. Deck, porch, and balcony walking surfaces located greater than 30" and less than 12' above grade or surface below shall be constructed with one of the materials listed below.

   - Exterior fire retardant treated wood
   - Noncombustible material
   - Materials that comply with the performance requirements of specific nationally recognized testing standards. See code section for details.

   Exception: Decks, porches, and balconies not greater than 200 sq. ft. where the walking surface is constructed of nominal 2-inch lumber.

(F) Glazing R327.4.8

- Exterior windows, windows within exterior doors, and skylights shall be tempered glass, multilayered glazed panels, glass block, or have a 20 minute fire rating.



4) Housing cost impact

Oregon Building Codes Division estimates the increased provisions in section R327.4 will add approximately $2,500-$3,000 to the existing cost of a typical 1,200 square foot single family home.[1]

[1] See BCD's Housing Cost Impact Statement – 12/18/19 (Available at www.deschutes.org/wildfirecommittee)

ATTACHMENT I

1" = 6.5 Mi

Jefferson

Wheeler

Linn

Crook

Lane

Deschutes County Wildfire Hazard

Total Risk

3	8
4	9
5	10
6	11
7	12

Klamath

Lake

Harney

October 16, 2019
File: N:\Custom\County\CDD\WildfireRiskAssessment