Chapter 9 Appendices

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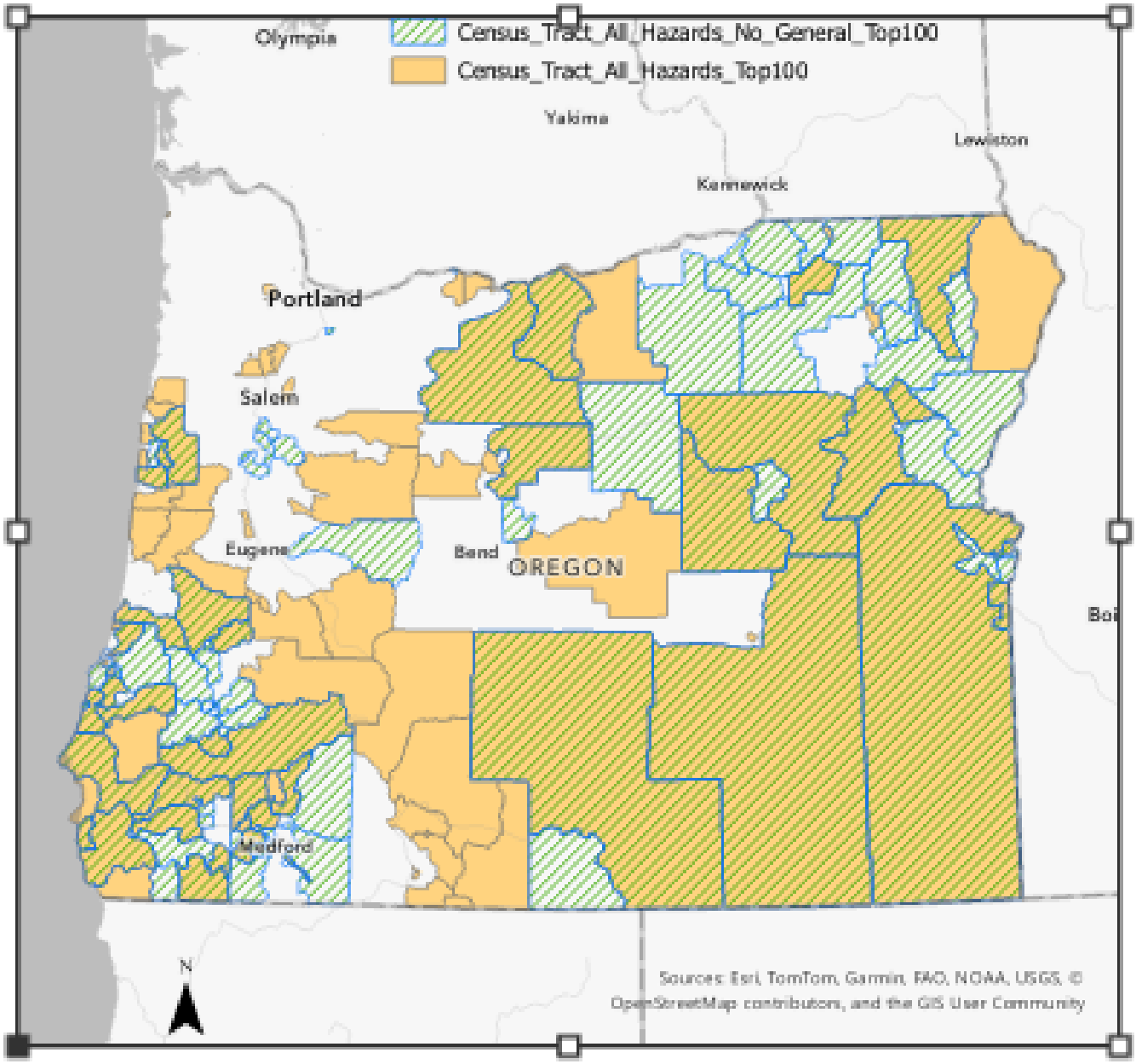
9.1 Risk Assessment Appendix

9.1.1 All Hazards

Many cities and census tracts in the state are exposed to multiple hazards. This section shows places exposed to multiple hazards by combining results from individual hazards analyses. Some of these multiple hazards may occur at the same time or following an initial event. While the state does recognize that harm from multiple hazards can occur and can have synergistic effects, the authors of this assessment were not able to evaluate cascading effects of multiple hazards at this time.

Figure 9.1.1-1 shows modeling results when all evaluated hazards are combined. The polygons represent census tracts that ranked in the top 100 when all evaluated hazards are considered together. The pink census tracts are those that ranked in the top 100 when all indicators are considered. The cross-hatched census tracts are those where only the hazard-specific indicators are considered.

Figure 9.1.1-1: Top 100 Census Tracts, All-hazards with Social Factors and without Social Factors.



Note: Areas that are solid orange in color reflect top 100 all-hazards ranking with socio-economic considerations included. When the solid orange color is overlaid with hatching, the census tract is in the top 100 both with and without socio-economic factors considered. Hatching alone indicates an area in the top 100 with no socio-economic factors included.

Table 9.1.1-1: Top 10 All-hazards Census Tract Rank with Social Factors (Orange polygons from figure above)

All Hazards Rank	Census Tract	County
1	41025960200	Harney
2	41015950100	Curry
3	41015950201	Curry
4	41029002800	Jackson
5	41019200000	Douglas
6	41065970800	Wasco
7	41031960100	Jefferson
8	41023960100	Grant
9	41023960201	Grant
10	41045970900	Malheur

Modeling as of 3/19/2025

Table 9.1.1-2: Top 10 All-hazards Census Tract Rank with No Social Factors (hazards only) (cross hatched polygons from figure above)

All Hazards Rank	Census Tract	County
1	41011000701	Coos
2	41045970600	Malheur
3	41011001002	Coos
4	41033361601	Josephine
5	41045970900	Malheur
6	41011001102	Coos
7	41019190000	Douglas
8	41065970800	Wasco
9	41059950400	Umatilla
10	41023960202	Grant

Model results as of 3/19/2025

9.1.2 State-owned or Leased Buildings

Analysis of state-owned or leased facilities expands on what was accomplished for the 2020 plan. According to the Oregon Department of Administrative Services (DAS), the State of Oregon owns or leases buildings having a total value of nearly $7.3 billion in 2019. Because of this investment it is important the State assess the vulnerability of these structures to Oregon's natural hazards. Data to support this analysis were available for the following hazards: coastal erosion, earthquake, flood, landslide, tsunami, volcano, and wildfire. The Oregon Department of Geology and Mineral Industries (DOGAMI) assembled the best-available statewide natural hazard data and assessed which state-owned/leased buildings are exposed to each hazard. DOGAMI also assessed the vulnerability of local critical facilities to natural hazards throughout the state.

The data for this analysis was furnished by DAS. As a part of the quality control review, DOGAMI removed nearly 400 building points from the original 2019 DAS dataset to build the dataset used in the vulnerability assessment. Many of the buildings were removed based on attributes in the GIS data that indicated that the points represented non-structures (e.g., property grounds). The final data set contained 5,350 state facilities.

Notably, the DAS building data does not identify "critical/essential" facilities. Within the state facilities dataset DOGAMI created a subcategory of critical facilities. DOGAMI and the Department of Land Conservation and Development (DLCD) defined critical facilities as buildings that function as airports, communications, emergency operations, fire stations, hospitals or health clinics, military facilities, police stations, schools, detention centers, or miscellaneous facilities (e.g., ODOT Maintenance Facility) that would be needed during or immediately after a natural disaster. DOGAMI identified 1,674 state critical facilities. Figure xx shows the distribution and dollar value (potential loss) of these 5,350 state-owned/leased facilities within Oregon NHMP Natural Hazard Regions.

DLCD extended analysis conducted for the 2020 plan by overlaying buildings that DOGAMI identified as being located in hazard zones onto the "all-hazards" census tract layer to assign one PROMETHEE ranking score to each exposed building. In most cases a building was not directly exposed to every hazard. Nonetheless, the ranking alerts hazard mitigation planners to buildings that for a variety of reasons may pose challenges during and after an event. Critical facilities located in high-risk census tracts should be managed to maintain a high degree of functionality.

Table 9.1.2-1: State-owned building names and values by all-hazards rank with social factors evaluated – Top 10 all-hazards census tracts only

All Hazards Rank 1 40125960200 - Harney	**Critical or Essential State-owned Facility?**		
Building Name	**No**	**Yes**	**Grand Total**
Alkali Lake MS Deicer Building		$640,565	$640,565
Barn - Pete French Round Barn	$509,322		$509,322
Buchanan Springs RA Shelter	$106,513		$106,513
Hotel (Concession)	$865,639		$865,639

Sagehen SRA Restroom Building	$1,322,406		$1,322,406
Site Systems - King Mountain M/W Grounds		$152,512	$152,512
Site Systems - Steens Radio Operating Exp Grounds		$107,781	$107,781
Stinking Water Scoop Shed	$82,741		$82,741
Stinking Water Mountain Sand Shed	$431,817		$431,817
Total	$3,318,438	$900,858	$4,219,296

All Hazards Rank 2 41015950100 - Curry	**Critical or Essential State-owned Facility?**		
Building Name	**No**	**Yes**	**Grand Total**
Barracks (01) Historic	$370,004		$370,004
Campground Maintenance Shop - Garage/Storage	$281,007		$281,007
Cape Blanco State Airport (5S6)	$60,668		$60,668
Edson Butte M/W Building		$147,355	$147,355
Elk River Hatchery Storage Building	$424,676		$424,676
Garage (03) Historic	$281,356		$281,356
House - Hughes House SA (Historic)	$462,666		$462,666
Life Boat Display Building	$323,969		$323,969
Maintenance Shop - Historic	$226,922		$226,922
Plumbed Type 6-4 RS - Sites 1-27	$489,339		$489,339
Plumbed Type 9-9 RS - A-Loop	$392,923		$392,923
Plumbed Type 9-9 RS - Sites 28-95	$651,255		$651,255
Port Orford Fuel Station		$243,383	$243,383
Port Orford Hazardous Materials Building		$458,532	$458,532
Port Orford Maintenance Station Building		$325,501	$325,501
Port Orford MS Herb		$122,628	$122,628
Port Orford MS Storage Building	$450,953		$450,953
Port Orford Pole Building		$211,401	$211,401
Residence	$672,866		$672,866

Residence (02) Historic	$290,531		$290,531
Shop 2 Bay Storage	$420,940		$420,940
Total	$5,800,075	$1,508,800	$7,308,875
All Hazards Rank 3 41015950201 - Curry	**Critical or Essential State-owned Facility?**		
Building Name	**No**	**Yes**	**Grand Total**
Curry County Circuit Court	$60,668		$60,668
Gas and Oil House (#15) Gold Beach	$2,907,498		$2,907,498
Hunter Creek Maintenance Station Building	$840,392		$840,392
Hunter Creek MS Pole Building	$931,662		$931,662
Total	$4,740,220		$4,740,220
All Hazards Rank 4 41029002800 - Jackson	**Critical or Essential State-owned Facility?**		
Building Name	**No**	**Yes**	**Grand Total**
Vault Double – Boat Ramp/Swimming/DU	$93,457		$93,457
Total	$93,457		$93,457
All Hazards Rank 5 41019200000 - Douglas	**Critical or Essential State-owned Facility?**		
Building Name	**No**	**Yes**	**Grand Total**
Canyonville MS Enclosed Storage		$280,158	$280,158
Canyonville Maintenance Station Building		$976,004	$976,004
Canyonville MS Open Storage		$232,529	$232,529
Lookout Silver Butte	$291,239		$291,239
Total	$291,239	$1,488,691	$1,779,930

All Hazards Rank 6 41065970800 - Wasco	Critical or Essential State-owned Facility?		
Building Name	**No**	**Yes**	**Grand Total**
Cow Creek Rest Area Buildings	2,360,151		2,360,151
Foreman Point M/W Buildings		749,128	749,128
Hulse Ranch M/W Buildings		1,046,295	1,046,295
Oak Springs Hatchery		9,205,512	9,205,512
The Dalles Maintenance Station		9,749,208	9,749,208
White River Wildlife Area	4,324,432		4,324,432
Unidentified Assets	4,611,843		4,611,843
Total	11,296,426	21,477,699	32,774,125

All Hazards Rank 7 41031960100 - Jefferson	Critical or Essential State-owned Facility?		
Building Name	**No**	**Yes**	**Grand Total**
Deer Ridge Correctional Facility		249,747,780	249,747,780
Juniper Butte Scale House	184,422		184,422
Stephenson Mountain M/W		54,188	54,188
Unidentified assets	95,586		95,586
Total	280,008	249,802,238	250,082,246

All Hazards Rank 8 41023960100 – Grant	Critical or Essential State-owned Facility?		
Building Name	**No**	**Yes**	**Grand Total**
Austin Maintenance Station		4,407,243	4,407,243
Bone Point M/W & Radio Operations		66,220	66,220
Carter Rest Area	99,936		99,936
Long Creek Maintenance Station		1,478,031	1,478,031
Lookout Ritter Mountain		148,072	148,072
Smith Pit Stockpile Site	20,480		20,480

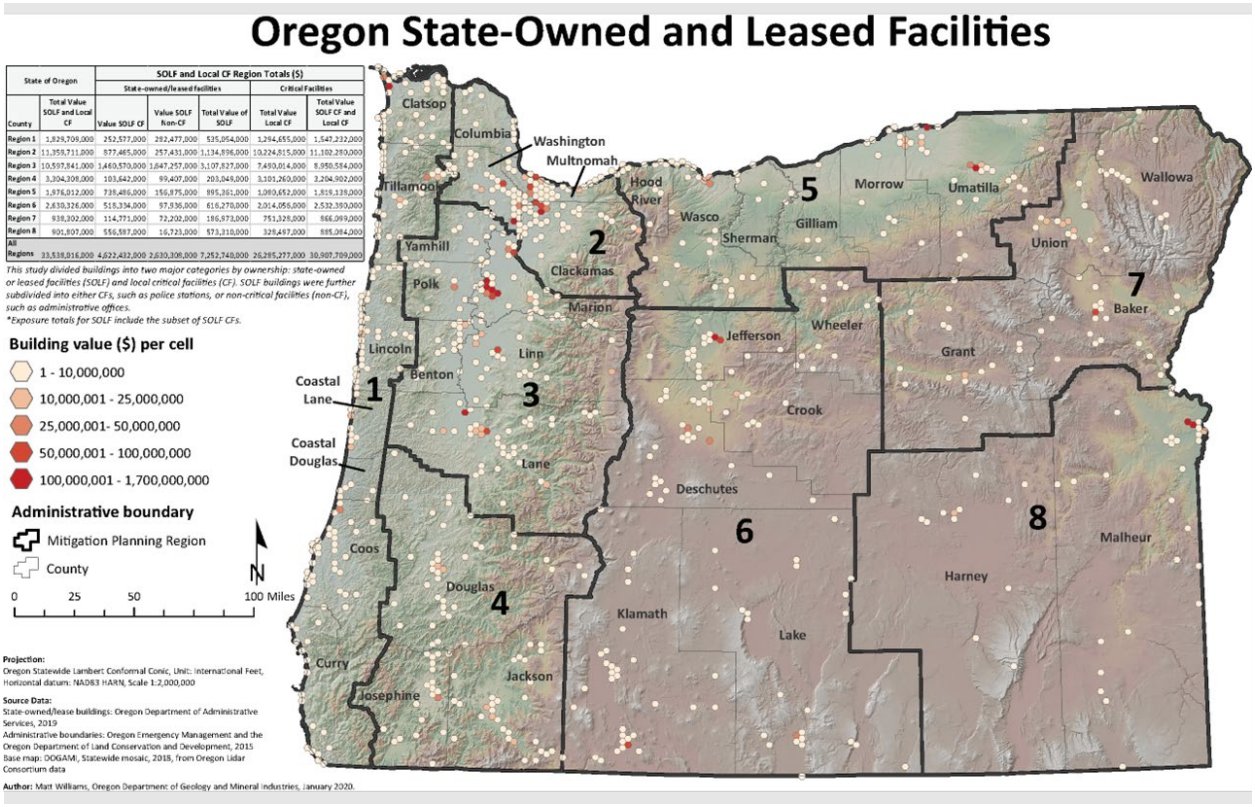
Tamarack m/W & Radio Operations		89,232	89,232
Unidentified Assets	1,978,013		1,978,013
Total	2,098,429	6,188,798	8,287,227
All Hazards Rank 9 41023960201 - Grant	**Critical or Essential State-owned Facility?**		
Building Name	**No**	**Yes**	**Grand Total**
Aldrich Mountain Generator Buildings		156,600	156,600
Phillip W. Schneider office/residence/barn	81,920		81,920
Unidentified assets	1,686,029		1,686,029
Total	1,767,949	156.600	1,924,549
All Hazards Rank 10 41045970900 - Malheur	**Critical or Essential State-owned Facility?**		
Building Name	**No**	**Yes**	**Grand Total**
Black Butte Radio Operations		96,210	96,210
Cottonwood Mountain M/W buildings		67,369	67,369
Coyne Point Radio Buildings		82,356	82,356
Farewell Bend POE Grounds	2,101,187		2,101,187
Mahogony Mountain M/W buildings		48,577	48,577
McDermitt State Airport	20,675		20,675
Ontario Maintenance Station		18,655,543	18,655,543
Pharmacy Hill Operating Grounds	47,671		47,671
Rome State Airport	20,675		20,675
Site Systems -- Basque	20,675		20,675
Snake River Correctional Institution		504,885,082	504,885,082
Succor Creek Operating Exp Grounds	65,328		65,328
Unidentified assets	1,032,477		1,032,477
Total	3,308,688	523,907,850	527,216,538

Grand Total			838,426,463

9.1.3 Critical Facilities

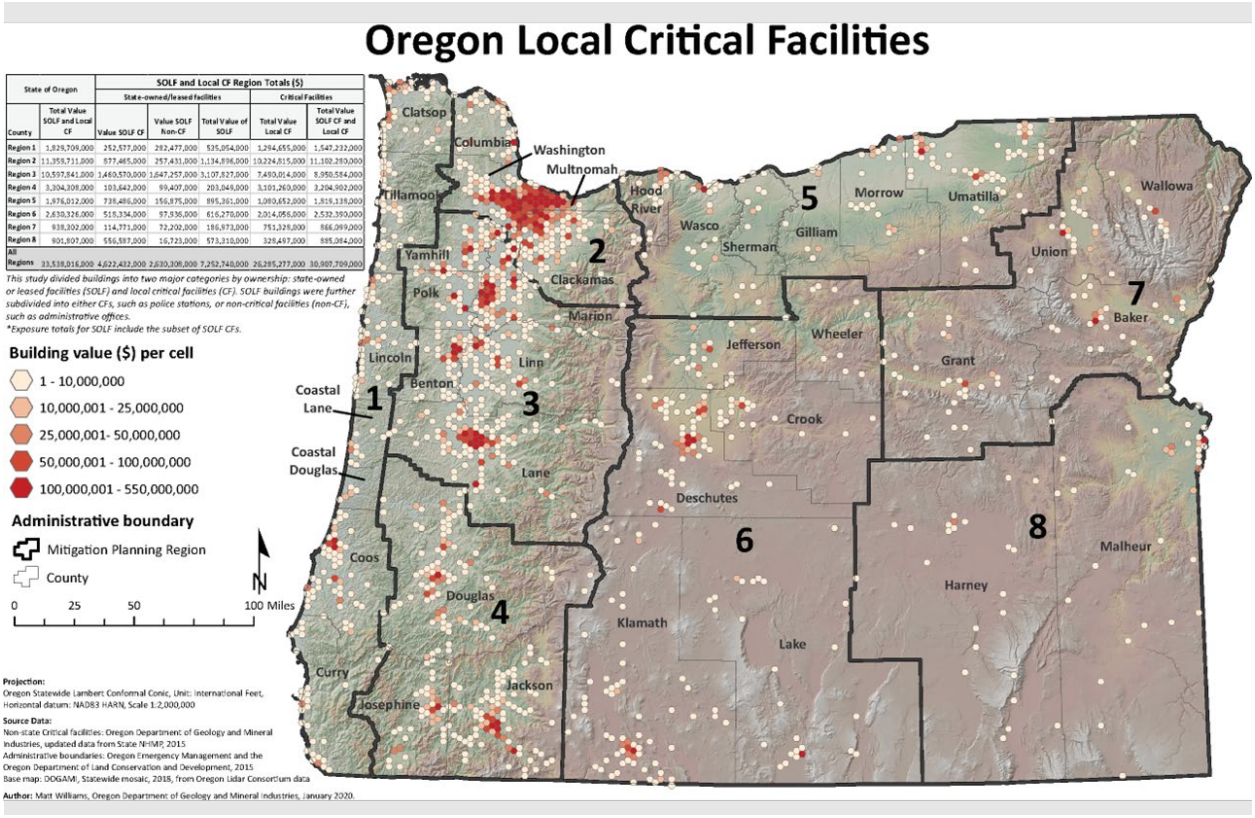
Local critical facilities are a building, or a group of buildings, that either are publicly or privately owned airports, communications, emergency operations, fire stations, hospitals or clinics, military facilities, police stations, schools, detention centers, or miscellaneous facilities, as defined by DOGAMI and DLCD. The dataset that DOGAMI developed and used in the 2020 vulnerability assessment had 8,757 buildings with a total value of $26 billion. Local critical facilities are shown in Figure 9.1.3-2. DLCD assigned a PROMETHEE census tract rank to this list of buildings to arrive at a list of buildings in priority all-hazards mitigation areas or the 2025 plan.

Figure 9.1.3-1: Statewide distribution of state-owned and leased facilities and state-critical facilities



Source: DOGAMI

Figure 9.1.3-2: Statewide distribution of local critical facilities



Source: DOGAMI

9.1.4 Lifelines

9.1.4.1 Road Network Lifelines

An overview of seismic lifeline vulnerabilities is provided in the Oregon Department of Transportation's (ODOT's) 2012 Oregon Seismic Lifeline Report (OSLR) findings, including identification of system vulnerabilities, loss estimates and recommended next steps. OSLR findings have been incorporated into a public facing GIS environment, last updated in 2023 (https://ftp.gis.oregon.gov/framework/transportation/seismic_lifelines.zip). This data is meant to represent a "secure lifeline network of streets, highways and bridges to facilitate emergency services response and to support rapid economic recovery after a seismic disaster."

9.1.4.2 ODOT Climate Adaptation and Resilience Roadmap

The Climate Adaptation and Resilience Roadmap is a broad document that provides policy guidance and actionable strategies to help ODOT institutionalize adaptation and resilience. It outlines a path forward for integrating climate change considerations into ways the agency plans for, invests in, builds, manages,

maintains, and supports the multi-modal transportation system. The roadmap incorporates results from ODOT's statewide climate hazards risk analysis, drawing from corridor-scale risk maps of the state highway system. This information can now be used to inform project planning and prioritization by locating transportation corridors at high risk to climate hazards. The roadmap is also Oregon's FHWA-approved statewide Resilience Improvement Plan (RIP) for PROTECT. Click here or more information about ODOT's PROTECT Program. (copied from ODOT website, accessed 02/04/2025)

Lifelines also include facilities that must remain operational during a natural hazard event. Based on FEMA's definition, they fall into seven categories: safety and security, food water and shelter, health and medical, energy (power and fuel), communications, transportation, hazardous materials. Some lifelines have already been identified as critical facilities as well. Additional lifelines that have not been previously identified by DLCD are listed in Table 9.1.4-1 and Table 9.1.4-2. DLCD identified these from data sources identified on the RAPT website, State of Oregon databases, and Oregon Department of Transportation (ODOT) TransGIS to compile a list of these facilities. Data on wastewater treatment plants, power plants, and principal ports are Homeland Infrastructure Foundation Level Data found on the RAPT website. Primary public safety answering points and hazardous materials storage sites are from the State of Oregon GEOHub Database, the state's authoritative geospatial repository. Data on stormwater control measures, stormwater outfalls, transit stops, Amtrak stops, and POINT Bus Stops (statewide long distance bus lines) are from the Oregon Department of Transportation TransGIS.

Table 9.1.4-1: Counts of community lifelines in top ranked all-hazards mitigation areas

			Food, Water, Shelter			Energy	Communications
All Hazard Rank	Census Tract	County	Wastewater Treatment Plants	Stormwater Control Measures	Stormwater Outfalls	Power Plants	Public Safety Answering Points
1	41025960200	Harney	0	4	0	1	0
2	41015950100	Curry	1	0	0	0	0
3	41015950201	Curry	0	0	0	0	1
4	41029002800	Jackson	1	2	0	0	0
5	41019200000	Douglas	2	2	0	1	0
6	41065970800	Wasco	2	8	0	1	0
7	41031960100	Jefferson	0	2	0	1	0
8	41023960100	Grant	1	0	0	1	0
9	41023960201	Grant	2	0	0	0	0
10	41045970900	Malheur	0	0	0	6	0

Table 9.1.4-2: Counts of community lifelines in top ranked all-hazards mitigation areas continued

			Transportation				Hazardous Materials
All Hazard Rank	Census Tract	County	Transit Stops	Amtrak Stops	POINT Bus Stops	Principal Ports	Hazardous Material Storage
1	41025960200	Harney	3	0	3	0	37
2	41015950100	Curry	1	0	0	0	34
3	41015950201	Curry	1	0	0	0	25
4	41029002800	Jackson	0	0	0	0	12
5	41019200000	Douglas	33	0	0	0	37
6	41065970800	Wasco	0	0	0	0	70
7	41031960100	Jefferson	2	0	0	0	32
8	41023960100	Grant	24	0	0	0	24
9	41023960201	Grant	9	0	0	0	9
10	41045970900	Malheur	2	0	2	0	52

9.2 Assessment Methods

DOGAMI used two primary methods for assessing vulnerability to hazards: Hazus damage estimates for earthquakes and exposure analysis for floods, coastal erosion, volcanic hazards, tsunamis, wildfires, and landslides. This is a simple method to determine which facilities lie within a natural hazard area and which do not. It is an alternative for natural hazards for which Hazus damage functions or high-quality, statewide hazard mapping is not available, and therefore, loss estimation is not possible or recommended.

9.2.1 Hazard Data Limitations

Building-specific information can make an enormous difference when evaluating the actual damaging effects of natural hazards. For example, a modern seismically reinforced building may receive far less or no earthquake damage compared to older un-reinforced buildings next door. The analysis performed by DOGAMI and DLCD does not attempt to account for building- or site-specific characteristics.

9.2.2 Interpreting the Results of Hazard Specific Modeling

The following sections show modeling results for six natural hazards: riverine flooding, coastal hazards, tsunami, drought, extreme heat, landslide, volcano, wildfire, and earthquake. Each hazard section begins with a short description of the event scenario used in the model. A map showing the top 10 ranked census tract is followed by a table naming the census tracts, its modeling rank, and statistics from the National Risk Index. Adjacent to the map is a list of the indicators used to model the event. The indicators category “General” was used as a set for each hazard. The remaining indicators vary by hazard type. Following the maps showing the top 10 census tracts are a set of maps showing the location of an individual census tract along with a bar chart showing a z-score for each indicator.

The z-score measures how many standard deviations the observed value is away from the mean value. Z-scores greater than 1 or less than 1 show where the observed value for the subject census tract is more

than one standard deviation from the mean value of all census tracts used in the analysis. In other words, it is unusual and a likely driver of risk or resilience in the census tract.

Care must be taken when deciding whether an unusual z-score contributes to risk or resilience. The table associated with the hazard-specific top 10 census tracts shows a column labeled “Direction”. If the direction is positive, the indicator contributes to vulnerability. If it is negative it contributes to resilience.

The tables listing state-owned buildings and critical facilities reflect only those buildings and facilities in the census tract that are in the hazard zone. Building values are provided by DAS and reflect 2019 values. If a loss is recorded it is because that building has suffered a loss from the natural hazard event in the past.

9.2.3 Indicator Key

The gold corresponds to indicators modeled in a positive direction (1)
The blue-green corresponds to indicators modeled in a negative direction (-1)

Table 9.2.3-1: Multi-Criteria Analyses Indicator Key

	Gold: bars point to the left on z-score graphs = less vulnerable
	Gold: bars point to the right on z-score graphs = more vulnerable
	Blue-green: bars point to the left on z-score graphs = more vulnerable
	Blue-green bars point to the right on z-score graphs = less vulnerable

Indicator Name	Description	Data Source	Justification
GENERAL (Socio-economic Indicators used for all evaluated hazards)			
EP_MOBILE	Percentage of residential building stock that are mobile homes	2020 Census; **ACS Table(s)**: B25024, B25032	Mobile homes are more likely than site-built homes to be damaged by natural hazard events. Manufactured home parks are often located in hazard zones
EP_MINRTY	Percentage of non-white population		The State of Oregon and the Department of Land Conservation

Indicator Name	Description	Data Source	Justification
			and Development have a “lead with race” policy. The CRE (a social vulnerability indicator) does not include race.
Housing Tenure	Percent of owned homes		Tenure definition from US Census: A unit is owner occupied if the owner or co-owner lives in the unit, even if it is mortgaged or not fully paid for. Owners have more control over mitigation projects and opportunities.
Median_Yrblt	Median year built of general building stock based on HAZUS default data.	Hazus (org. 2020 Census)	Older homes likely are built with less stringent buildings codes. Maintenance status may make them more prone to damage due to natural hazard events.
HospitalDistMile	Distance from tract centroid to nearest hospital.	DOGAMI generated	Distance to the nearest hospital indicates degree of access to medical services in the face of and after a natural hazard event.
NatResrcJobs	Percentage of natural resource jobs.	2020 Census	People employed in natural resource jobs may work outdoors and may face reductions in work

Indicator Name	Description	Data Source	Justification
			hours or access to raw materials during and after a natural hazards event. Short term employment gains may be experienced from rebuilding, but these are short-lived.
PRED3_PE	Percentage of individuals with three plus components of social vulnerability from the Community Resilience Estimate (CRE)	2023 CRE Estimate	Metric for how socially vulnerable people are to the impacts of disasters.
Hosp_Beds	Estimated number of hospital beds based on square footage of hospital building (1500ft^2 per bed)	DOGAMI generated	Indicates the ability of local medical system to address emergencies during and after an event.
Pct_Adherents	Percentage of members to a religious group	2020 US Religion Census	Indicates community cohesion or access to local assistance.
Mitigation	Number of mitigation projects (grouped by zip code and evenly distributed to overlaying tracts)	FEMA: Hazard Mitigation Assistance Projects - v4 | FEMA.gov	Measures degree of mitigation attention that has been paid to the area.
Cultural	Number of cultural-related institutions	Oregon Cultural Trust	Indicates community cohesion by participation in cultural activities
Favors	Average rating from survey of neighborliness: Willing	OHA	Indicates propensity to assist neighbors during and after an event.

Indicator Name	Description	Data Source	Justification
	to do favors for neighbor		
Advice	Average rating from survey of neighborliness: Seeks advice from neighbor	OHA	Indicates propensity to assist neighbors during and after an event.
Parties	Average rating from survey of neighborliness: Attended parties that occur in neighborhood	OHA	Indicates propensity to assist neighbors during and after an event.
Visits	Average rating from survey of neighborliness: Has visited neighbor's house	OHA	Indicates propensity to assist neighbors during and after an event.
Watch	Average rating from survey of neighborliness: Will watch neighbor's house	OHA	Indicates propensity to assist neighbors during and after an event.
CountyTax	County tax rate	Oregon Dept. of Revenue	Indicates capacity of local government to plan, respond to, and mitigate.
CityTax	City tax rate	Oregon Dept. of Revenue	Indicates capacity of local government to plan, respond to, and mitigate.

Hazard Specific Indicators

Indicator Name	Description	Data Source	Justification
COASTAL HAZARDS			
CFL_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings exposed to coastal flooding based on NFIP flood zones.	DOGAMI generated	Indicates the degree of disruption to critical facilities during a flood event and its aftermath.
Hist_count	Number of historic buildings.	OPRD/Historic Preservation	Indicates cultural significance in the area
Port	Presence of marine port infrastructure	DOGAMI generated	Damage to ports disrupts commerce, jobs, and local economy. May be costly to repair
Bridge_Scour_pct	Percentage of bridges that are scoured from a 100-year flood.	ODOT	A high proportion of damaged bridges in an area indicates reduced ability to find detours.
CRS_Rate	Community Rating System (NFIP program for reduced insurance premiums) score for communities within census tracts (1 – 10 scores with 1 being the best score).	FEMA	Communities that participate in the Community Rating System tend to be better prepared for flood events and to adopt policies to avoid building in flood hazard zones.
ImpervSurf_Pct	Percentage of impervious surface.	Justice40	Areas with a high percentage of impervious surface tend to have flood and drainage problems, leading to the potential for damage.
FIRM_Diff	Number of years difference between	FEMA/2020 Census	Older flood maps tend to misrepresent areas

Indicator Name	Description	Data Source	Justification
	median year built and first Flood Insurance Rate Map date.		subject to flood; newer maps are more reliable indicators of flood hazard.
FL_Haz_Area	Area of tract in 100-year flood hazard.	FEMA	Census tracts with large flood hazard zones are more likely to suffer harm.
RepeatLoss	Number of Repetitive loss structures	FEMA	Indicates historic repetitive losses and opportunity for mitigation.
DROUGHT			
Drght_NRI_rate	Expected annual loss (EAL) rate for drought from the FEMA NATIONAL RISK INDEX.	National Risk Index	EAL rates are designed to reflect the average expected annual percentage loss for the building value, population, and agriculture value within a community
Drght_Events	Number of drought events from the FEMA NATIONAL RISK INDEX.	National Risk Index	
Drght_AL_AG	Expected annual loss (EAL) rate for agriculture from FEMA NATIONAL RISK INDEX.	National Risk Index	EAL rates are designed to reflect the average expected annual percentage loss for the building value, population, and agriculture value within a community
Over90th	Mean number of days that are above the historic 90th percentile temp	OCCRI	Hot days contribute to drought effects.

Indicator Name	Description	Data Source	Justification
Over90F	Mean number of days above 90 degrees Fahrenheit	OCCRI	Hot days contribute to drought effects.
EARTHQUAKE			
LQ_pct_bld	Percentage of STATEWIDE BUILDING FOOOTPRINTS FOR OREGON buildings exposed to Moderate to Very High liquefaction zones based on data compiled in the Oregon Seismic Hazard Dataset (OSHD).	DOGAMI generated	Indicates the degree of disruption within the census tract because of liquefaction and its aftermath.
LQ_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings exposed to Moderate to Very High liquefaction zones based on data compiled in the Oregon Seismic Hazard Dataset (OSHD).	DOGAMI generated	Indicates the degree of disruption to critical facilities as a result liquefaction.
EQCSZ_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings that are red or yellow-tagged buildings based on CSZ Deterministic Hazus scenario analysis.	DOGAMI generated	Indicates the degree of disruption to critical facilities because of earthquake.
EQ25_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings that are red or yellow-tagged buildings	DOGAMI generated	Indicates the degree of disruption to critical facilities because of earthquake.

Indicator Name	Description	Data Source	Justification
	based on 2500 Probabilistic Hazus scenario analysis.		
Hist_count	Number of historic buildings.	OPRD/Historic Preservation	Indicates cultural significance in the area
Hwy_LQ_pct	Miles of major roadway exposed to Moderate to Very High liquefaction zones based on data compiled in the Oregon Seismic Hazard Dataset (OSHD).	ODOT/DOGAMI generated	Damaged roads disrupt transportation and access to services.
Erqk_NRI_rate	Expected annual loss (EAL) rate for earthquake from FEMA NATIONAL RISK INDEX.	National Risk Index	FEMA designed EAL rates to reflect the average expected annual percentage loss for the building value, population, and agriculture value within a community.
LQ_Haz_Area	Area of tract in high or very high liquefaction hazard.	DOGAMI generated	Indicates a potential disruption.
Bridges_LIQ	Number of bridges that are within high or very high liquefaction hazard.	ODOT/DOGAMI generated	Bridges provide critical transportation links and can take time to repair, leading to disruptions.
PGA_2500	Average shaking in tract from 2500-year probabilistic earthquake.	DOGAMI generated	
EXTREME HEAT			

Indicator Name	Description	Data Source	Justification
Heat_Events	Number of heat events.	National Risk Index	
Heat_ALAG	Expected annual loss (EAL) rates to agriculture from heat.	National Risk Index	FEMA designed EAL rates to reflect the average expected annual percentage loss for the building value, population, and agriculture value within a community
Heat_ALPOP	Expected annual loss rate to population from heat.	National Risk Index	FEMA designed EAL rates to reflect the average expected annual percentage loss for the building value, population, and agriculture value within a community
OutdoorJobs	Percentage of jobs that occur outside.	ACS 2021	People who work outdoors are exposed to natural hazards and their consequences.
TreeCan_avg	Tree canopy density	USDA	Indicates potential for shade or cooling.
FLOOD			
Bridge_Scour	Number of bridges that are at risk from scour during a 100-year flood.	Oregon Dept. of Transportation	Bridges provide key transportation links that can be difficult to go around if damaged during a flood. Often require extended repair times.
CRS_Rate	Community Rating System (NFIP program for reduced insurance premiums) score for communities within census tracts (1 – 10	FEMA	Communities that participate in the Community Rating System tend to be better prepared for flood events and to adopt policies to avoid

Indicator Name	Description	Data Source	Justification
	scores with 1 being the best score).		building in flood hazard zones.
FL_pct_bld	Percentage of Statewide Building Footprint for Oregon buildings exposed to flooding based on NFIP flood zones.	DOGAMI generated	Indicates the degree of disruption within the census tract because of flood and its aftermath.
FL_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings exposed to flooding based on NFIP flood zones.	DOGAMI generated	Indicates the degree of disruption to critical facilities during a flood event and its aftermath.
ImpervSurf_Pct	Percentage of impervious surface.	Justice40	Areas with a high percentage of impervious surface tend to have flood and drainage problems, leading to the potential for damage.
Hwy_FL_pct	Miles of major roadways miles based on ODOT data that are exposed to flood hazard from NFIP data.	ODOT/DOGAMI generated	Flooded roads disrupt transportation and access to services.
Bridge_Scour_pct	Percentage of bridges that are scoured from a 100-year flood.	ODOT	A high proportion of damaged bridges in an area indicates reduced ability to find detours.
FIRM_Diff	Number of years difference between median year built and first Flood Insurance Rate Map date.	FEMA/2020 Census	Older flood maps tend to misrepresent areas subject to flood; newer maps are more reliable indicators of flood hazard.

Indicator Name	Description	Data Source	Justification
FL_Haz_Area	Area of tract in 100-year flood hazard.	FEMA	Census tracts with large flood hazard zones are more likely to suffer harm.
RepeatLoss	Number of Repetitive loss structures	FEMA	Indicates historic repetitive losses and opportunity for mitigation.
Hist_count	Number of historic buildings.	OR agency for Historic Preservation	Indicates cultural significance in the area
CFL_pct_bld	Percentage of STATEWIDE BUILDING FOOOTPRINTS FOR OREGON buildings exposed to coastal flooding based on NFIP flood zones.	DOGAMI generated	Indicates the degree of disruption within the census tract because of flood and its aftermath.
Hwy_FL_pct	Miles of major roadways that are exposed to flood hazard from NFIP data based on ODOT data.	ODOT/DOGAMI generated	Flooded roads disrupt transportation and access to services.
LANDSLIDE			
LSS_pct_bld	Percentage of STATEWIDE BUILDING FOOOTPRINTS FOR OREGON buildings exposed to existing landslide deposit SLIDO.	DOGAMI generated	Indicates the degree of disruption within the census tract as a result of landslide.
LSS_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings exposed to existing landslide deposit SLIDO.	DOGAMI generated	Indicates the degree of disruption to critical facilities during a landslide event and its aftermath.

Indicator Name	Description	Data Source	Justification
Hwy_LSS_pct	Miles of major roadways based on ODOT data that are exposed to existing landslide deposits based on SLIDO.	ODOT/DOGAMI generated	Damaged roads disrupt transportation and access to services.
Hist_count	Number of historic buildings.	OWRD/Historic Preservation	Indicates cultural significance in the area
LSS_Haz_Area	Area of tract in high or very high landslide hazard.	DOGAMI generated	Indicates the degree of potential disruption and harm to people or property.
TSUNAMI			
TSU_pct_bld	Percentage of STATEWIDE BUILDING FOOOTPRINTS FOR OREGON buildings exposed to any sized (SM-XXL) CSZ tsunami.	DOGAMI generated	Indicates the degree of disruption within the census tract as a result of tsunami.
TSU_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings exposed to any sized (SM-XXL) CSZ tsunami.	DOGAMI generated	Indicates the degree of disruption to critical facilities because of tsunami.
Port	Presence of marine port infrastructure	DOGAMI generated	Damage to ports disrupts commerce, jobs, and local economy. May be costly to repair
Bridges_TSU	Number of bridges that are within a tsunami inundation zone.	ODOT/DOGAMI generated	Bridges provide critical transportation links, particularly on the coast where detour routes are few and far between.

Indicator Name	Description	Data Source	Justification
Hist_count	Number of historic buildings.	OPRD/Historic Preservation	Indicates cultural significance in the area
VOLCANO			
LAH_pct_bld	Percentage of STATEWIDE BUILDING FOOOTPRINTS FOR OREGON buildings exposed to volcanic lahar hazard of any size based on USGS and DOGAMI lahar zones for Cascade volcanoes.	DOGAMI generated	Indicates the degree of disruption within the census tract, including harm to people and property.
LAH_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings exposed to volcanic lahar hazard of any size based on USGS and DOGAMI lahar zones for Cascade volcanoes.	DOGAMI generated	Indicates the degree of disruption to critical facilities during a volcanic event and its aftermath.
Hist_count	Number of historic buildings.	OPRD/Historic Preservation	Indicates cultural significance in the area
WILDFIRE			
WF_pct_bld	Percentage of STATEWIDE BUILDING FOOOTPRINTS FOR OREGON buildings exposed to Medium and High Burn Probability based on PNW Quantitative database.	Oregon Dept. of Forestry/DOGAMI	Indicates the degree of disruption within the census tract, including harm to people and property.
WF_pct_CF	Percentage of critical facilities (2020 State NHMP data) buildings	Oregon Dept. of Forestry/DOGAMI	Indicates the degree of disruption to critical facilities during a flood

Indicator Name	Description	Data Source	Justification
	exposed to Medium and High Burn Probability based on PNW Quantitative database.		event and its aftermath.
BurnProb	Burn probability from the QPNW		
Hwy_WF_pct	Percentage of highway miles within High Burn Probability Zones		Addresses transportation and evacuation issues.
Hist_count	Number of historic buildings.	OPRD/Historic Preservation	Indicates cultural significance in the area
Over 90th	Mean number of days that are above the historic 90th percentile temp	OCCRI	Hot days contribute to fire risk,
Over90F	Mean number of days above 90 degrees Fahrenheit	OCCRI	Hot days contribute to fire risk.

9.2.4 Hazard Scenarios

Table 9.2.4-1: Hazard scenario data sources

Hazard	Data Name	Data Source
Earthquake	Liquefaction	Oregon Seismic Hazard Database (OSHD) – DOGAMI (Madin and others, 2021)
	CSZ Hazus Analysis (Co-seismic landslide and liquefaction, and NEHRP)	OSHD – DOGAMI (Madin and others, 2021)
	2475-year Hazus Analysis (4 ground motions)	OSHD – DOGAMI (Madin and others, 2021)
Flood & Coastal Flooding	Flood Hazard Area	FEMA – National Flood Hazard Program

Hazard	Data Name	Data Source
Channel Migration	Channel migration zones	DOGAMI (multiple pubs)
Tsunami	Tsunami inundation zones	DOGAMI (multiple pubs)
Landslide	Statewide Landslide susceptibility	DOGAMI (multiple pubs)
Wildfire	Burn probability	Oregon Dept. of Forestry (McEvoy and others, 2023)
	Wildfire annualized loss	National Risk Index
Volcano	Lahar inundation zones	USGS (Mt. Jefferson, Sisters, Crater Lake)
	Lahar inundation zones	Mt. Hood – DOGAMI (Burns and others, 2011)
Drought	Drought annualized loss	National Risk Index
Heat	Heat annualized loss	National Risk Index
	Tree canopy	USDA, US Forest Service

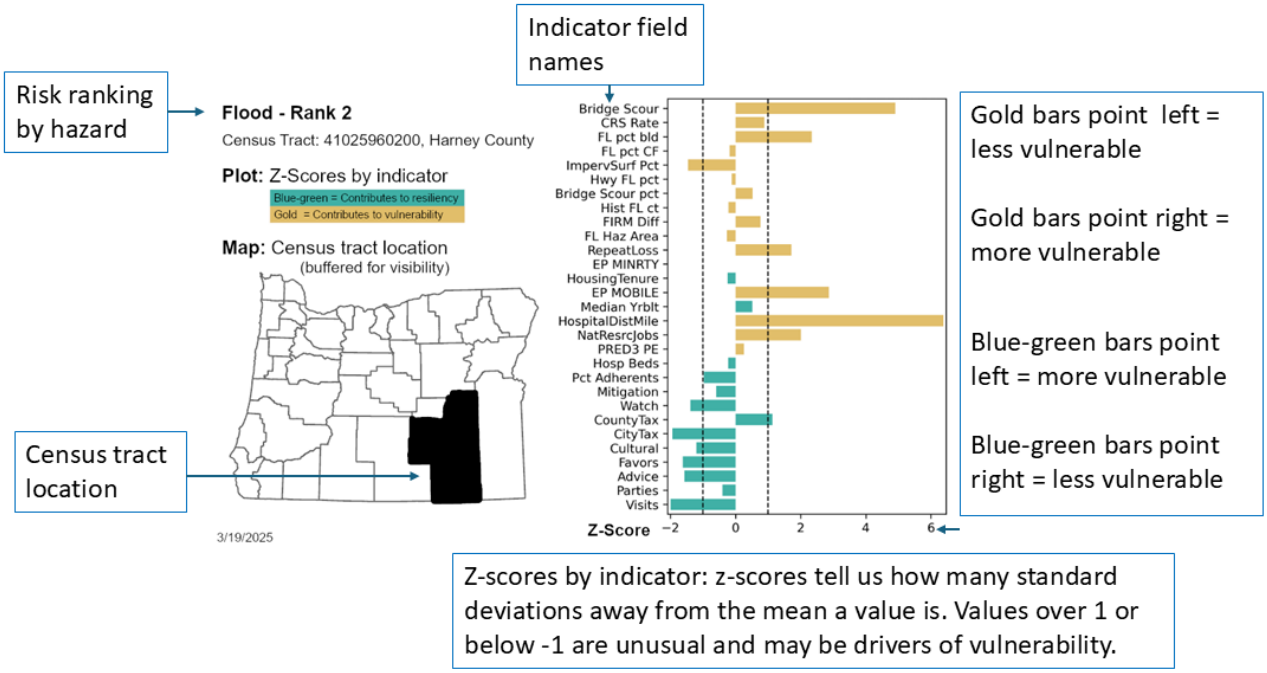
DRAFT prepared by: Matt Williams DOGAMI 12/3/2024

9.2.5 How to Interpret Risk Assessment Results Graphs

The following graphs show z-scores for the top 10 most vulnerable census tracts by hazard. A z-score measures how far away a value is from the mean or average of all values considered. In our case, the dataset includes all 993 Oregon inhabited census tracts, except for the coastal hazards which include 77 census tracts. So, for hazards except for coastal hazards, the z-score represents how far away the indicator value is away from the average of all Oregon census tracts. The z-scores for coastal hazards represents how far the indicator value is away from the average of all coastal census tracts. A z-score of 1 tells us that the indicator value is one standard deviation above the average, while a z-score of –1 tells us that the indicator value is one standard deviation below the average. Z-scores above or below 1 tell us that the indicator value is unusually high or low. These unusual values can be interpreted as drivers of risk or resilience.

Most of the indicators used in this model point towards vulnerability or increased risk. These are labeled on the map that introduces each hazard as “Direction.” A Direction of 1 tells us that the indicator contributes to vulnerability or risk. A Direction of –1 tells us that the indicator contributes to resilience. (Future versions of these graphs will color code which indicators point to more or less risk.). Figure 9.2.5-1 provides a visual explanation of the top 10 hazard graphs.

Figure 9.2.5-1: Visual explanation of how to interpret hazard graphs



9.3 Top 10 Census Tracts by Hazard

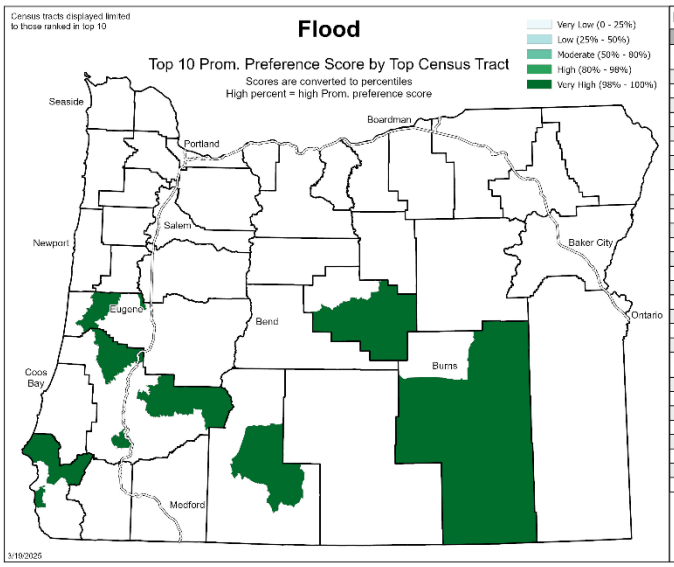
9.3.1 Riverine Flood

9.3.1.1 Hazard Scenario

Exposure was based on 1% annual chance floods as depicted on Federal Emergency Management Agency Flood Insurance Rate Maps. GIS layers were obtained from digital flood insurance rate maps, where possible. The Oregon Department of Geology and Mineral Industries digitized flood zones boundaries in areas where FEMA has not provided digitized information.

9.3.1.2 Top Ranked Riverine Flood Risk Areas

Figure 9.3.1-1: Top 10 flood hazard census tracts



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Flood	Bridge_Scour	1	0.032	Number of bridges that are at risk from scour during a 100-year flood.
Flood	CRS_Rate	1	0.032	Community Rating System (NFIP) score for communities.
Flood	FL_pct_bld	1	0.032	Percentage of SBFO buildings exposed to flooding.
Flood	FL_pct_CF	1	0.032	Percentage of critical facilities buildings exposed to flooding.
Flood	ImpervSurf_Pct	1	0.032	Percentage of impervious surface.
Flood	Hwy_FL_pct	1	0.032	Major roadways number of miles that are exposed to flood hazard.
Flood	Bridge_Scour_pct	1	0.032	Percentage of bridges that are scoured from a 100 year flood.
Flood	Hist_FL_ct	1	0.032	Percentage of historic buildings exposed to flooding.
Flood	FIRM_Diff	1	0.032	Number of years difference between median year built and FIRM date.
Flood	FL_Haz_Area	1	0.032	Area of tract in 100-year flood hazard.
Flood	RepeatLoss	1	0.032	Repetitive loss structures
General	EP_MINRTY	1	0.046	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.046	Housing tenure from the US Census.
General	EP_MOBILE	1	0.046	Percentage of people that live in mobile homes
General	Median_Yrblt	1	0.046	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.046	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.046	Rate of natural resource jobs.
General	PRED3_PE	1	0.046	Community Resilience Estimate
General	Hosp_Beds	-1	0.046	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.046	Percentage of members to a religious group
General	Mitigation	-1	0.046	Number of migitation projects (grouped by zip code and evenly distributed to overlaying tracts)
General	Watch	-1	0.046	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.046	County tax rate
General	CityTax	-1	0.046	City tax rate
General	Cultural	-1	0.009	Number of cultural-related buildings
General	Favors	-1	0.009	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.009	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.009	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.009	Neighborliness: Has visited neighbor's house

Table 9.3.1-1: Oregon Natural Hazard Risk Assessment Rank Compared to the National Risk Index

Census Tract Number	County in which census tract is located	Oregon Risk Assessment Rank – Riverine Flood	National Risk Index Classification*	People Exposed to 1% annual chance flood**
41039000500	Lane	1	Relatively moderate	667
41025960200	Harney	2	Relatively low	159
41035970201	Klamath	3	Relatively high	178
41015950201	Curry	4	Relatively high	186

Census Tract Number	County in which census tract is located	Oregon Risk Assessment Rank – Riverine Flood	National Risk Index Classification*	People Exposed to 1% annual chance flood**
41039000404	Lane	5	Relatively high	2387
41015950100	Curry	6	Relatively high	90
41019030000	Douglas	7	Relatively high	821
41019100000	Douglas	8	Relatively high	156
41013950402	Crook	9	Relatively low	53
41019200000	Douglas	10	Relatively high	235

*Compared to census tracts nationwide

** From NRI, accessed on 2/5/2025, 03/25/2025

Table 9.3.1-2: Top 10 Census Tract Demographics

Census Tract	Flood Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41039000500	1	2244	2148	-4%	0.53	0.56	0.02
41025960200	2	2165	2261	4%	0.50	0.71	0.21
41035970201	3	2012	1450	-28%	#N/A	0.41	#N/A
41015950201	4	3513	3730	6%	#N/A	0.80	#N/A
41039000404	5	4010	4409	10%	0.83	0.74	-0.08
41015950100	6	3296	3226	-2%	0.66	0.56	-0.10
41019030000	7	4047	4107	1%	0.39	0.35	-0.04
41019100000	8	3103	3283	6%	0.56	0.56	0.00
41013950402	9	2397	2739	14%	#N/A	0.51	#N/A
41019200000	10	4902	4912	0%	0.87	0.91	0.04

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Flood Risk Rank 1 – Lane County, Mapleton vicinity 41039000500

This rural census tract includes the unincorporated community of Mapleton. The NRI reports a moderate risk of flooding, with a score of 89. Approximately 30% of the census tract population is exposed to flood risk (667 people). The Oregon risk assessment shows a much higher than statewide average repetitive losses due to flood. A higher than stateside average percent of buildings in the census tract are exposed to flood risk. The risk assessment also shows a higher than stateside average highway miles, bridge scour potential. Hospital distance is further than statewide average. The census tract has a higher-than-average CRE score (PRED3_PE) and lower social cohesion scores (Watch, Favors, Advice, Parties, Visits) indicating relatively high social vulnerability.

Figure 9.3.1-2: First ranked census tract for flood hazard

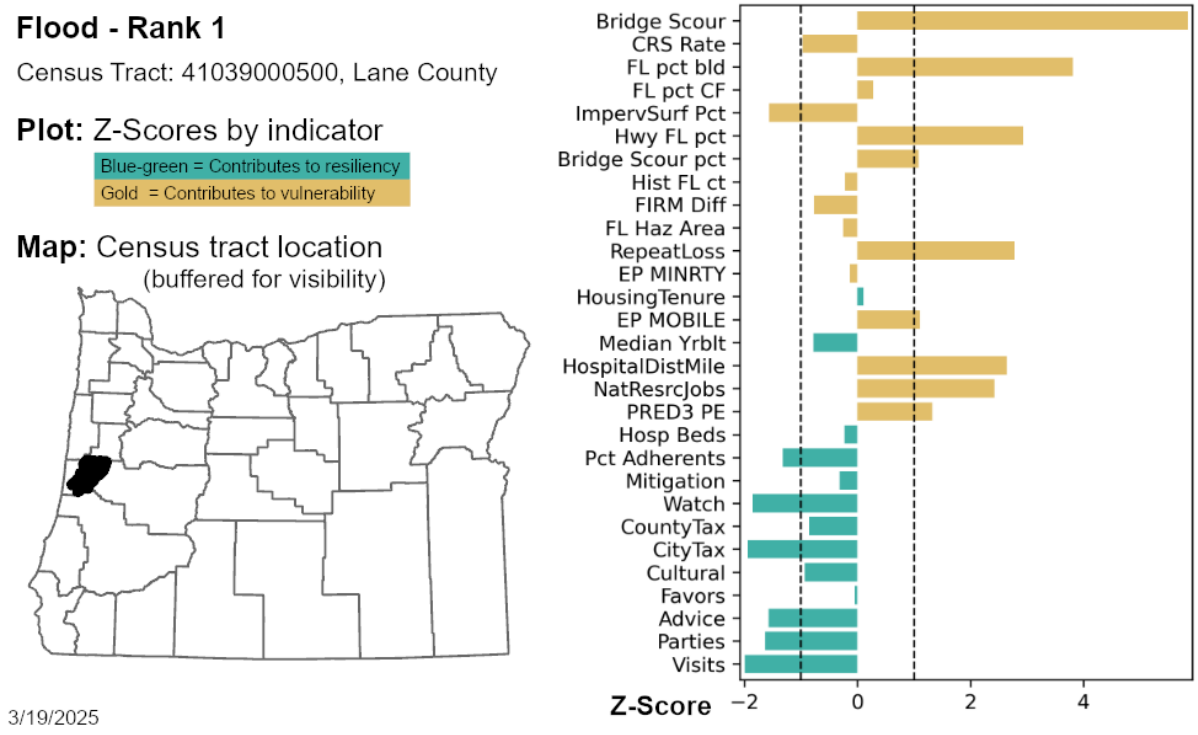


Table 9.3.1-3: Critical facilities identified in 1% annual chance flood zone

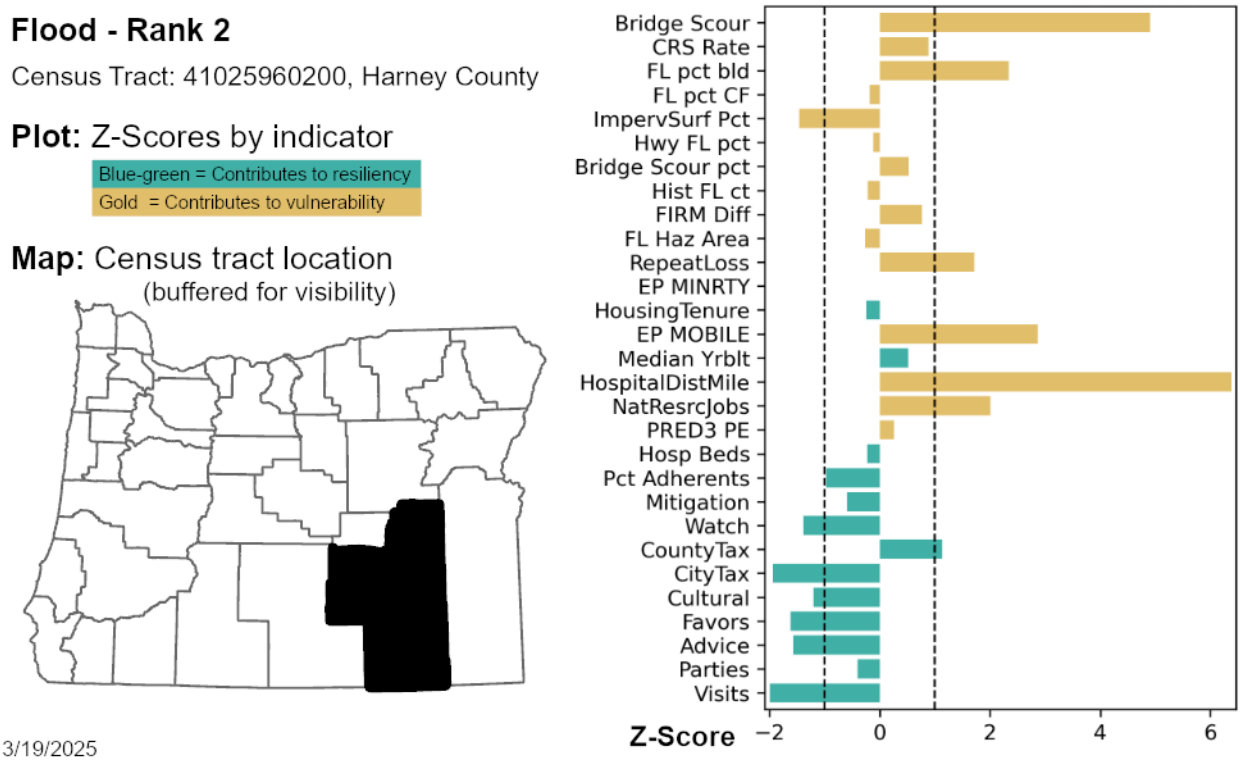
	Building Name 41039000500	Value ($)	Flood Losses ($)
Critical Facility	Mapleton Fire Department	143,695	15,530
Critical Facility	Mapleton School	70,416	6,843
Critical Facility	Swisshome Deadwood RFPD Station 2	82,008	

No state-owned buildings located in the 1% annual chance flood zone.

Flood Rank 2 – Harney County, unincorporated area south of the City of Burns 41025960200

This large census tract is in Harney County, south of the City of Burns. It rural and flat. The NRI reports a relatively low risk due to riverine flooding, with a score of 57.3. About 7 percent of the census tract population is exposed to flood hazards. The census tract has a higher than statewide average of proportion of building stock exposed to flood, and a higher than statewide average of repetitive losses. Hospitals are further away than for most census tracts. There are a higher proportion of natural resource jobs than the statewide average. County property tax rates are lower than statewide average. Social cohesion scores are also lower than statewide average.

Figure 9.3.1-3: Second ranked census tract for flood hazard

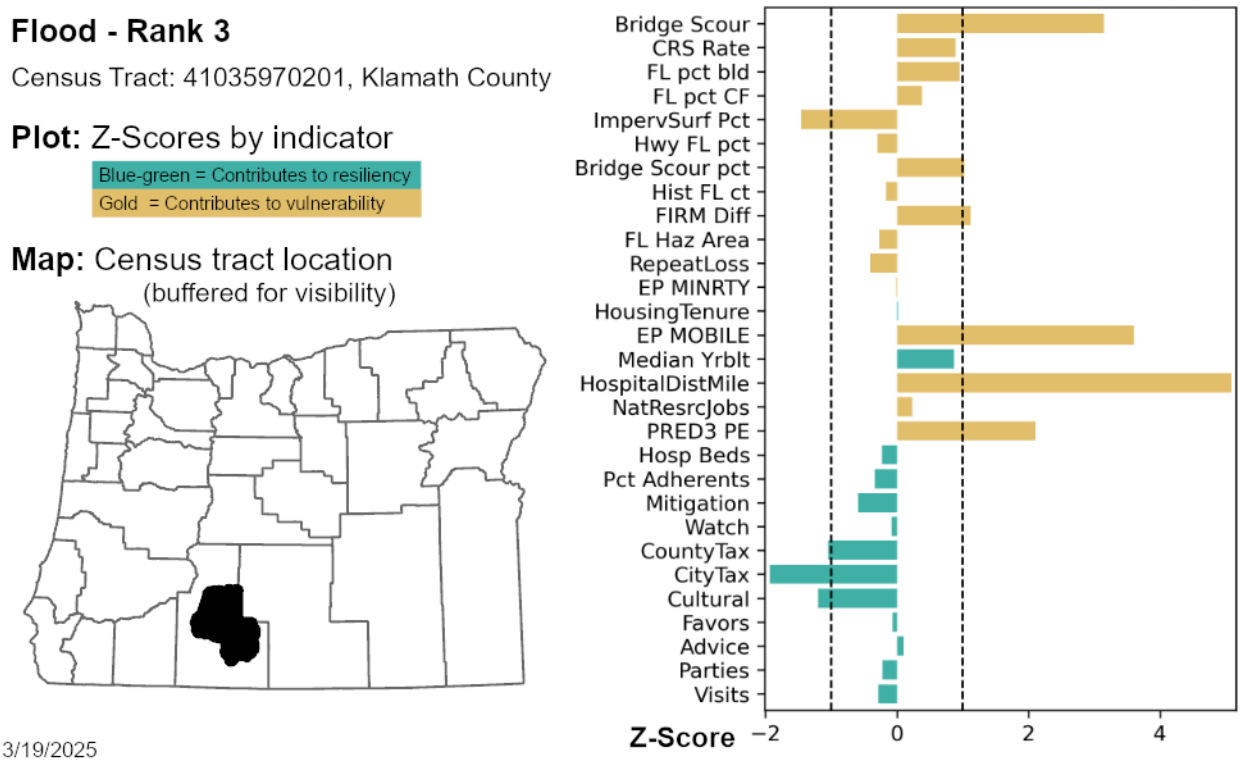


No state-owned buildings or critical facilities identified in the 1% annual chance flood zone.

Flood Rank 3 – Klamath County unincorporated area east of Chiloquin 41035970201

This extremely rural census tract has a relatively high NRI riverine flood rating of 96.1, with approximately 9% of the census tract population exposed to a flood hazard. Flood risk is driven by a much higher than statewide average percent of bridges with scour potential, and a much higher than statewide average percent of mobile homes. The CRE score indicates a lack of community resilience. Census Bureau reports that over half the population is over the age of 65. Distances to a hospital are above statewide average.

Figure 9.3.1-4: Third ranked census tract for flood hazard



No state-owned buildings or critical facilities identified in the 1% annual chance flood zone. 41035970201

Flood Rank 4 – Curry County including the City of Gold Beach 41015950201

This census tract includes the City of Gold Beach. The NRI ranks this census tract as having a relatively high riverine flood risk, with a score of 98.5. About 5 percent of the census tract population is potentially directly exposed to riverine floods. The riverine flooding source is Hunter Creek. The census tract is characterized by above statewide average repetitive losses, mobile homes, and natural resource jobs. County property tax rates are significantly lower than the statewide average whereas city taxes are just slightly below. “People associated with religious organizations” is below the statewide average, but “community cohesion” is about average.

Figure 9.3.1-5: Fourth ranked census tract for flood hazard

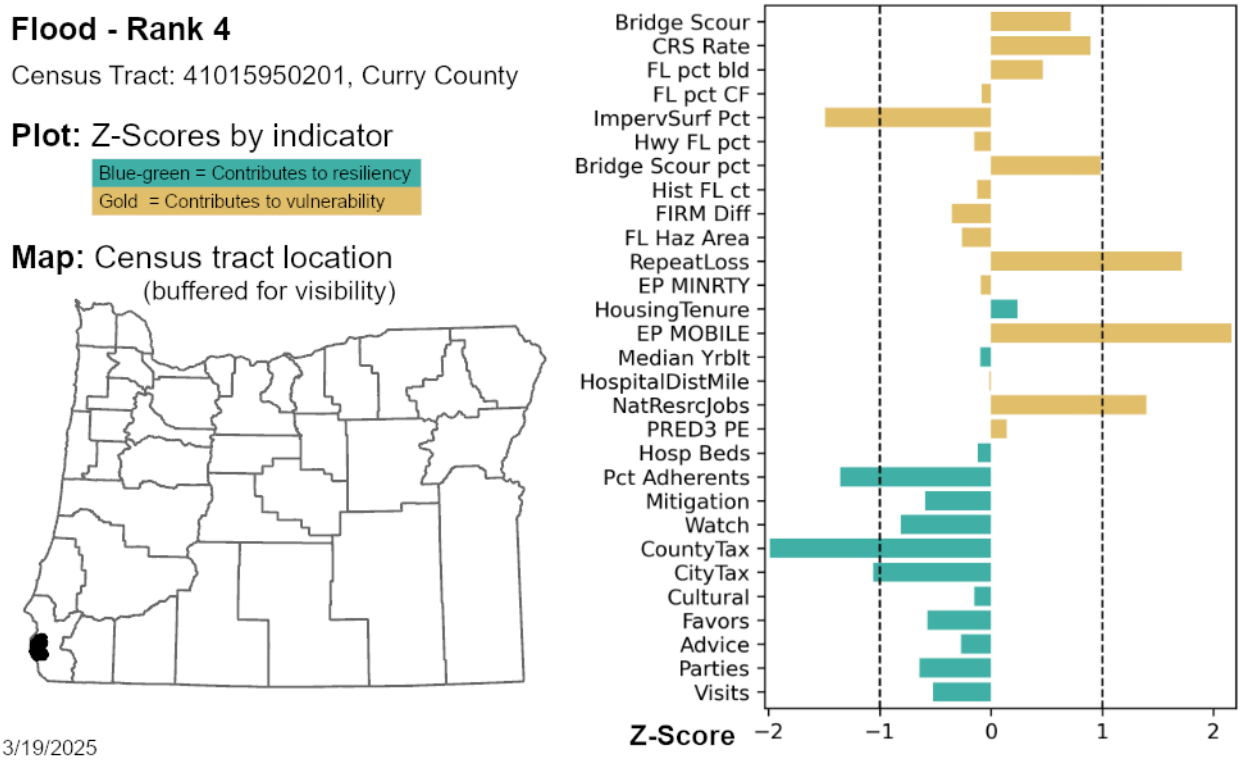


Table 9.3.1-4: Critical facilities identified in 1% annual chance flood zone

	Building Name 41015950201	Value ($)	Flood Losses ($)
Critical facility	Gold Beach Muni	2,088,716	484,641
Critical facility	Communications Structure	1,679,700	259,953

No state-owned building located in the 1% annual chance flood zone.

Flood Rank 5 – Lane County, Junction City to Harrisburg 41039000404

This census tract includes portions of Junction City and the City of Harrisburg, including part of the Junction City State Hospital campus. The census tract is characterized by a mix of urban development and agricultural land. The NRI reports a relatively high risk of flooding, with a score of 97. Almost 60 percent of the census tract population is exposed to flood risk according to the NRI (2387 people). The Oregon risk assessment confirms the extent of potential flooding with flood area, exposed buildings, exposed critical facilities, and exposed highway miles far exceeding statewide average. Bridge scour potential also exceeds statewide average. CRE is similar to statewide average while social cohesion indicator values are slightly below statewide average.

Figure 9.3.1-6: Fifth ranked census tract for flood hazard

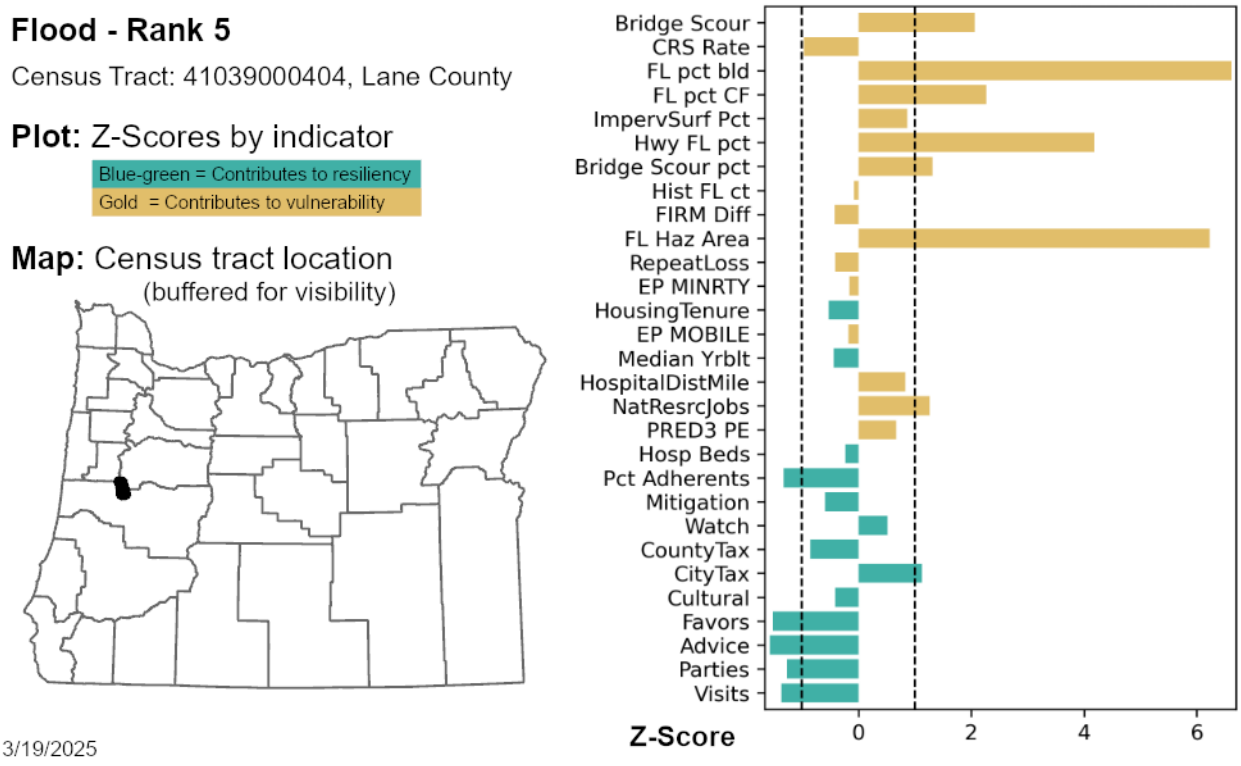


Table 9.3.1-5: State-owned buildings and critical facilities identified in 1% annual chance flood zone

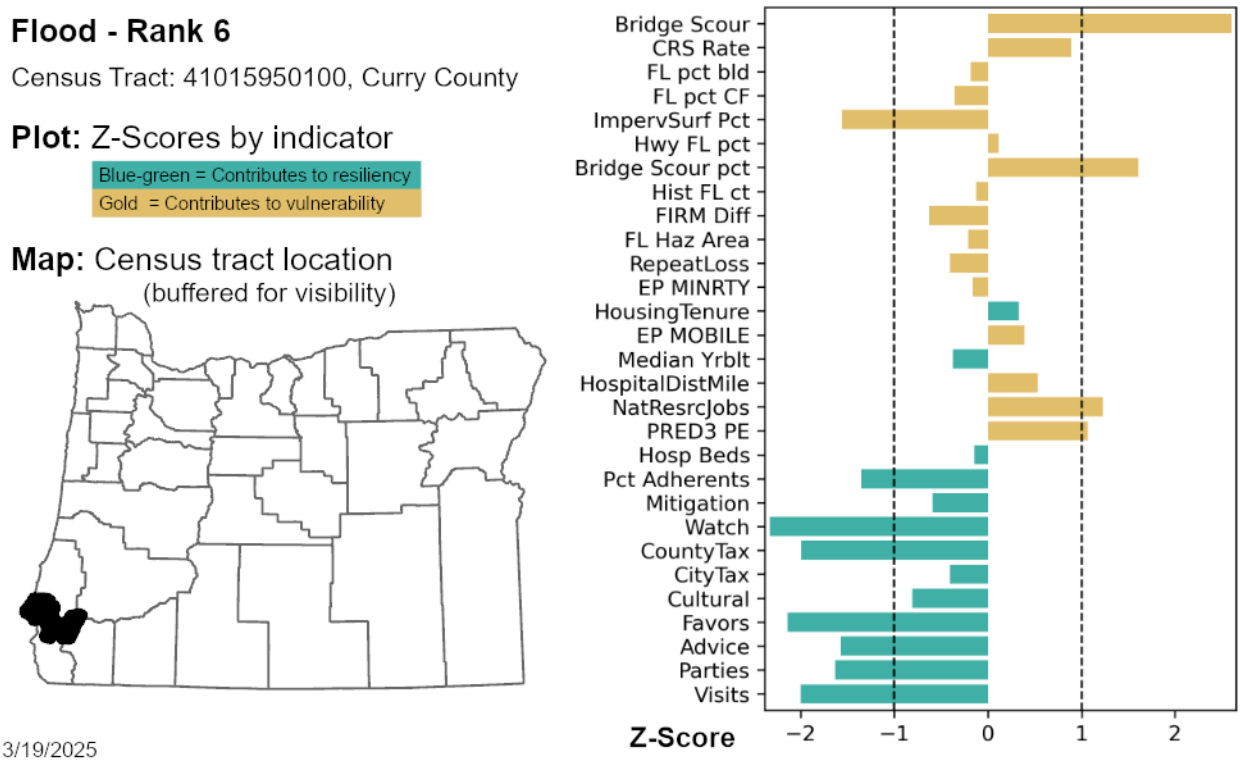
	Building Name 41039000404	Value ($)
State-owned	State Hospital Junction City	117,098,414
State-owned	Marshall Island Boat Ramp, Park, Restrooms	69,239
Critical Facility	Nature Discovery School	1,430,250

	Building Name 41039000404	Value ($)
Critical Facility	Junction City Public Works	1,564,800
Critical Facility	Communications Structure	750,000
Critical Facility	Communications Structure	3,114,600

Flood Rank 6 – Curry County, including Port Orford 41015950100

This largely rural census tract includes the small city of Port Orford. The main drivers of vulnerability appear to be percent and miles of bridges exposed to scour. Social factors indicate potential social vulnerabilities and a lack of community cohesion. Taxes in the unincorporated portion of the tract are very low compared to other counties indicating a lack of government capacity to develop mitigation projects.

Figure 9.3.1-7: Sixth ranked census tract for flood hazard



No state-owned buildings or critical facilities located in the 1% annual chance flood zone.

Flood Rank 7 – Douglas County, Drain, Elkton, and coastal mountains west of Drain 41019030000

This census tract includes the small cities of Drain and Elkton and the rural area in between. The FEMA NRI ranks this census tract as at very high flood risk with a score of 98.6. The NRI estimates that approximately 20% of the census tract population is exposed to a flood hazard (821 people). The Oregon risk assessment shows a larger than average percent of highway miles in the flood zone with very high percent of bridges in the census tract subject to scour. A higher-than-statewide average estimated percentage of mobile homes and buildings located in the flood zone increases risk. Residents have a higher-than-statewide average distance to hospitals. Both city and county tax rates are lower than the statewide average.

Figure 9.3.1-8: Seventh ranked census tract for flood hazard

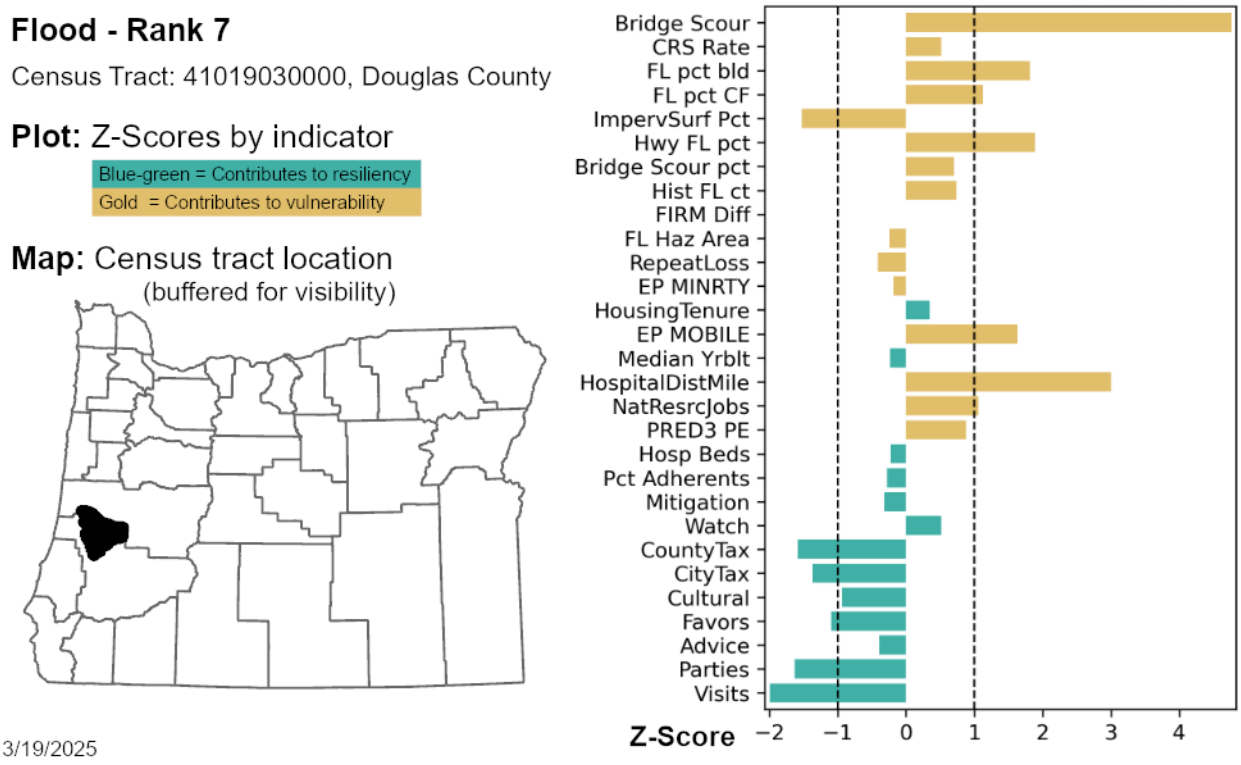


Table 9.3.1-6: State-owned buildings or critical facilities identified in 1% annual chance flood zone

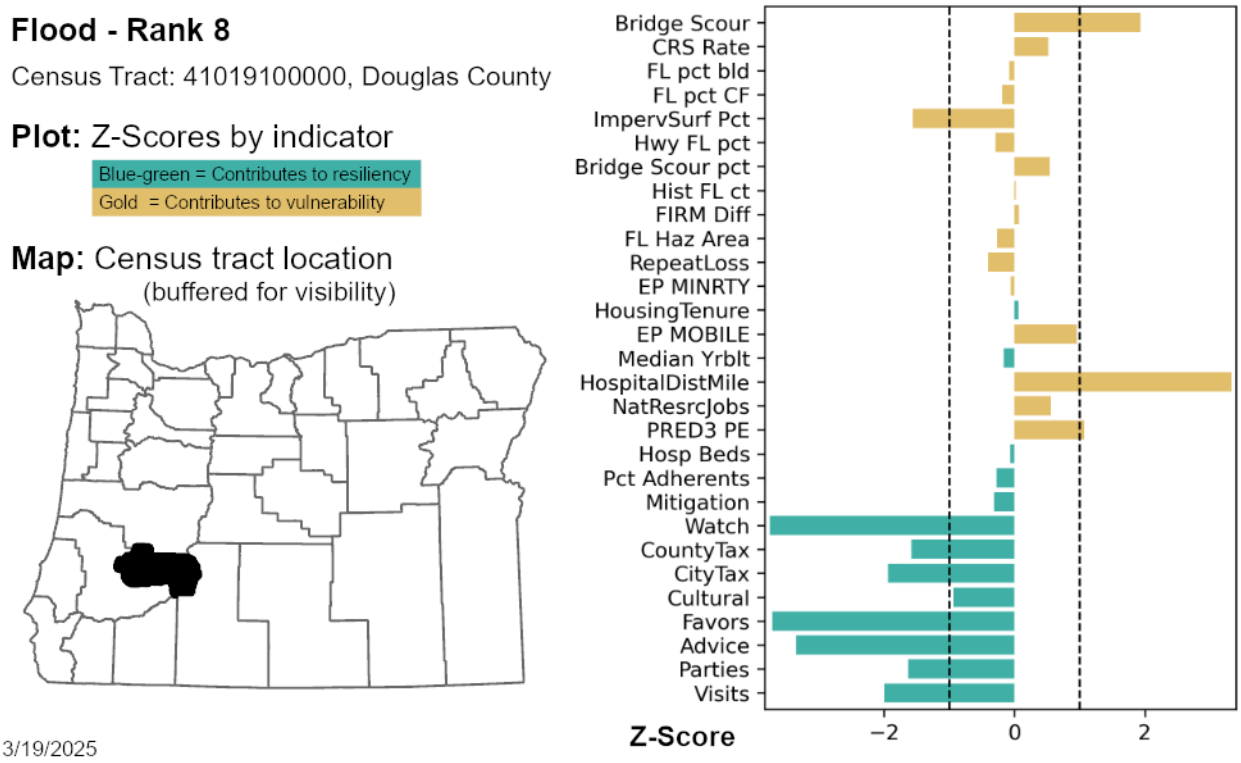
	Building Name 41019030000	Value ($)
State-owned	Unknown	95,675
State-owned	Unknown	136,002
Critical facility	Douglas County Sheriff's Office, Drain Substation	786,450
Critical facility	Drain STP	125,100
Critical facility	Drain City Shop	1,342,950

	Building Name 41019030000	Value ($)
Critical facility	Douglas County Public works	854,850
Critical facility	Douglas County Fire & EMS, annex	190,950
Critical facility	Douglas County Fire & EMS	1,102,200
Critical facility	Elkton High School	4,927,950

Flood Rank 8 – Douglas County, largely rural census tract along Umpqua River 41019100000

This rural census tract includes the small city of Glide and numerous recreational and camping sites along Highway 138. The highway follows close to the river. Hwy 138 links the City of Roseburg to Highway 97 to the east. The FEMA mapped floodplain is mostly centered on the City of Glide with the rural area floodplain left unmapped. The primary flood source is the Umpqua River. The NRI classifies the flood risk in the census tract as relatively high on a national scale, with a score of 93.3. Approximately 5 percent of the census tract population is expected to be affected (156 people). About half the population in this census tract lives in or very near the City of Glide. The Oregon risk assessment results are dominated by very low social cohesion scores, although these may be an artefact of about a third of the residents being over 65 years of age, and therefore not surveyed in the PRAMS protocol. City and county tax rates are lower that the statewide average.

Figure 9.3.1-9: Eighth ranked census tract for flood hazard

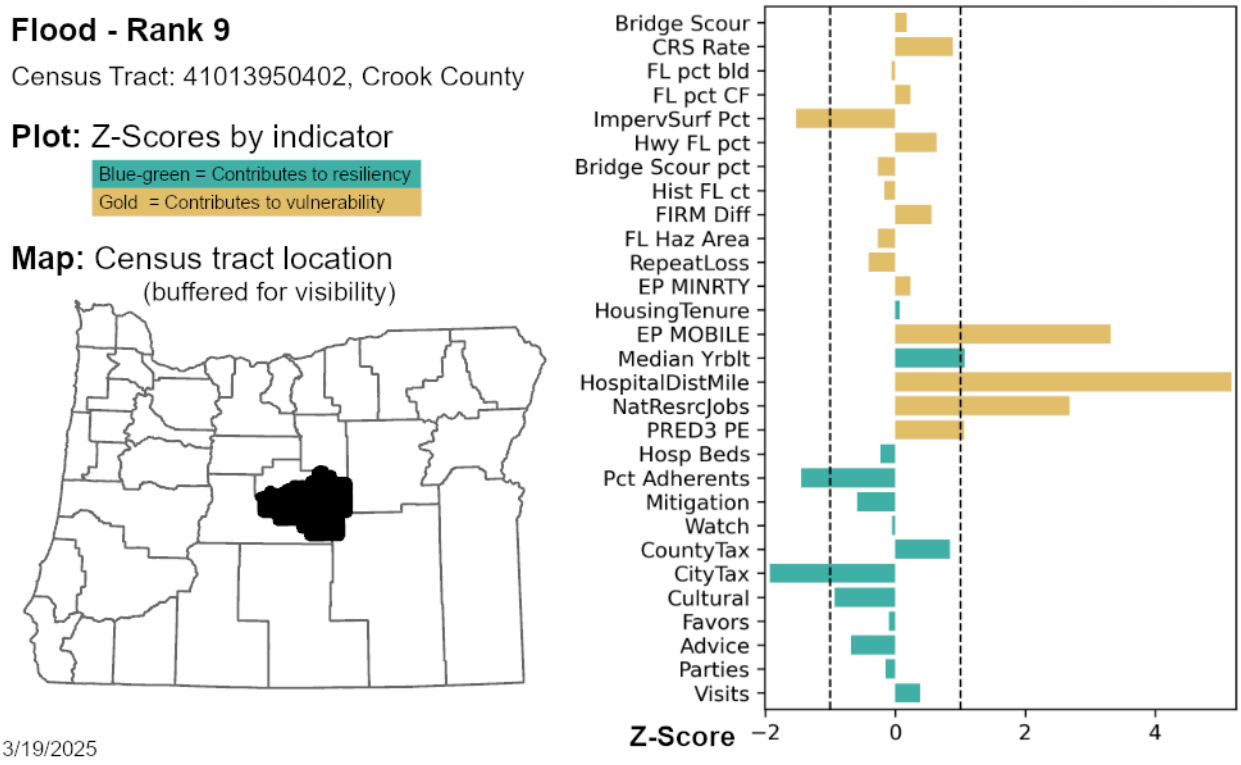


No state-owned buildings or critical facilities identified in the 1% annual chance flood zone.

Flood Rank 9 – Crook County, including the city of Prineville 41013950402

Vulnerabilities in this census tract center on a high rate of mobile homes, long distances to medical attention, and a high percentage of natural resource jobs. City tax rates are quite low compared to other cities in Oregon.

Figure 9.3.1-10: Ninth ranked census tract for flood hazard

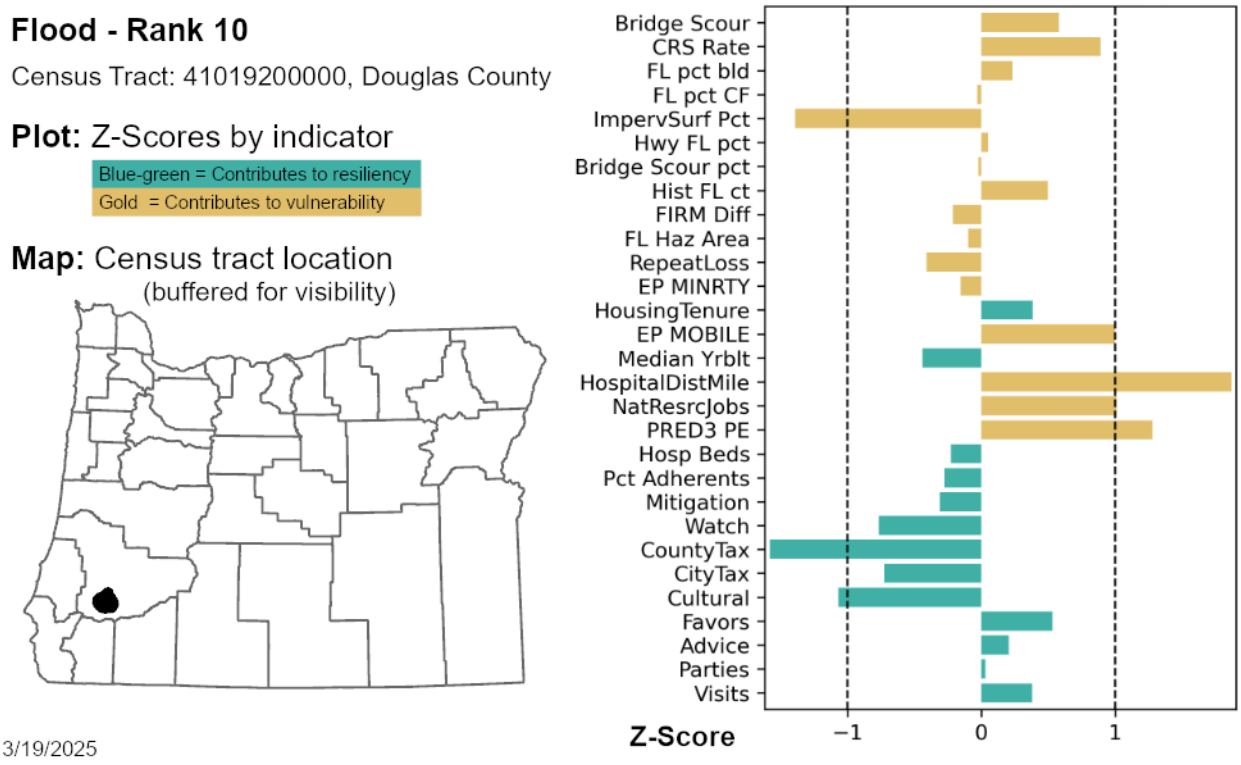


No state-owned buildings or critical facilities identified in the 1% annual chance flood zone.

Flood Rank 10 – Douglas County 41019200000

This is a mostly rural census tract that includes the small cities if Canyonville and Riddle. Vulnerabilities in this census tract arise from high social vulnerabilities and very low county tax rates. Distances to hospitals are long.

Figure 9.3.1-11: Tenth ranked census tract for flood hazard



No state-owned buildings or critical facilities identified in the 1% annual chance flood zone.

9.3.2 Coastal Zone Hazards

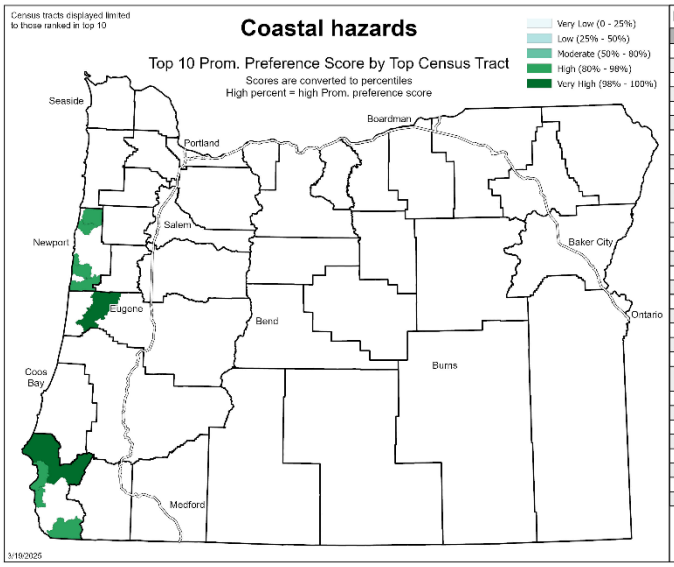
"Coastal hazards" includes coastal erosion zones and FEMA 1% annual chance flood zones for riverine and oceanfront velocity zones.

9.3.2.1 Hazard Scenario

Exposure was based on 1% annual chance floods as depicted on Federal Emergency Management Agency Flood Insurance Rate Maps. GIS layers were obtained from digital flood insurance rate maps. "Coastal hazards" also includes coastal erosion obtained from the Oregon Department of Geology and Mineral Industries.

9.3.2.2 Top Ranked Coastal Flood Risk Areas

Figure 9.3.2-1: Top Ranked Risk Areas in the Coastal Zone



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Coastal hazards	CFL_pct_bld	1	0.029	Percentage of SBFO buildings exposed to coastal flooding.
Coastal hazards	Hwy_FL_pct	1	0.029	Major roadways number of miles that are exposed to flood hazard.
Coastal hazards	CFL_pct_CF	1	0.029	Percentage of critical facilities exposed to coastal flooding.
Coastal hazards	Hist_CE_ct	1	0.029	Percentage of historic buildings exposed to coastal erosion.
Coastal hazards	SBFO_CE_pct	1	0.029	Percentage of SBFO buildings exposed to coastal erosion.
Coastal hazards	Port	1	0.029	Presence of marine port infrastructure
Coastal hazards	Bridge_Scour	1	0.029	Number of bridges that are at risk from scour during a 100-year flood.
Coastal hazards	CRS_Rate	1	0.029	Community Rating System (NFIP) score for communities.
Coastal hazards	ImpervSurf_Pct	1	0.029	Percentage of impervious surface.
Coastal hazards	FIRM_Diff	1	0.029	Number of years difference between median year built and FIRM date.
Coastal hazards	FL_Haz_Area	1	0.029	Area of tract in 100-year flood hazard.
Coastal hazards	RepeatLoss	1	0.029	Repetitive loss structures
General	EP_MINRTY	1	0.046	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.046	Housing tenure from the US Census.
General	EP_MOBILE	1	0.046	Percentage of people that live in mobile homes
General	Median_Yrblt	-1	0.046	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.046	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.046	Rate of natural resource jobs.
General	PRED3_PE	1	0.046	Community Resilience Estimate
General	Hosp_Beds	-1	0.046	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.046	Percentage of members to a religious group
General	Mitigation	-1	0.046	Number of migitation projects (grouped by zip code and evenly distributed to overlaying tracts)
General	Watch	-1	0.046	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.046	County tax rate
General	CityTax	-1	0.046	City tax rate
General	Cultural	-1	0.009	Number of cultural-related buildings
General	Favors	-1	0.009	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.009	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.009	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.009	Neighborliness: Has visited neighbor's house

Table 9.3.2-1: Oregon Natural Hazard Risk Assessment Rank Compared to the National Risk Index

Census Tract	County	Oregon Rank Coastal Hazards	National Risk Index Classification*	People Exposed to Coastal Flooding **
41039000500	Lane	1	Relatively moderate	3
41015950100	Curry	2	Relatively low	111
41015950201	Curry	3	Relatively moderate	95
41015950202	Curry	4	Relatively moderate	49

Census Tract	County	Oregon Rank Coastal Hazards	National Risk Index Classification*	People Exposed to Coastal Flooding **
41041951700	Lincoln	5	Relatively low	71
41041950601	Lincoln	6	Relatively high	338
41041950100	Lincoln	7	Relatively moderate	19
41041951200	Lincoln	8	Relatively moderate	47
41015950401	Curry	9	Relatively moderate	41
41041951500	Lincoln	10	Relatively moderate	128

*Compared to census tracts nationwide

**From the FEMA NRI

Table 9.3.2-2: Top 10 Census Tract Demographics

Census Tract	Coastal Flooding Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41039000500	1	2244	2148	-4%	0.53	0.56	0.02
41015950100	2	3296	3226	-2%	0.66	0.56	-0.10
41015950201	3	3513	3730	6%	#N/A	0.80	#N/A
41015950202	4	1923	2074	8%	#N/A	0.34	#N/A
41041951700	5	2475	2163	-13%	0.67	0.77	0.11
41041950601	6	2662	2758	4%	0.35	0.28	-0.08
41041950100	7	3450	2639	-24%	0.55	0.66	0.11
41041951200	8	2166	2501	15%	0.24	0.46	0.22
41015950401	9	2925	2723	-7%	#N/A	0.53	#N/A
41041951500	10	2953	3040	3%	0.19	0.21	0.02

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Coastal Flood Rank 1, Lane County in the vicinity of Mapleton 41039000500

This rural census tract includes the unincorporated community of Mapleton. The NRI reports a relatively moderate risk of coastal and riverine flooding, with a score of 94.7 and 89 respectively. Approximately 30% of the census tract population is exposed to flood risk (669 people). The Oregon risk assessment shows a much higher than statewide average repetitive losses due to flood. A higher than stateside average percent of buildings in the census tract are exposed to flood risk. The risk assessment also shows a higher than stateside average highway miles, bridge scour potential. Hospital distance is further than statewide average. The census tract has a higher-than-average CRE score and lower social cohesion scores indicating social vulnerability.

Figure 9.3.2-2: First ranked census tract for coastal hazards

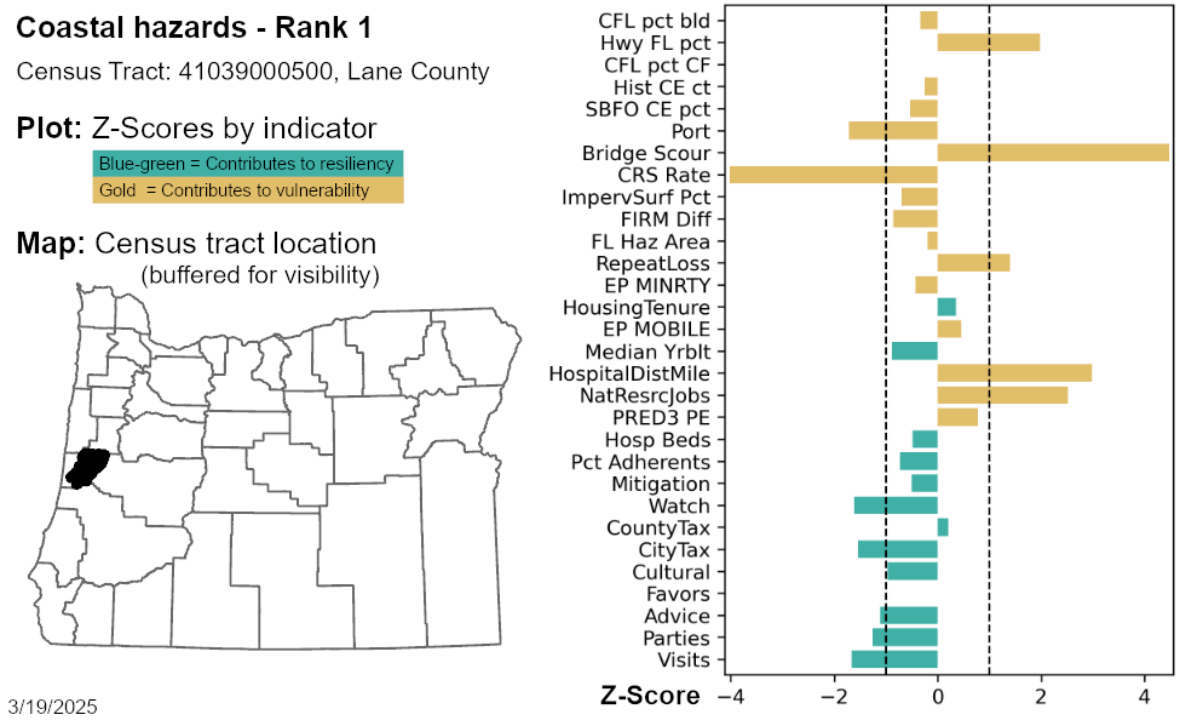


Table 9.3.2-3: Critical Facilities identified in the coastal hazard zone

	Building Name 41039000500	Value	Flood Losses
Critical facility	Mapleton Fire Department	143,695	15,530
Critical facility	Mapleton School	70,416	6,843
Critical facility	Swisshome Deadwood RFPD Station 2	82,008	

No state-owned buildings identified in the coastal hazard zone.

Coastal Flood Risk 2 – Curry County including Port Orford 41015950100

This rural census tract includes the City of Port Orford. The NRI classifies the census tract as low risk for coastal flood and high risk of riverine flood, with scores of 92.3 and 97.5 respectively. Three percent of the census tract population is exposed to these hazards. The Oregon risk assessment indicates that risk is driven by high bridge scour potential, high number of natural resources jobs, low county tax rates, and low social cohesion relative to other coastal census tracts.

Figure 9.3.2-3: Second ranked census tract for coastal hazards

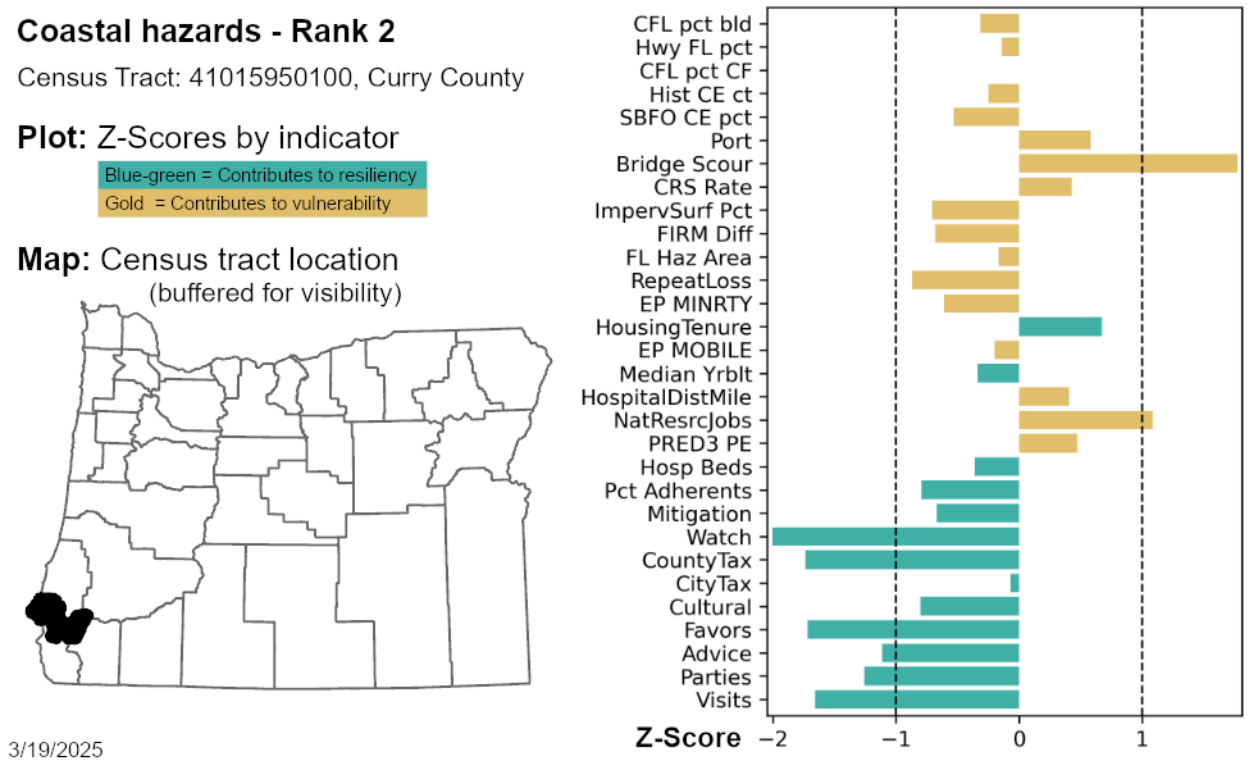


Table 9.3.2-4: State-owned Buildings identified in the coastal hazard zone

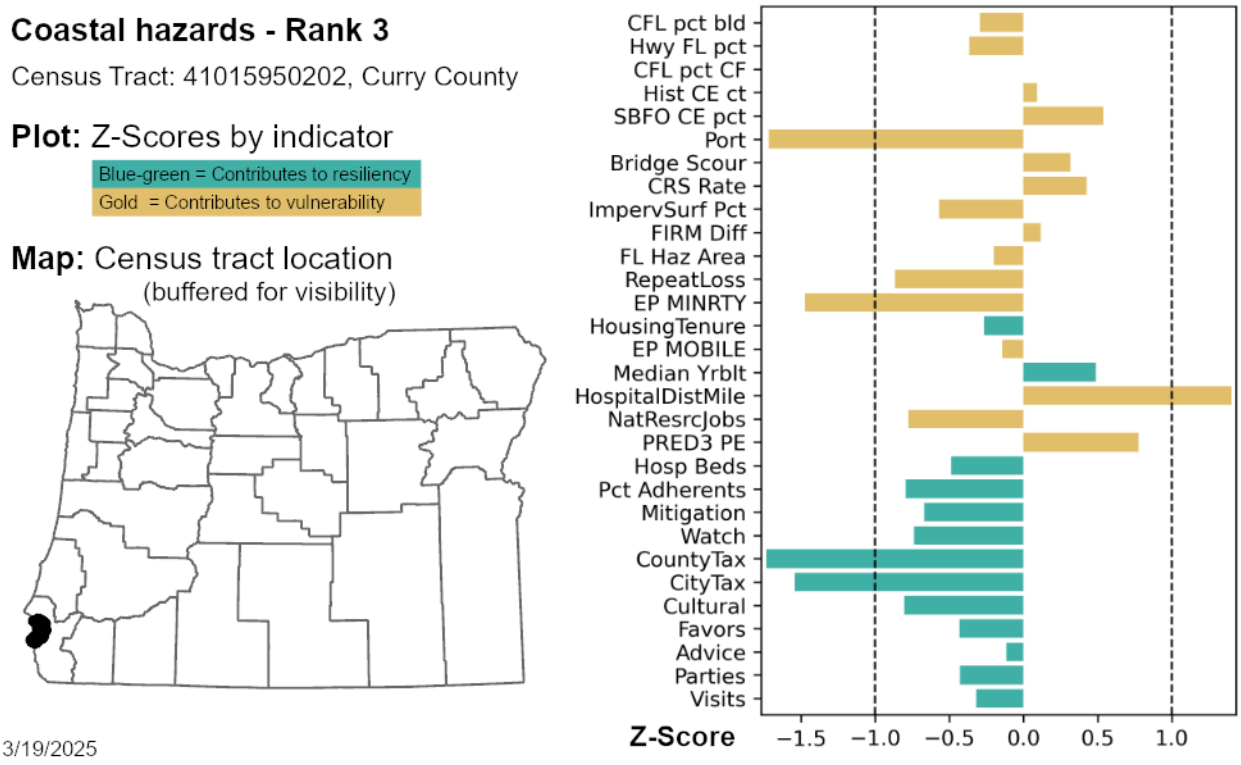
	Building Name 41015950100	Value ($)
State-owned	Communications Structure	463,050
State-owned	Cape Blanco Airport	60,668

No critical facilities located in the coastal hazard zone.

Coastal Flood Rank 3 -- Curry County including the unincorporated communities of Nesika and Wedderburn, north of the City of Gold Beach 41015950202

This census tract is mostly rural but includes the unincorporated communities of Nesika and Wedderburn. The NRI rates the census tract as having a moderate risk of coastal flooding and a very high risk of riverine flooding, with scores of 94.1 and 99.1 respectively. Approximately 12 percent of the census tract population is exposed to flood risk (224 people). The Oregon risk assessment indicates that drivers of risk include long distance to a hospital and low county tax rates when compared to other coastal census tracts.

Figure 9.3.2-4: Third ranked census tract for coastal hazards



No state-owned buildings or critical facilities identified in the coastal hazard zone.

Coastal Flooding Rank 4 – Curry County, including Gold Beach 41015950201

This coastal census tract includes the City of Gold Beach. The NRI ranks this census tract as having moderate coastal flood risk and high riverine flood risk, with scores of 93.5 and 98.5 respectively. Eight percent of the census tract population is exposed to these hazards (281 people). The Oregon risk assessment indicates that a high number of mobile homes, high number of natural resource jobs, and low county tax rates drive risk when compared to other coastal census tracts.

Figure 9.3.2-5: Fourth ranked census tract for coastal hazards

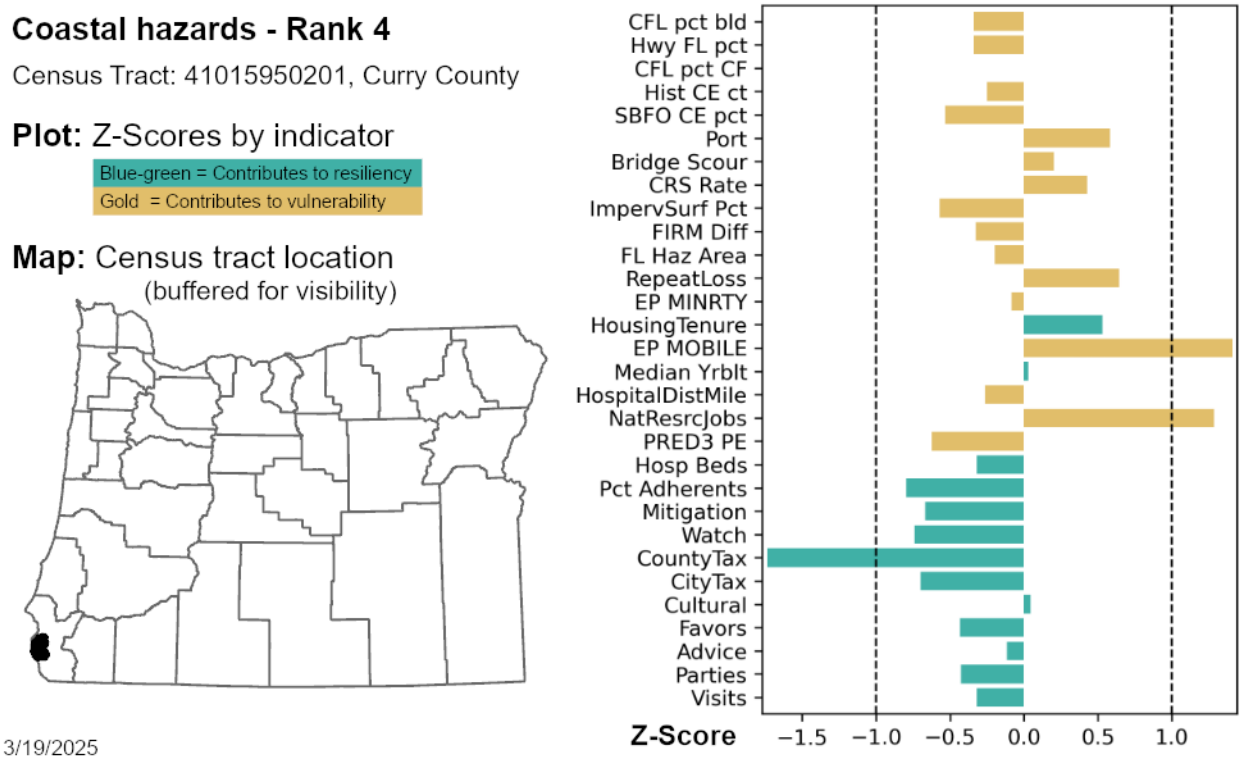


Table 9.3.2-5: Critical Facilities identified in the Coastal Hazard Zone

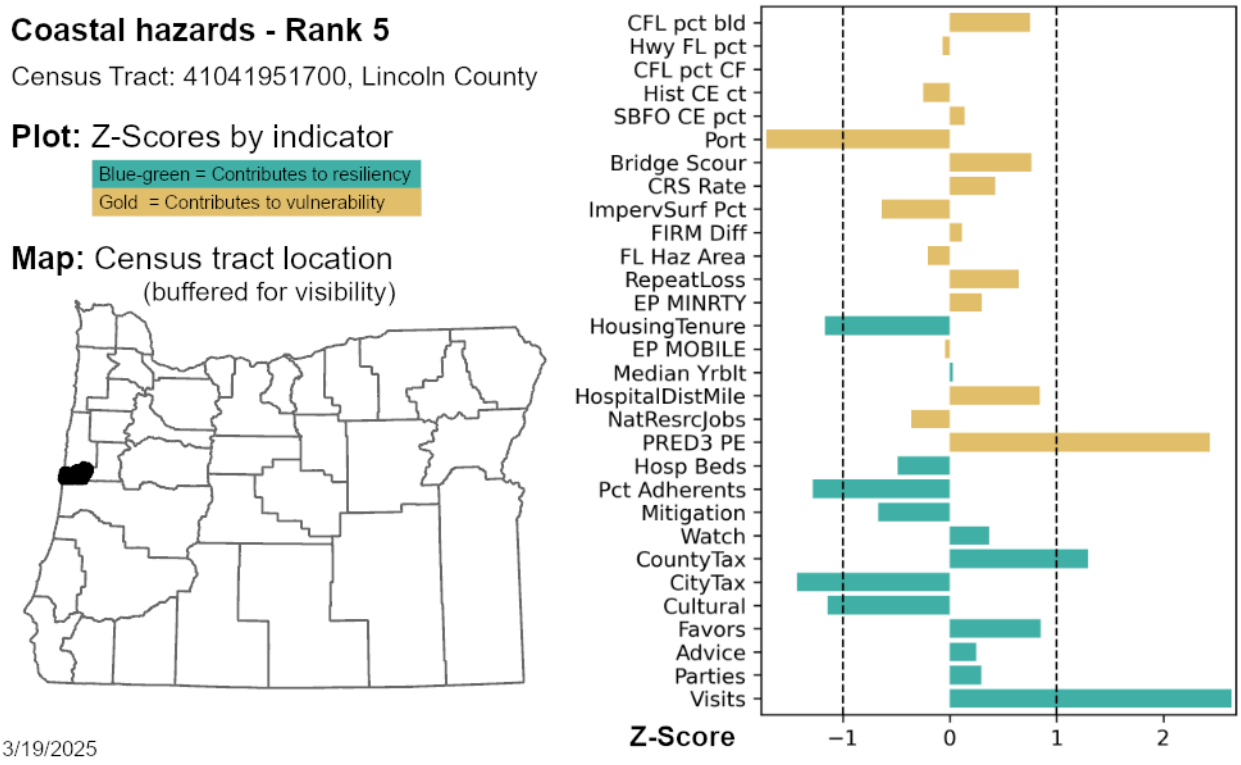
	Building Name 41015950201	Value	Flood Losses
Critical facility	Communications Structure	1,679,700	259,993
Critical facility	Gold Beach Muni	2,088,716	484641

No state-owned buildings identified in the coastal hazard zone.

Coastal Flooding Rank 5 – Lincoln County including the City of Yachats 41041951700

This mostly rural coastal census tract includes the City of Yachats. The NRI ranks the census tract low for coastal flooding and moderate for riverine flooding, with scores of 92.6 and 90.7 respectively. Approximately 9 percent of the census tract population is exposed to these flood hazards (222 people). The Oregon risk assessment finds that risk is dominated by low community resilience although social cohesion scores are near average for the coastal census tracts. City tax rates are also lower than for other coastal census tracts, but county tax rate is higher.

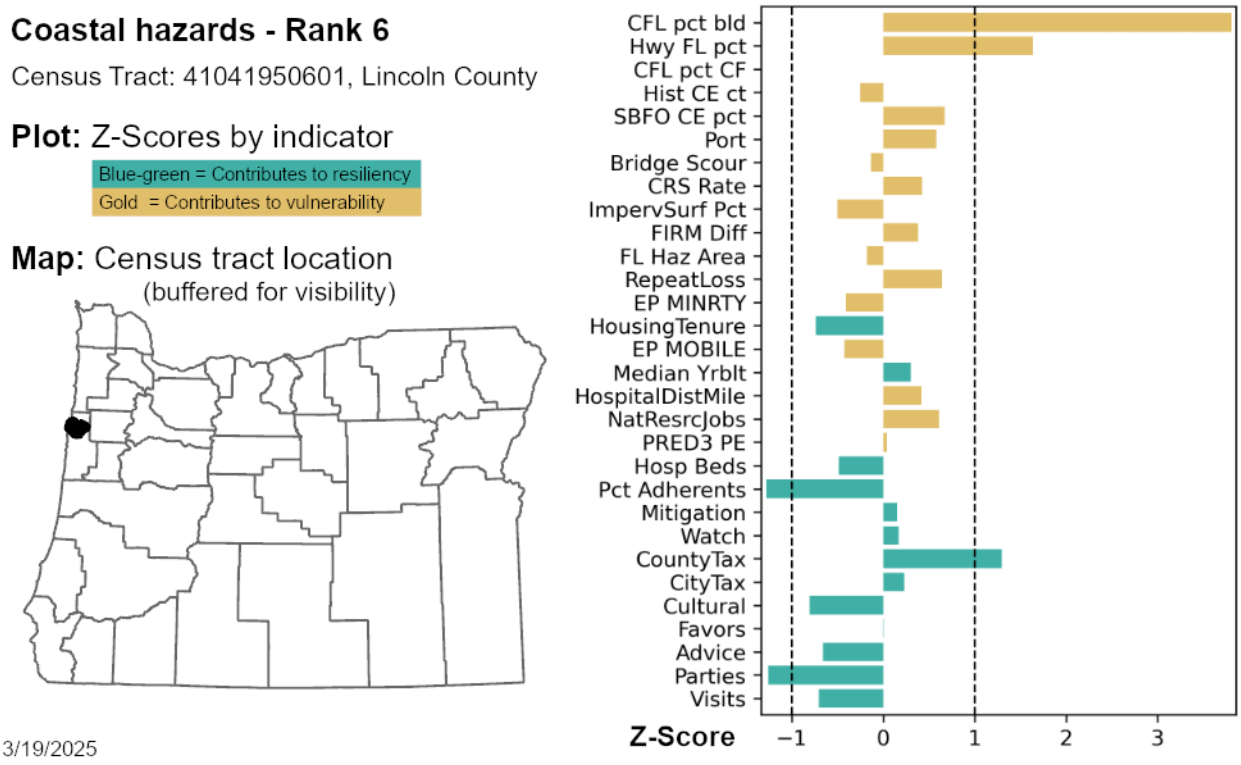
Figure 9.3.2-6: Fifth ranked census tract for coastal hazards



No state-owned Buildings or Critical Facilities identified in the coastal hazard zone. 41041951700

Coastal Flooding Rank 6 – Lincoln County in the vicinity of Otis and Rose Lodge 41041950601

Figure 9.3.2-7: Sixth ranked census tract for coastal hazards

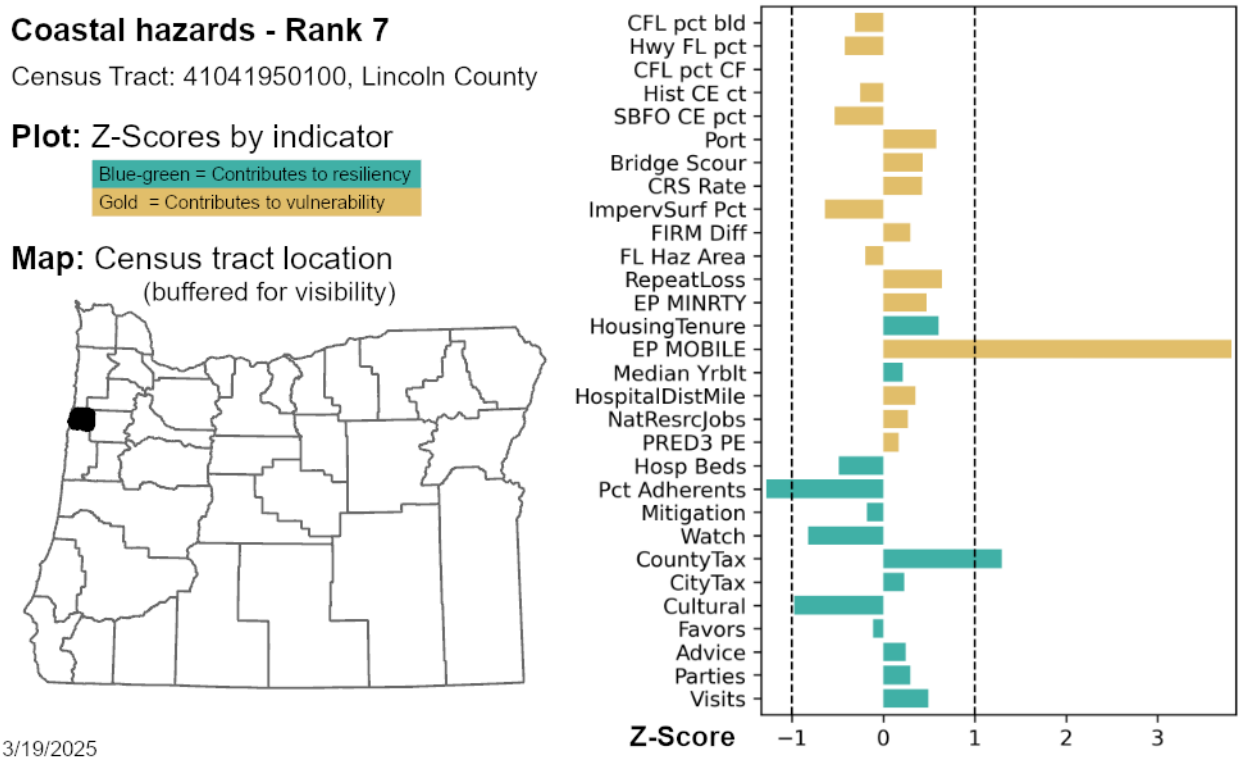


No state-owned buildings or critical facilities identified in coastal flood hazard zone.

Coastal Flooding Rank 7 – Lincoln County in the vicinity of Otis and Rose Lodge 41041950100

The NRI ranks this rural census tract as at moderate risk of coastal and riverine flooding, with scores of 95.6 and 88.8 respectively. Seven percent of the census tract population is exposed to these flood hazards (251 people). Risk is dominated by a much higher than average number of mobile homes when compared to other coastal census tracts.

Figure 9.3.2-8: Seventh ranked census tract for coastal hazards

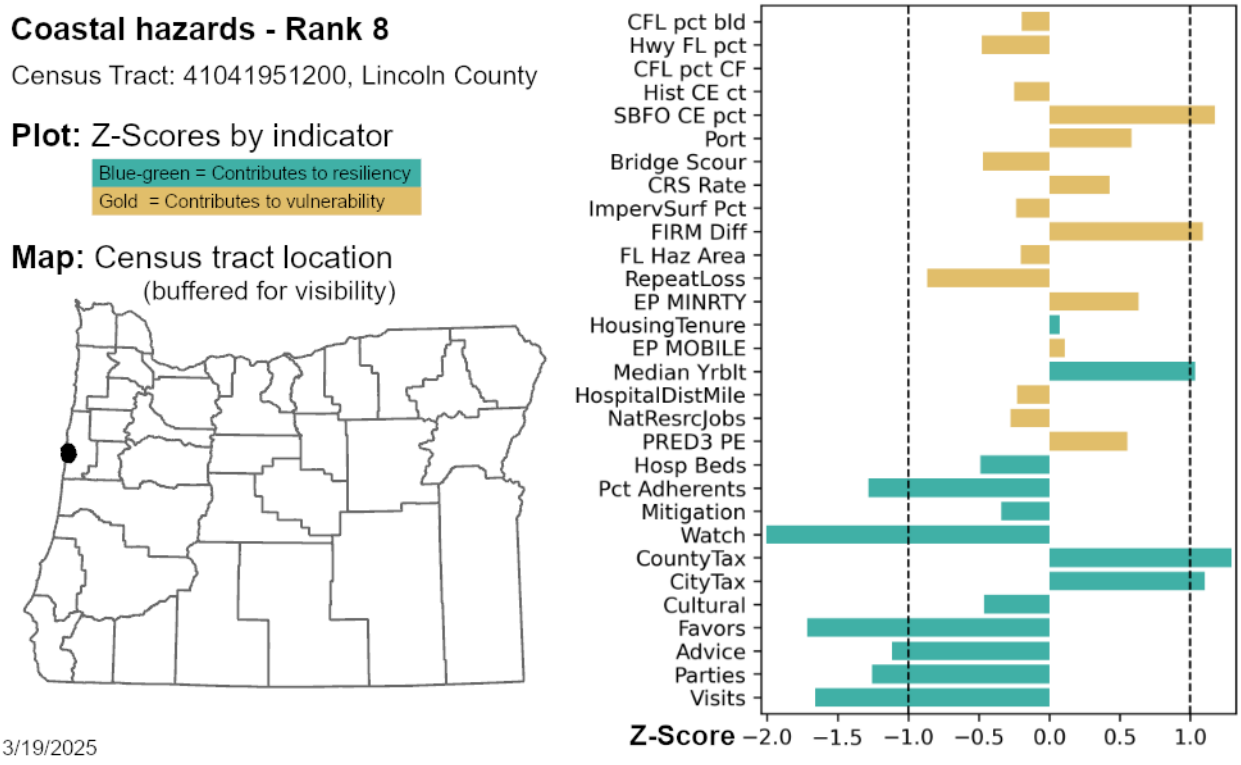


No state-owned buildings or critical facilities identified in coastal hazard zones.

Coastal Flooding Rank 8– Lincoln County 41041951200

Risk in this census tract is driven by a high percentage of buildings located in coastal erosion zone.

Figure 9.3.2-9: Eighth ranked census tract for coastal hazards



No state-owned buildings or critical facilities identified in coastal hazard zones.

Coastal Hazards 9 – Curry County 41015950401

This census tracts abuts 41015950301 (Coastal Hazards rank 9). It is also rural and includes unincorporated communities near the Chetco River. According to the NRI it is at relatively moderate risk of coastal flooding and relatively high risk for riverine flooding. Together approximately 4 percent of census tract population is exposed to flood risks. Oregon risk assessment risk drivers include percentage of buildings and highway miles in the census tract that are located in the flood zones relative to other coastal census tracts.

Figure 9.3.2-10: Tenth ranked census tract for coastal hazards

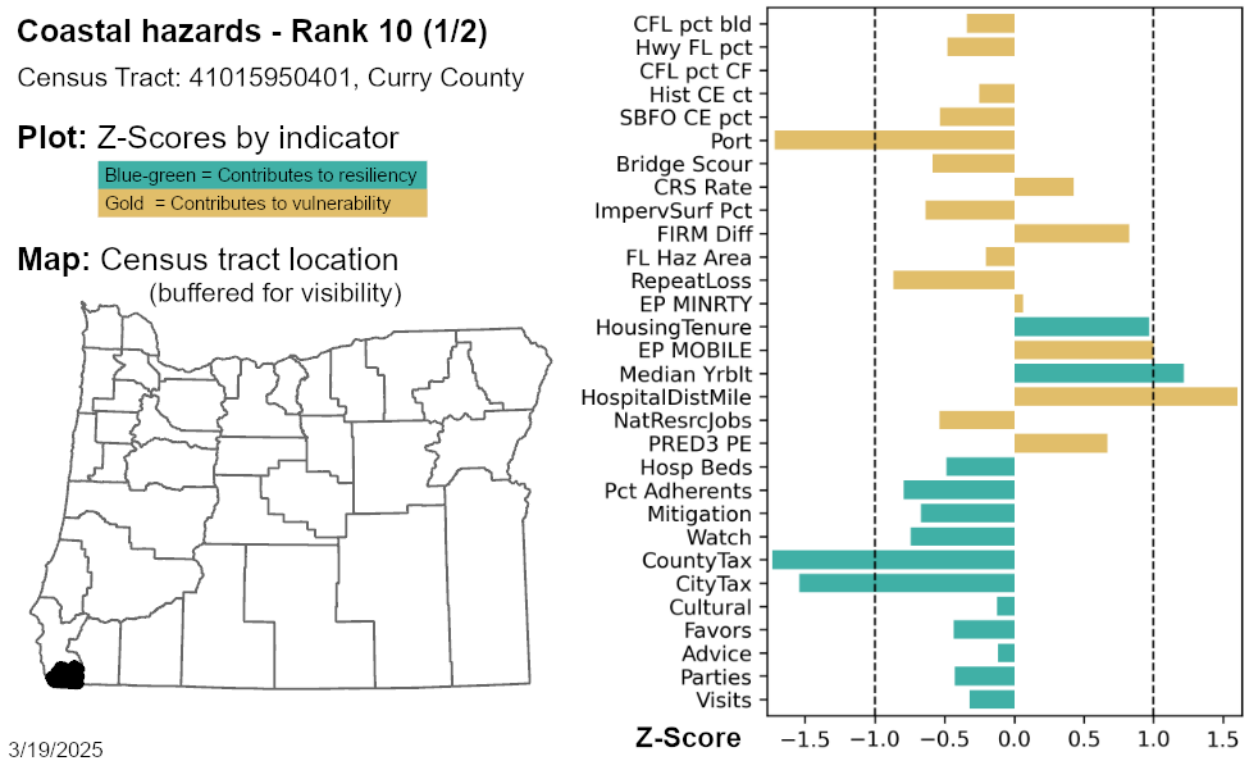


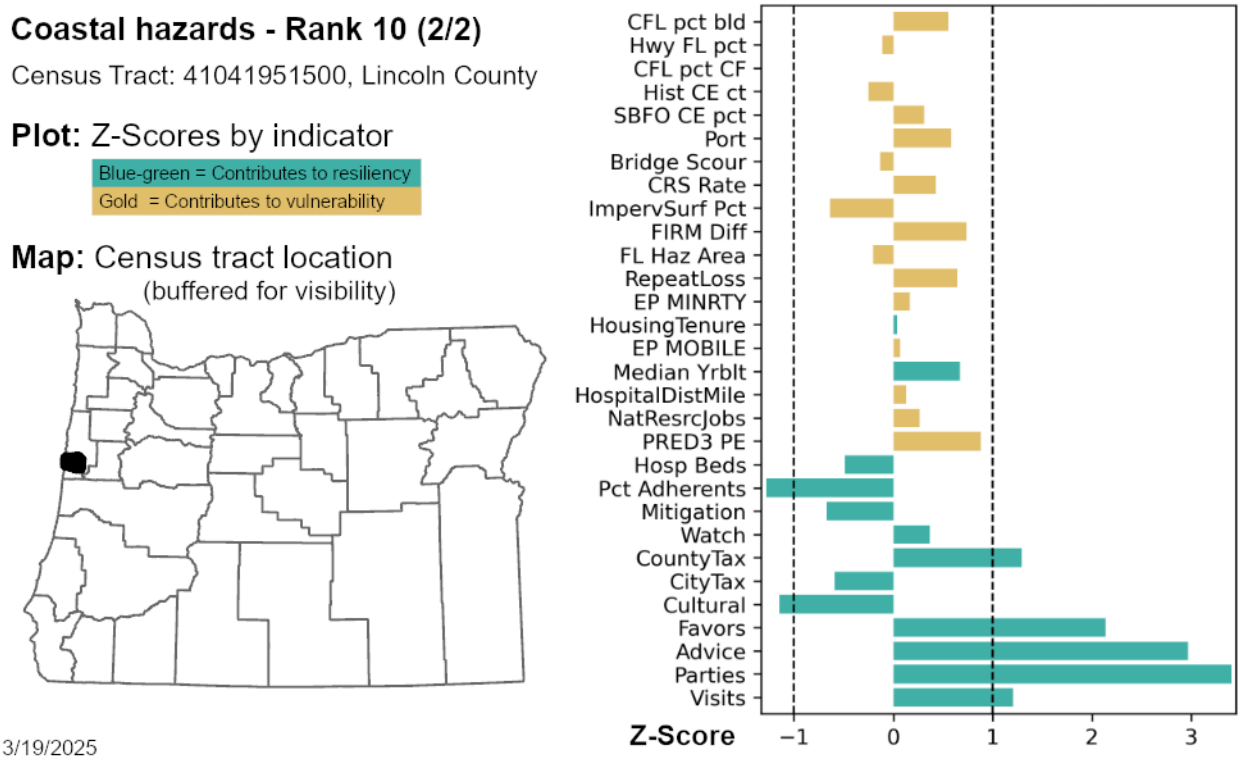
Table 9.3.2-6: State-owned Buildings identified in the coastal hazard zone

	Building Name 41015950401	Value ($)
State-owned	Crissey Field Welcome Center	3,959,447

No critical facilities identified in the coastal hazard zone.

Coastal Hazards 10 – Lincoln 41041951500

Figure 9.3.2-11: Tenth ranked census tract for coastal hazards



No state-owned buildings or critical facilities identified in the coastal hazard zone.

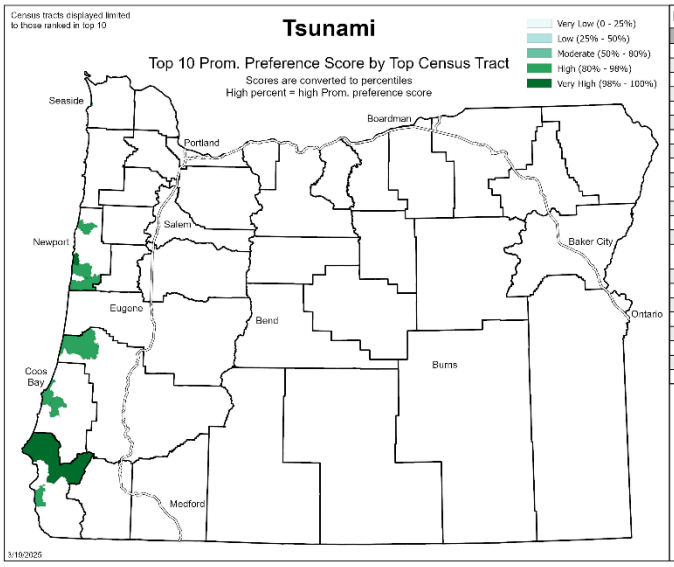
9.3.3 Tsunami

9.3.3.1 Hazard Scenario

Tsunami risks were evaluated based on exposure to any size (SM-XXL) CSZ tsunami.

9.3.3.2 Top Ranked Tsunami Risk Areas

Figure 9.3.3-1: Top Ranked Risk Areas in the Tsunami Zone



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Tsunami	TSU_pct_bld	1	0.07	Percentage of SBFO buildings exposed to any sized CSZ tsunami.
Tsunami	TSU_pct_CF	1	0.07	Percentage of critical facilities exposed to any sized CSZ tsunami.
Tsunami	Port	1	0.07	Presence of marine port infrastructure
Tsunami	Bridges_TSU	1	0.07	Number of bridges that are within a tsunami inundation zone.
Tsunami	Hist_Tsu_ct	1	0.07	Percentage of historic buildings exposed to any sized CSZ tsunami.
General	EP_MINRTY	1	0.046	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.046	Housing tenure from the US Census.
General	EP_MOBILE	1	0.046	Percentage of people that live in mobile homes
General	Median_Yrblt	-1	0.046	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.046	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.046	Rate of natural resource jobs.
General	PRED3_PE	1	0.046	Community Resilience Estimate
General	Hosp_Beds	-1	0.046	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.046	Percentage of members to a religious group
General	Mitigation	-1	0.046	Number of migitation projects (grouped by zip code and evenly distributed to overlaying tracts)
General	Watch	-1	0.046	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.046	County tax rate
General	CityTax	-1	0.046	City tax rate
General	Cultural	-1	0.009	Number of cultural-related buildings
General	Favors	-1	0.009	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.009	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.009	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.009	Neighborliness: Has visited neighbor's house

Table 9.3.3-1: Oregon Natural Hazard Risk Assessment Rank Compared to the National Risk Index

Oregon Rank	Census Tract	County	National Risk Index Classification*	People Exposed to Tsunami**
1	41015950100	Curry	Relatively high	1402
2	41041951200	Lincoln	Relatively high	896
3	41041951700	Lincoln	Relatively high	2187
4	41041950601	Lincoln	Relatively moderate	1704
5	41015950201	Curry	Relatively high	2187
6	41007950900	Clatsop	Relatively high	4861
7	41011000502	Coos	Relatively moderate	1926
8	41019010000	Douglas	Relatively moderate	1538

Oregon Rank	Census Tract	County	National Risk Index Classification*	People Exposed to Tsunami**
9	41041951500	Lincoln	Relatively moderate	1203
10	41011000902	Coos	Relatively Low	185

*Compared to census tracts nationwide
** From the NRI accessed 03/26/2025

Table 9.3.3-2: Top 10 Census Tract Demographics

Census Tract	Tsunami Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41015950100	1	3296	3226	-2%	0.66	0.56	-0.15
41041951200	2	2166	2501	15%	0.24	0.46	0.95
41041951700	3	2475	2163	-13%	0.67	0.77	0.16
41041950601	4	2662	2758	4%	0.35	0.28	-0.21
41015950201	5	3513	3730	6%	#N/A	0.80	#N/A
41007950900	6	4861	4793	-1%	0.89	0.86	-0.04
41011000502	7	2977	2494	-16%	0.66	0.56	-0.15
41019010000	8	2320	2434	5%	0.79	0.44	-0.44
41041951500	9	2953	3040	3%	0.19	0.21	0.13
41011000902	10	3684	3390	-8%	#N/A	0.81	#N/A

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Tsunami Rank 1 – Curry County including the City of Port Orford 41015950100

Tsunami risk in this census tract is dominated by a higher-than-average number of bridges within the tsunami inundation zone, a higher-than-average number of natural resource dependent jobs, lower than average county property tax rates, and lower than average social cohesion. The NRI estimates that 1402 or 42 percent of the census tract population is exposed to the tsunami inundation area. The NRI rates this census tract as relatively high for tsunami risk.

Figure 9.3.3-2: First ranked census tract for tsunami hazard

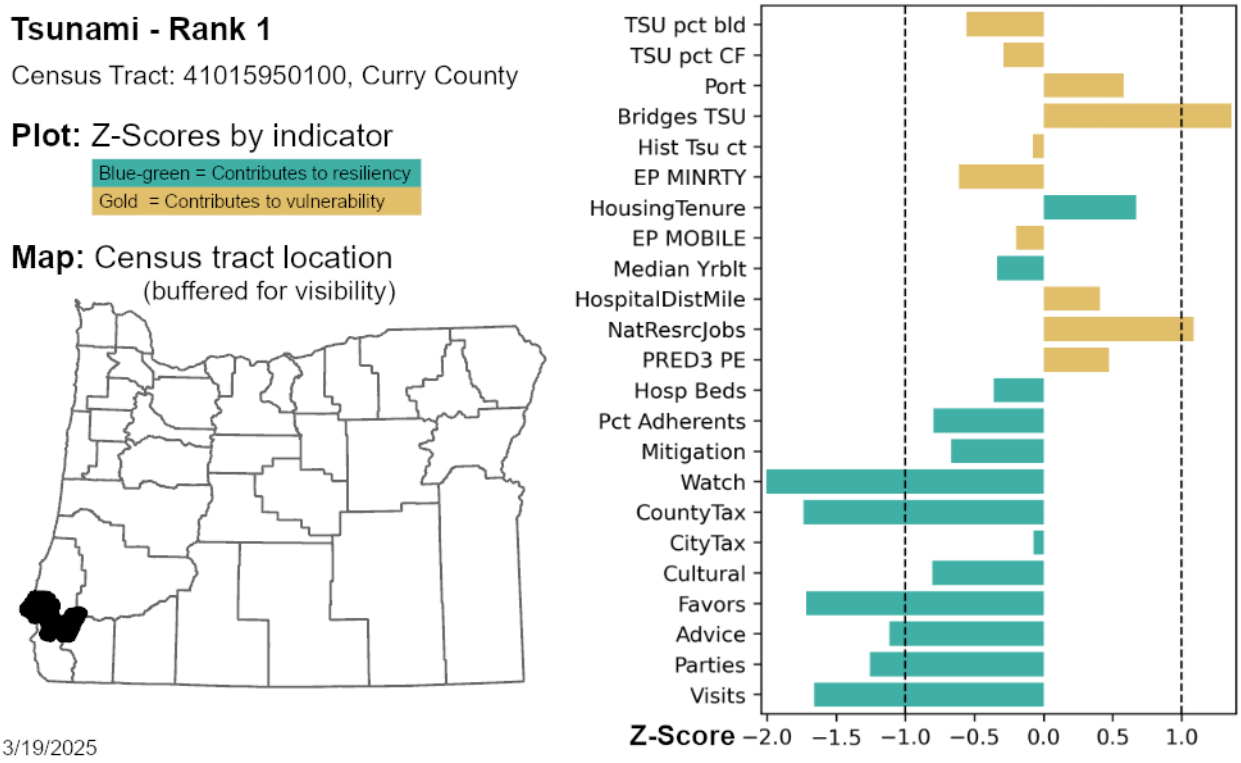


Table 9.3.3-3: Critical Facilities in Tsunami SM-XXL Zone

	Building Name 41015950100	Value ($)	Source
Critical facility	Driftwood Elementary School	997771	DOGAMI/DAS
Critical facility	CURRY FAMILY MEDICAL	178464	DOGAMI/DAS
Critical facility	PORT ORFORD POLICE DEPARTMENT	173340	DOGAMI/DAS
Critical facility	Port Orford RFPD	273150	DOGAMI/DAS

No state-owned buildings identified in tsunami zone.

Tsunami Rank 2 -- Lincoln County 41041951200

Tsunami risk in this census tract is driven by the high percentage of people exposed to the hazard. The NRI estimates that 896 people or 41 percent of the population are exposed. The Oregon risk assessment finds a higher-than-average number of historic buildings exposed to the hazard. The Yaquina Bay and Yaquina Head Lighthouses are located in the XXL tsunami zone. The area is characterized by lower-than-average social cohesion. The NRI rates this census tract as being at relatively high risk for harm caused by tsunami.

Figure 9.3.3-3: Second ranked census tract for tsunami hazard

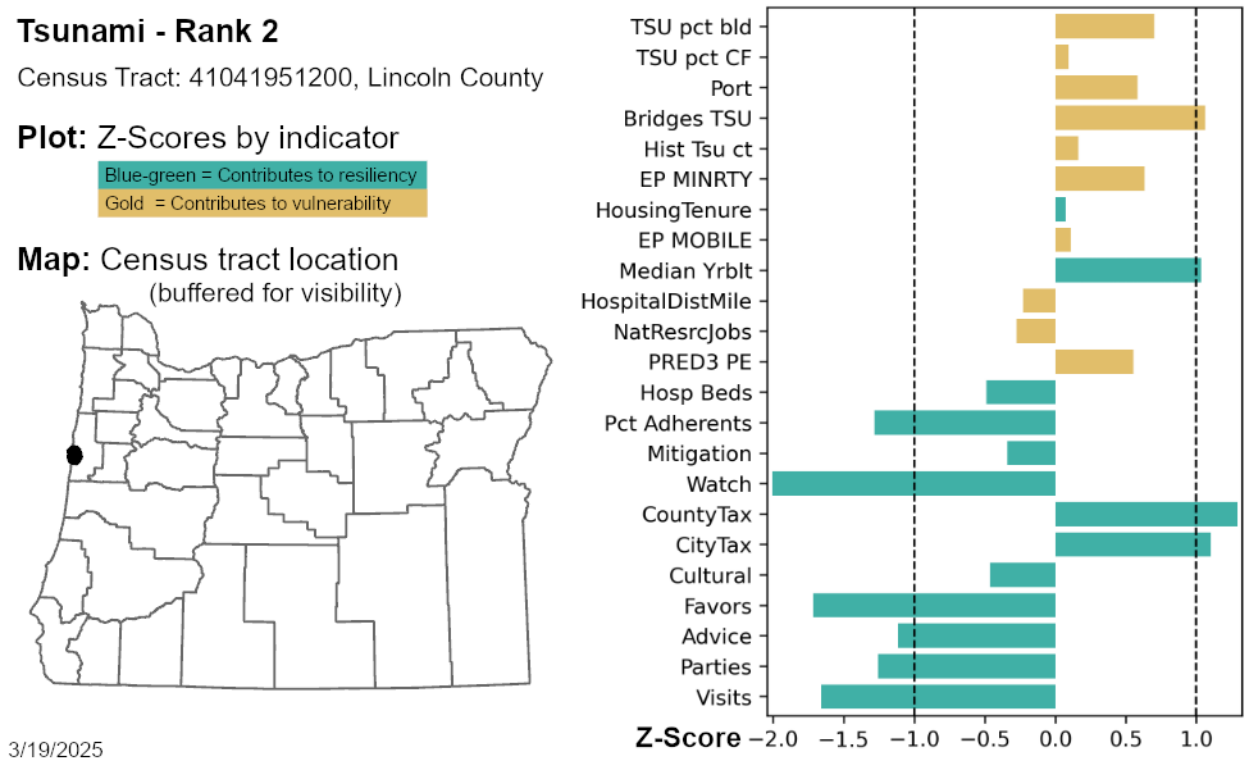


Table 9.3.3-4: State-owned Buildings or Critical Facilities in Tsunami SM-XXL Zone

	Building Name 41041951200	Value ($)	Source
State-owned	Ona Beach	179311	DOGAMI/DAS
State-owned	Lost Creek State Park Day Use	101603	DOGAMI/DAS
State-owned	South Beach State Park	6528638	DOGAMI/DAS
State-owned	Yaquina Bay Lighthouse	unknown	RAPT
State-owned	Marine Resources Program	3523355	DOGAMI/DAS
Critical facility	Communication Structure	1651200	DOGAMI/DAS
Critical facility	Communication Structure	103650	DOGAMI/DAS

Tsunami Rank 3 – Lincoln County in the vicinity of Yachats 41041951700

Figure 9.3.3-4: Third ranked census tract for tsunami hazard

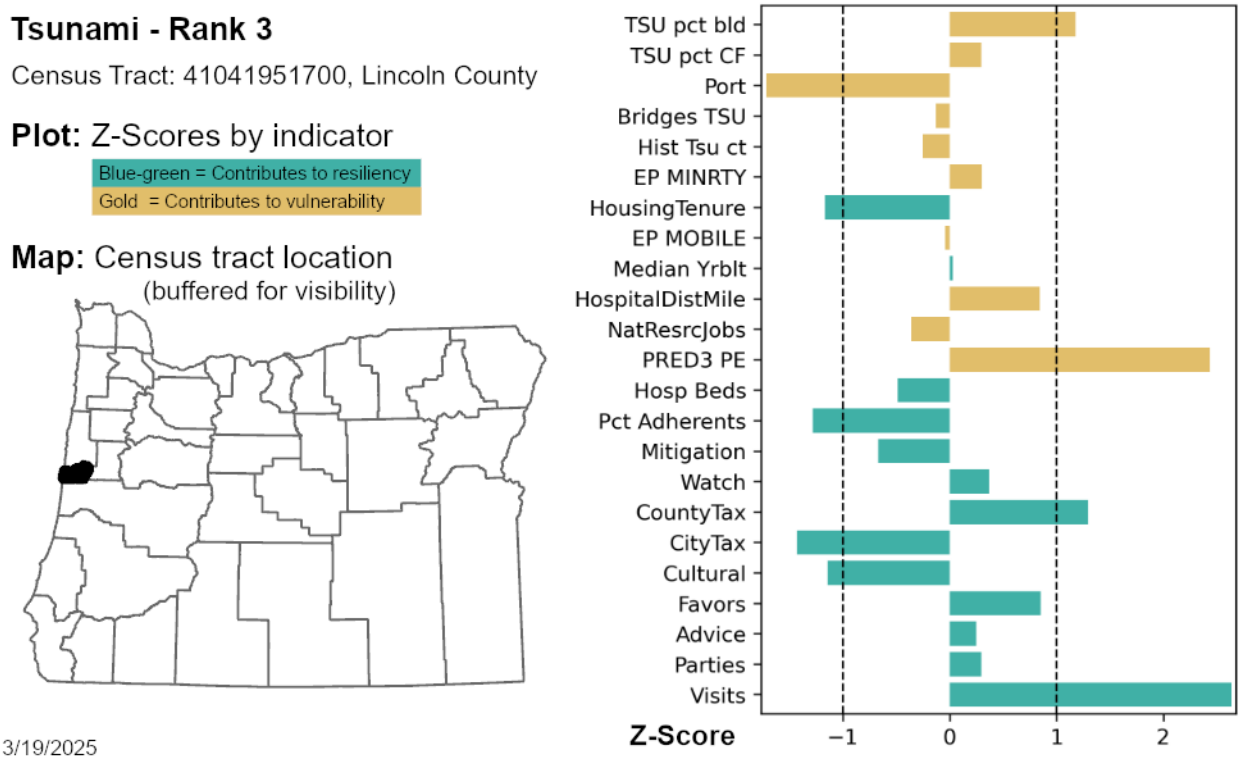


Table 9.3.3-5: Critical Facilities in Tsunami SM-XXL Zone

	Building Name 41041951700	Value	Source
Critical facility	Yachats Rural Fire Protection District Station 8200	unknown	RAPT
Critical facility	Yachats Rural Fire Protection District, South Station	unknown	RAPT
Critical facility	Yachats STP (wastewater)	unknown	RAPT

No state-owned buildings identified in tsunami zone.

Tsunami Rank 4 – Lincoln County in the vicinity of Kernville 41041950601

This census tract includes significant development with the Oregon risk assessment showing a higher-than-average percentage of buildings, critical facilities, and historic sites when compared to other coastal census tracts. The NRI estimates 1704 people or 65 percent of the population of the census tract is exposed to the hazard. The NRI classifies the area as at relatively moderate risk of harm from tsunami.

Figure 9.3.3-5: Fourth ranked census tract for tsunami hazard

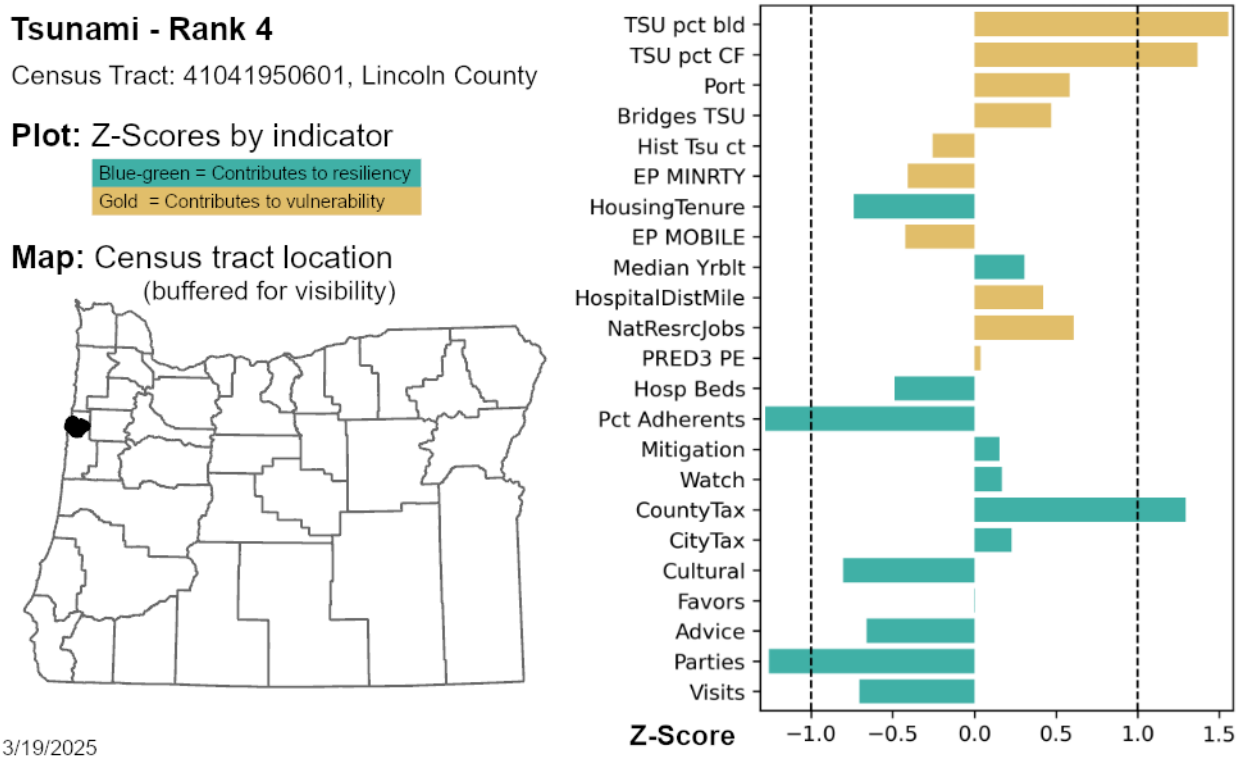


Table 9.3.3-6: State-owned Buildings or Critical Facilities in Tsunami SM-XXL Zone

	Building Name 41041950601	Value ($)	Source
State-owned	Gleneden Beach Recreation Area	358410	DOGAMI/DAS
Critical facility	Communication Structure	16957	DOGAMI/DAS
Critical facility	Communication Structure	16957	DOGAMI/DAS
Critical facility	Depoe Bay Fire District - Station 2200	422087	DOGAMI/DAS
Critical facility	North Lincoln Fire and Rescue - Kernville Station 1700	115940	DOGAMI/DAS
Critical facility	SALISHAN STP	85650	DOGAMI/DAS

	Building Name 41041950601	Value ($)	Source
Critical facility	LINCOLN CITY, CITY OF	601350	DOGAMI/DAS

Tsunami Rank 5 – Curry County including the City of Gold Beach 41041951700

Sixty-two percent of people living in this census tract are directly exposed to tsunami risk, 2187 people. The area is characterized in the Oregon risk assessment as having a higher-than-average percent when compared to other coastal census tracts of critical facilities, people living in mobile homes, and people dependent on natural resource jobs exposed to the hazard. County property taxes are lower than average. The NRI rates this census tract as at relatively high risk of tsunami damage.

Figure 9.3.3-6: Fifth ranked census tract for tsunami hazard

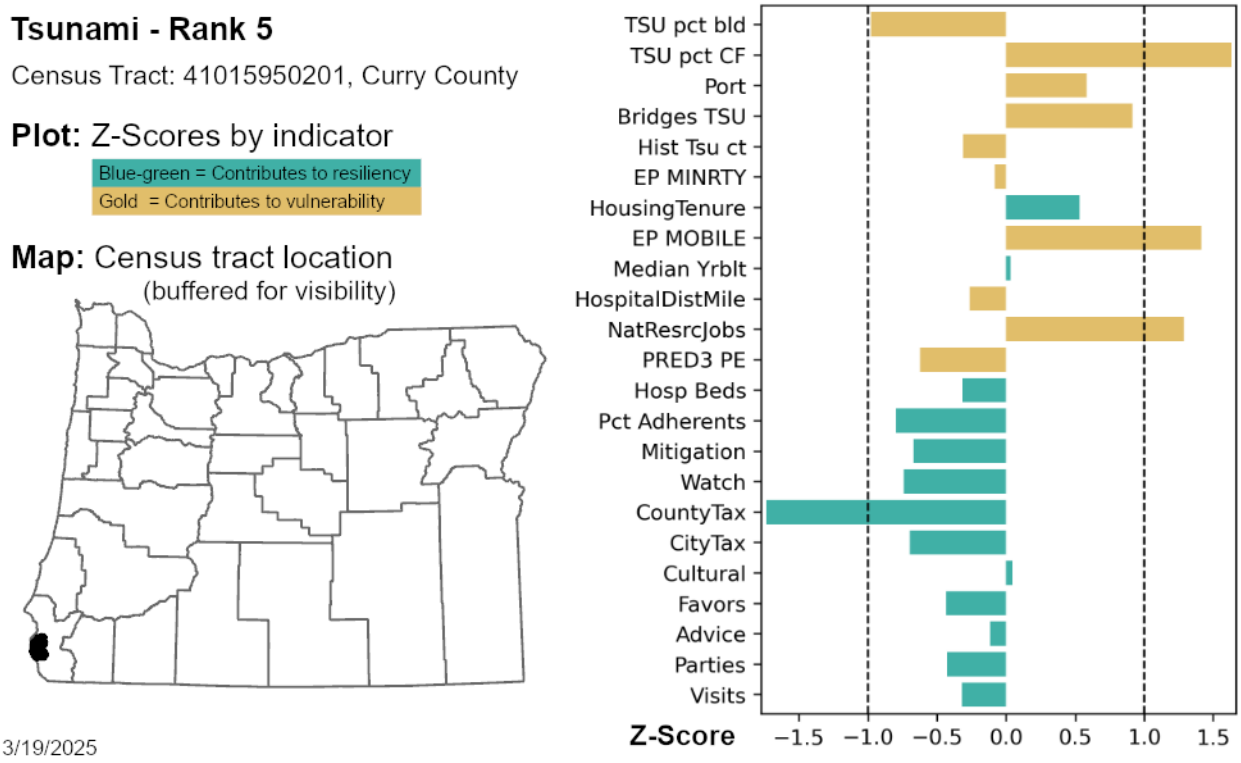


Table 9.3.3-7: State-owned Buildings or Critical Facilities in Tsunami SM-XXL Zone

	Building Name 41041951700	Value ($)	Source
State-owned	Hunter Creek Maintenance Station Grounds	249130	DOGAMI/DAS
State-owned	Hunter Creek Maintenance Station Grounds	840392	DOGAMI/DAS
State-owned	Hunter Creek Maintenance Station Grounds	682532	DOGAMI/DAS
State-owned	Unknown	929953	DOGAMI/DAS
State-owned	OR State Police Gold Beach Work Site	unknown	RAPT
State-owned	Curry County Circuit Court	60668	DOGAMI/DAS

	Building Name 41041951700	Value ($)	Source
Critical facility	Riley Creek Elementary School	3245302	DOGAMI/DAS
Critical facility	Riley Creek Elementary School	96624	DOGAMI/DAS
Critical facility	Riley Creek Elementary School	364100	DOGAMI/DAS
Critical facility	Gold Beach High School	2985321	DOGAMI/DAS
Critical facility	Gold Beach High School	219421	DOGAMI/DAS
Critical facility	Gold Beach High School	173833	DOGAMI/DAS
Critical facility	Gold Beach High School	501716	DOGAMI/DAS
Critical facility	Gold Beach High School	97350	DOGAMI/DAS
Critical facility	Gold Beach Public Works, multiple buildings	495860	DOGAMI/DAS
Critical facility	Communication Structure	1679700	DOGAMI/DAS
Critical facility	Communication Structure	496850	DOGAMI/DAS
Critical facility	Communication Structure	730650	DOGAMI/DAS
Critical facility	Curry General Hospital - Gold Beach	555600	DOGAMI/DAS
Critical facility	NORTH BEND MEDICAL CENTER-GOLD BEACH	950400	DOGAMI/DAS
Critical facility	North Bend Medical Center duplicate?	950400	DOGAMI/DAS
Critical facility	Curry General Hospital	189300	DOGAMI/DAS
Critical facility	CURRY COUNTY SHERIFFS OFFICE and JAIL	2731050	DOGAMI/DAS
Critical facility	GOLD BEACH POLICE DEPARTMENT	516229	DOGAMI/DAS
Critical facility	ROGUE RIVER-SISKIYOU NATIONAL FOREST LAW ENFORCEMENT - GOLD BEACH RANGER DISTRICT	425100	DOGAMI/DAS
Critical facility	Gold Beach Fire Department	536643	DOGAMI/DAS
Critical facility	Pistol River RFPD	1960	DOGAMI/DAS
Critical facility	Pistol River RFPD	4259	DOGAMI/DAS
Critical facility	Gold Beach Muni	2088716	DOGAMI/DAS
Critical facility	Curry Emergency Operations Center	2731050	DOGAMI/DAS

Tsunami Rank 6 – Clatsop County, including the City of Seaside 4107950900

Risk in this census tract is driven by the high percentage of buildings and critical facilities located in the tsunami zone.

Figure 9.3.3-7: Sixth ranked census tract for tsunami hazard

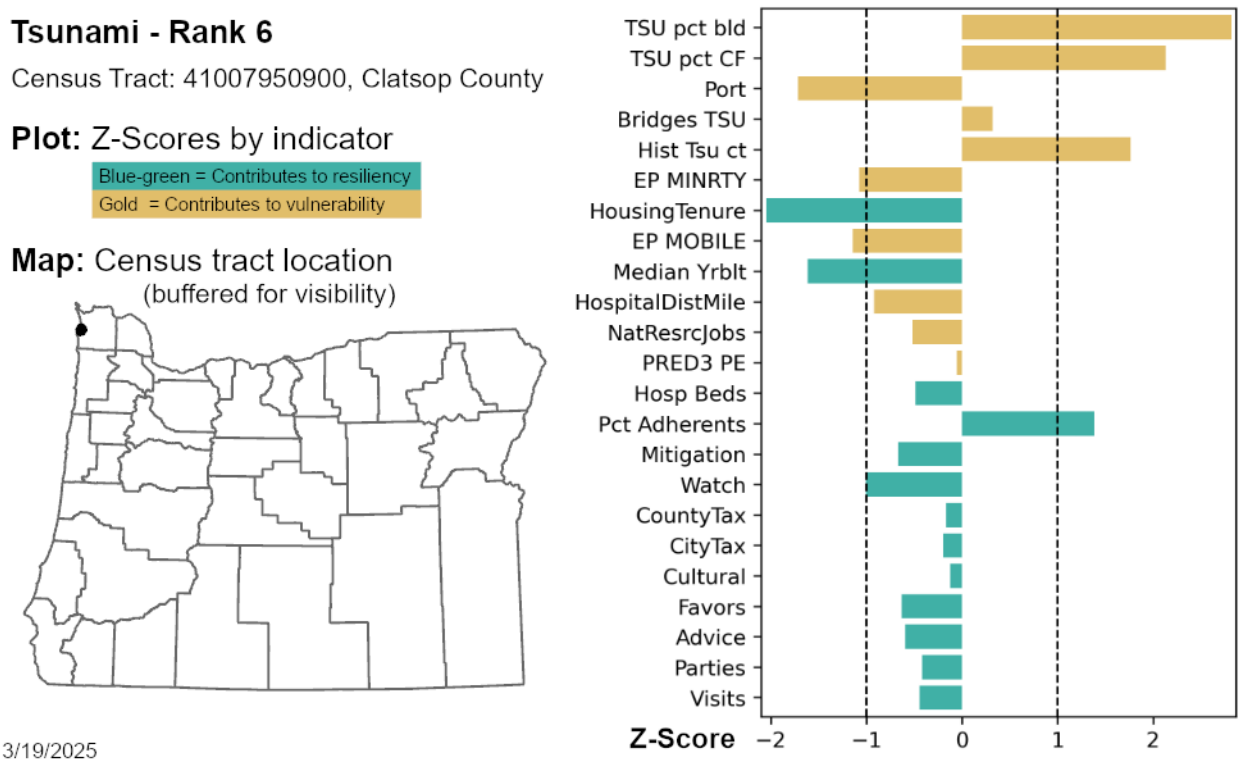


Table 9.3.3-8: Critical Facilities in Tsunami SM-XXL Zone

	Building Name 41007950900	Value ($)	Source
Critical facility	Seaside Fire Station	unknown	RAPT
Critical facility	Seaside Police Department	unknown	RAPT

No state-owned buildings identified.

Tsunami Rank 7 – Coos County including Sunset Bay and Shore Acres State Parks 4101100502

This census tract is characterized in the Oregon risk assessment as having a higher-than-average percentage of buildings, critical facilities, historic buildings, and people living in mobile homes when compared to other coastal census tracts. Approximately 1926 people are directly exposed to the hazard, or 44 percent of the census tract population. The NRI rates the areas as having a relatively moderate risk due to tsunami.

Figure 9.3.3-8: Seventh ranked census tract for tsunami hazard

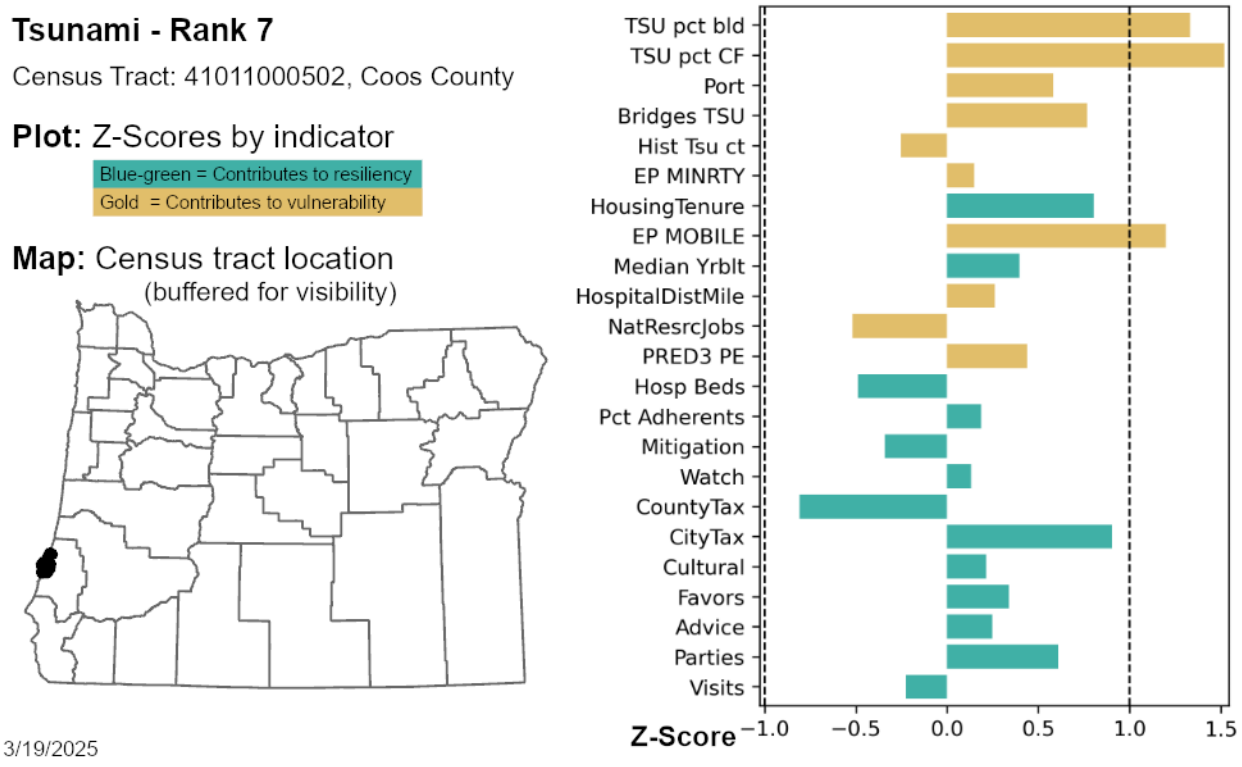


Table 9.3.3-9: State-owned Buildings or Critical Facilities in Tsunami SM- XXL Zone

	Building Name 4101100502	Value ($)	Source
State-owned	Seven Devils Recreation Site	335287	DOGAMI/DAS
State-owned	Sunset Bay Campground	2421487	DOGAMI/DAS
State-owned	Unknown structures near Cape Argo	970505	DOGAMI/DAS
State-owned	Charleston District Office Building	44635	DOGAMI/DAS
Critical facility	Communication Structure	81150	DOGAMI/DAS
Critical facility	US Coast Guard - Station Coos Bay	2042006	DOGAMI/DAS

	Building Name 4101100502	Value ($)	Source
Critical facility	US Coast Guard - Navigation Team Coos Bay	1047136	DOGAMI/DAS
Critical facility	Charleston RFPD - Station 3	993482	DOGAMI/DAS
Critical facility	Charleston RFPC – Station 1		RAPT

Tsunami Rank 8 – Douglas County including the City of Reedsport 41019010000

The NRI rates this census tract, which includes the City of Reedsport, as relatively moderate risk of harm due to tsunami. Sixty-six percent, or 1538 people are directly exposed to the hazard according to the NRI. A higher than average when compared to other coastal census tracts of buildings, critical facilities, and bridges is reported by the Oregon risk assessment. Distance to hospital facilities is longer than average. County property tax rates are also relatively lower than in other census tracts. The US Census Bureau finds the tract to have high social vulnerability as compared to other coastal census tracts.

Figure 9.3.3-9: Eighth ranked census tract for tsunami hazard

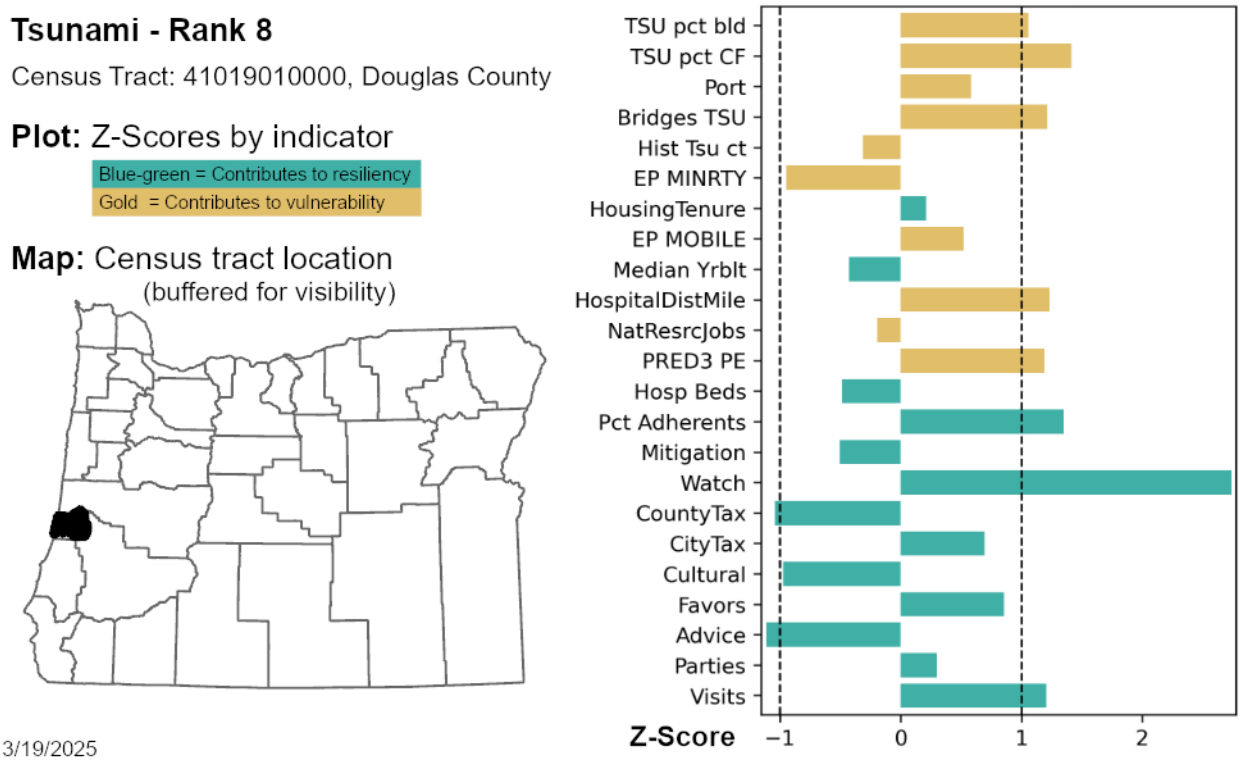


Table 9.3.3-10: State-owned Buildings or Critical Facilities in Tsunami SM-XXL Zone

	Building Name 41019010000	Value ($)	Source
State-owned	Reedsport Maintenance Station Grounds	2262958	DOGAMI/DAS
Critical facility	Public Works - City Shop	88470	DOGAMI/DAS
Critical facility	Public Works - City Shop	34037	DOGAMI/DAS
Critical facility	Public Works - City Shop	8729	DOGAMI/DAS
Critical facility	Reedsport Public Works	97438	DOGAMI/DAS

	Building Name 41019010000	Value ($)	Source
Critical facility	Reedsport Public Works	68708	DOGAMI/DAS
Critical facility	Reedsport Public Works	31809	DOGAMI/DAS
Critical facility	Reedsport Public Works	12724	DOGAMI/DAS
Critical facility	Communication Structure	150900	DOGAMI/DAS
Critical facility	REEDSPORT POLICE DEPARTMENT	553960	DOGAMI/DAS
Critical facility	DOUGLAS COUNTY SHERIFFS OFFICE - REEDPORT SUBSTATION	850024	DOGAMI/DAS
Critical facility	Gardiner RFPD	204336	DOGAMI/DAS
Critical facility	Reedsport Fire Department - Station 1	553960	DOGAMI/DAS
Critical facility	REEDSPORT STP	214950	DOGAMI/DAS

Tsunami Rank 9 – Lincoln County 41041951500

Figure 9.3.3-10: Ninth ranked census tract for tsunami hazard

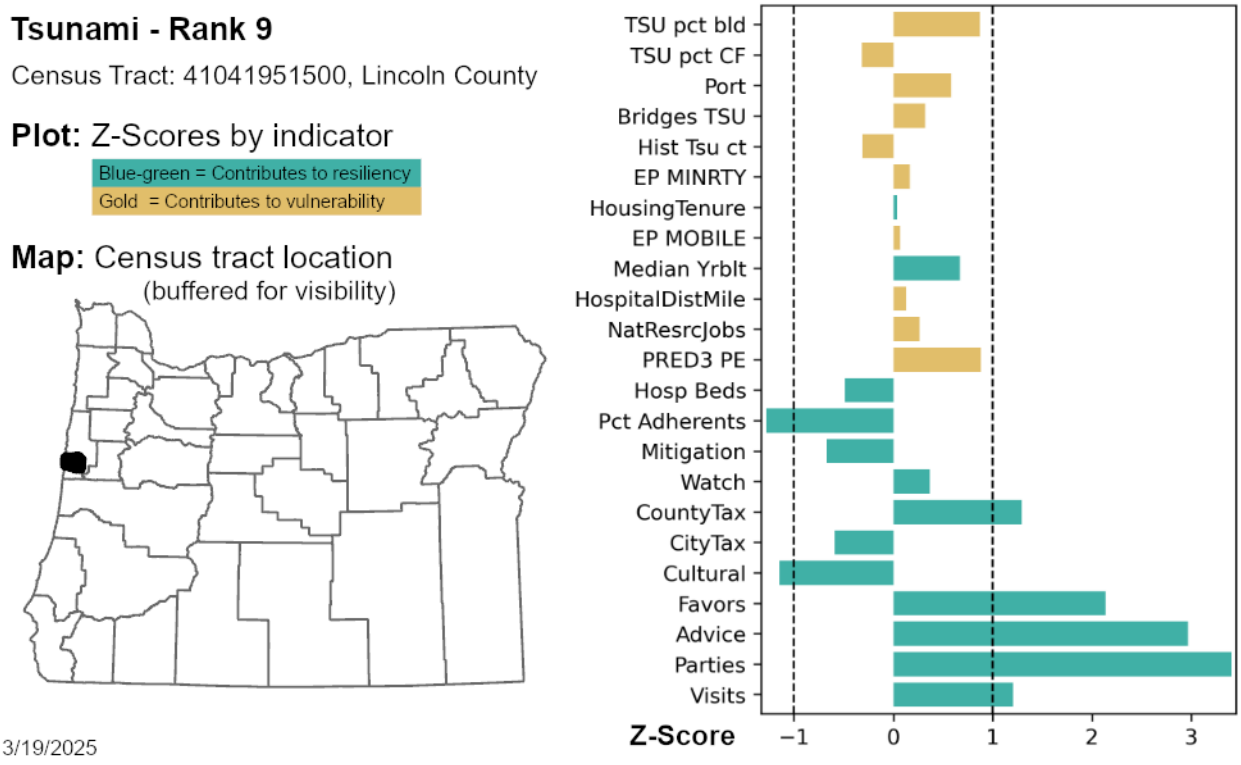


Table 9.3.3-11: State-owned Buildings in Tsunami XXL Zone

	Building Name 41041951500	Value	Source
State-owned	Brian Booth State Park	unknown	DOGAMI/DAS

No critical facilities identified in the Tsunami XXL zone

Tsunami Rank 10 – Coos County in the vicinity of Coquille 41011000902

Tsunami risks in this census tract are dominated by a larger than average estimated percentage of BIPOC populations and a higher-than-average percentage of workers in natural resource jobs. The reasons for the risk assessment showing a higher that average proportion of critical facilities is not clear (Table xx). The NRI estimates that 185 residents, or 5 percent of the census tract population is exposed to tsunami risk. The census tract hosts the large Bullards Beach State Park Campground, which is serviced with electrical hook-ups, yurts, and a meeting room. This park attracts a large number of visitors who would be exposed to tsunami risk in addition to census tract residents. No Tribal census areas.

Figure 9.3.3-11: Tenth ranked census tract for tsunami hazard

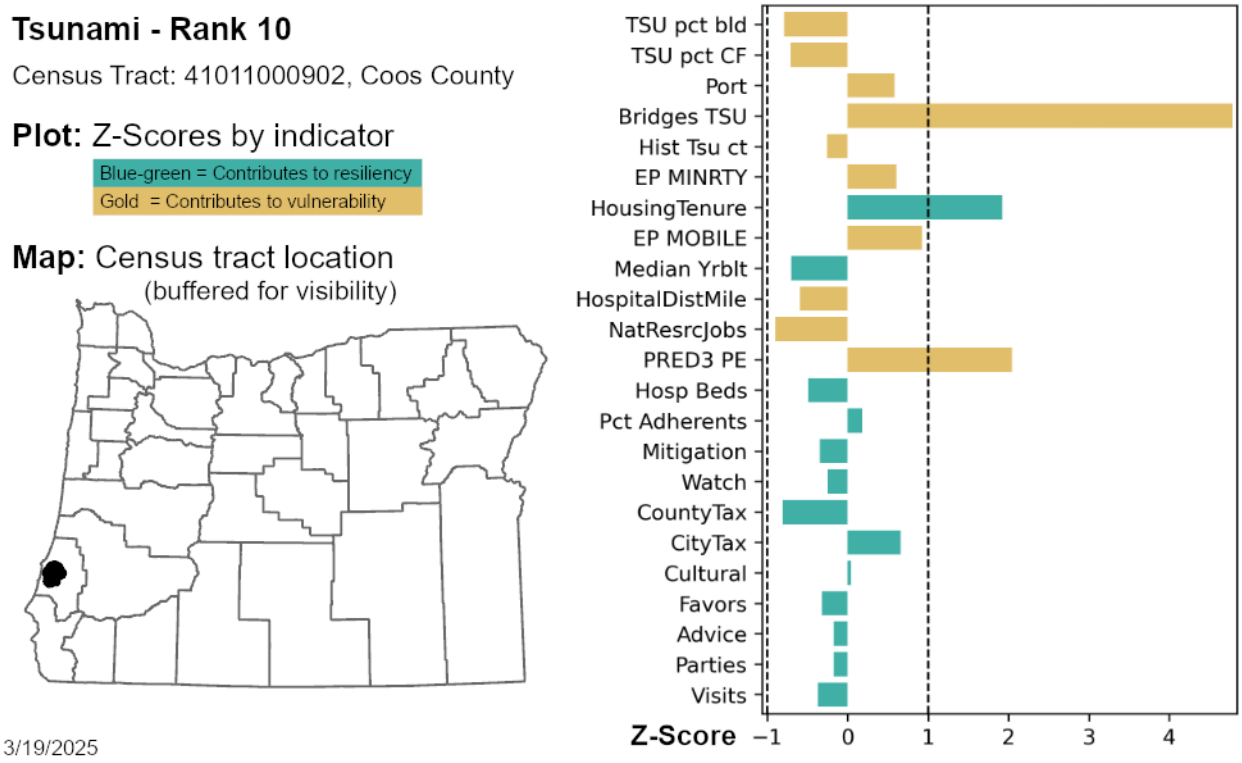


Table 9.3.3-12: State-owned Buildings or Critical Facilities in Tsunami XXL Zone

	Building Name 41011000902	Value ($)	Flood Losses
State-owned	Unknown structures off Beach Loop Road	898857	DOGAMI/DAS
State-owned	Site Systems - Four Mile M/W Operating Grounds	44635	DOGAMI/DAS
State-owned	Four Mile M/W Building	53018	DOGAMI/DAS
State-owned	Coquille River Lighthouse	2935688	DOGAMI/DAS
State-owned	Bullards Beach State Park Campground	4473338	DOGAMI/DAS

	Building Name 41011000902	Value ($)	Flood Losses
Critical facility	Communication Structure	750000	DOGAMI/DAS

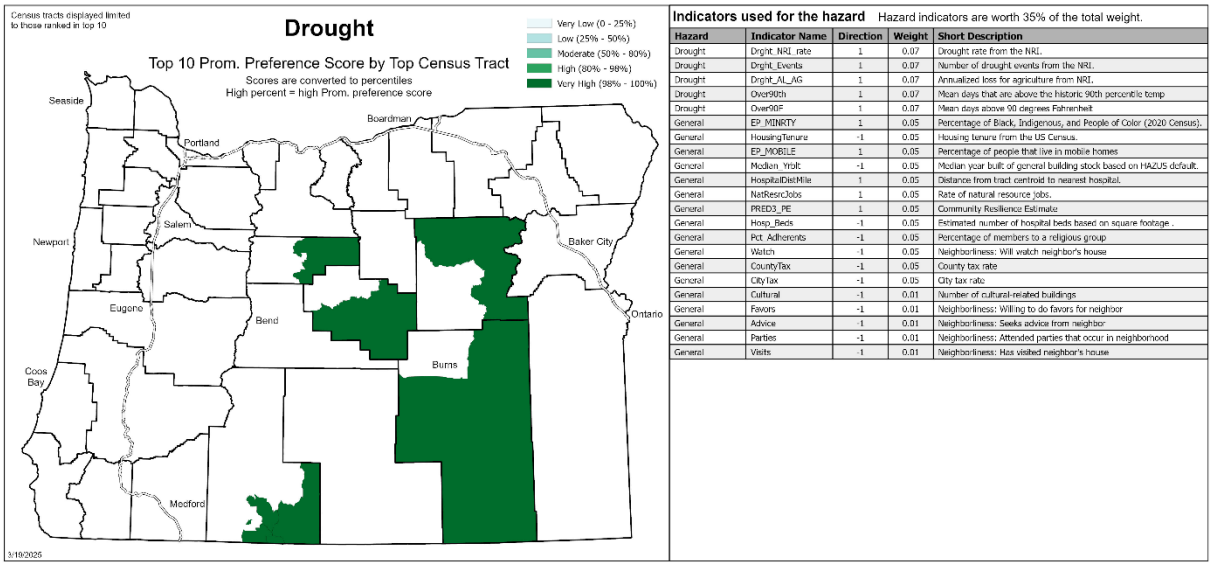
9.3.4 Drought

9.3.4.1 Hazard Scenario

Drought risk was evaluated using the number of drought events and annualized drought frequency as reported in the National Risk Index. According to NRI documentation, drought **annualized frequency** value represents the average number of recorded drought hazard occurrences (event-days) per year over the period of record (21.8 years).

9.3.4.2 Top Ranked Drought Risk Areas

Figure 9.3.4-1: Top Ranked Risk Areas in Drought Risk Areas



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Drought	Drght_NRI_rate	1	0.07	Drought rate from the NRI.
Drought	Drght_Events	1	0.07	Number of drought events from the NRI.
Drought	Drght_AL_AG	1	0.07	Annualized loss for agriculture from NRI.
Drought	Over90th	1	0.07	Mean days that are above the historic 90th percentile temp
Drought	Over90F	1	0.07	Mean days above 90 degrees Fahrenheit
General	EP_MINRTY	1	0.05	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.05	Housing tenure from the US Census.
General	EP_MOBILE	1	0.05	Percentage of people that live in mobile homes
General	Median_YrBlt	-1	0.05	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.05	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.05	Rate of natural resource jobs.
General	PRED3_PE	1	0.05	Community Resilience Estimate
General	Hosp_Beds	-1	0.05	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.05	Percentage of members to a religious group
General	Watch	-1	0.05	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.05	County tax rate
General	CityTax	-1	0.05	City tax rate
General	Cultural	-1	0.01	Number of cultural-related buildings
General	Favors	-1	0.01	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.01	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.01	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.01	Neighborliness: Has visited neighbor's house

Table 9.3.4-1: NRI Risk Ranking

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating
1	41025960200	Harney	Relatively moderate
2	41035970700	Klamath	Relatively moderate
3	41035970600	Klamath	Relatively moderate
4	41013950402	Crook	Relatively low
5	41035970400	Klamath	Relatively moderate
6	41035971500	Klamath	Very low
7	41035971200	Klamath	Very low
8	41031960100	Jefferson	Relatively low
9	41023960100	Grant	Relatively low
10	41035970500	Klamath	Relatively low

*Compared to census tracts nationwide

Table 9.3.4-2: Top 10 Census Tract Demographics

Census Tract	Drought Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41025960200	1	2165	2261	4%	0.50	0.71	0.21
41035970700	2	2069	2361	14%	0.72	0.57	-0.16
41035970600	3	1472	1624	10%	0.88	0.87	-0.01
41013950402	4	2397	2739	14%	#N/A	0.51	#N/A
41035970400	5	1474	1679	14%	0.69	0.50	-0.19
41035971500	6	4309	4725	10%	0.95	0.94	-0.01
41035971200	7	2547	2156	-15%	0.88	0.91	0.03
41031960100	8	2482	2163	-13%	0.38	0.50	0.13
41023960100	9	2050	2214	8%	0.62	0.65	0.03
41035970500	10	1608	1663	3%	0.60	0.54	-0.06

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Drought Risk Rank 1—Harney County 41025960200

This census tract encompasses much of Harney County in Oregon's Outback of Southeastern Oregon. The NRI reports relatively moderate drought risk for this area, with a score of 94.6. The NRI does not estimate population at risk for this hazard. In this rural county, distances to hospitals and occurrence of drought events drive risk.

Figure 9.3.4-2: First ranked census tract for drought hazard

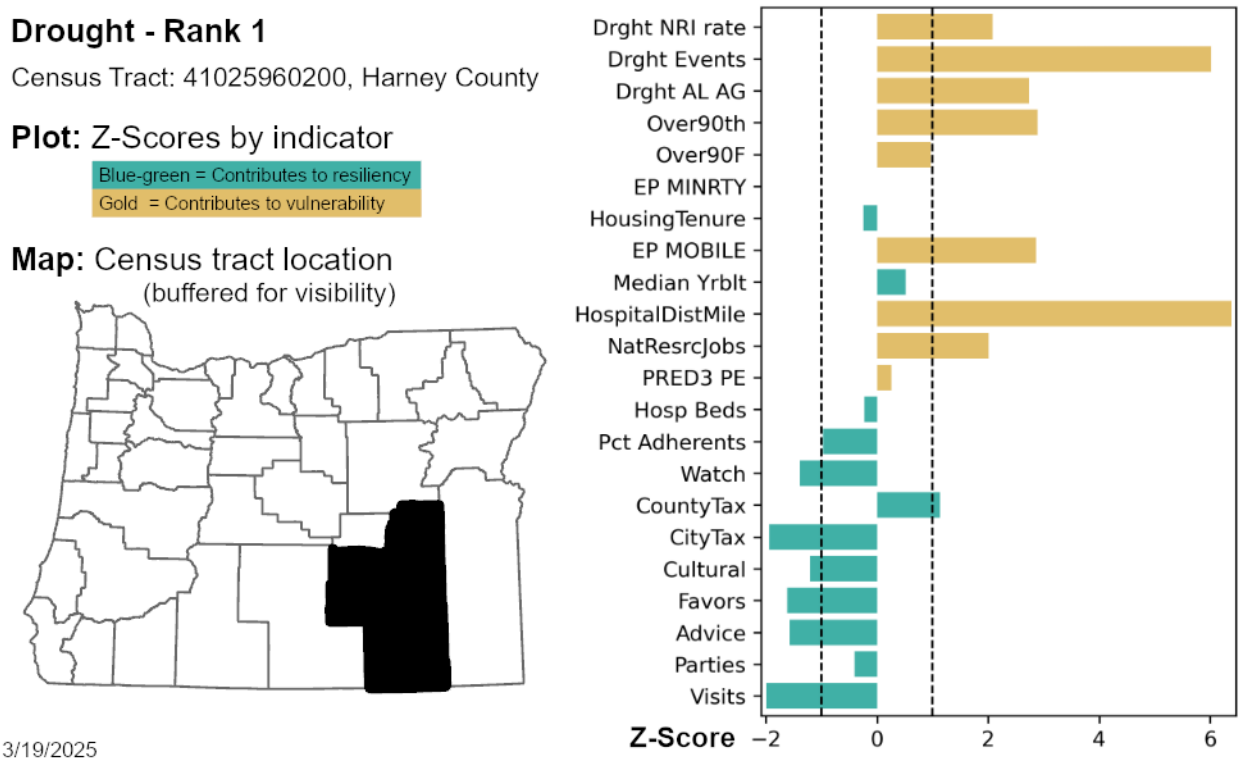


Table 9.3.4-3: State-owned facilities

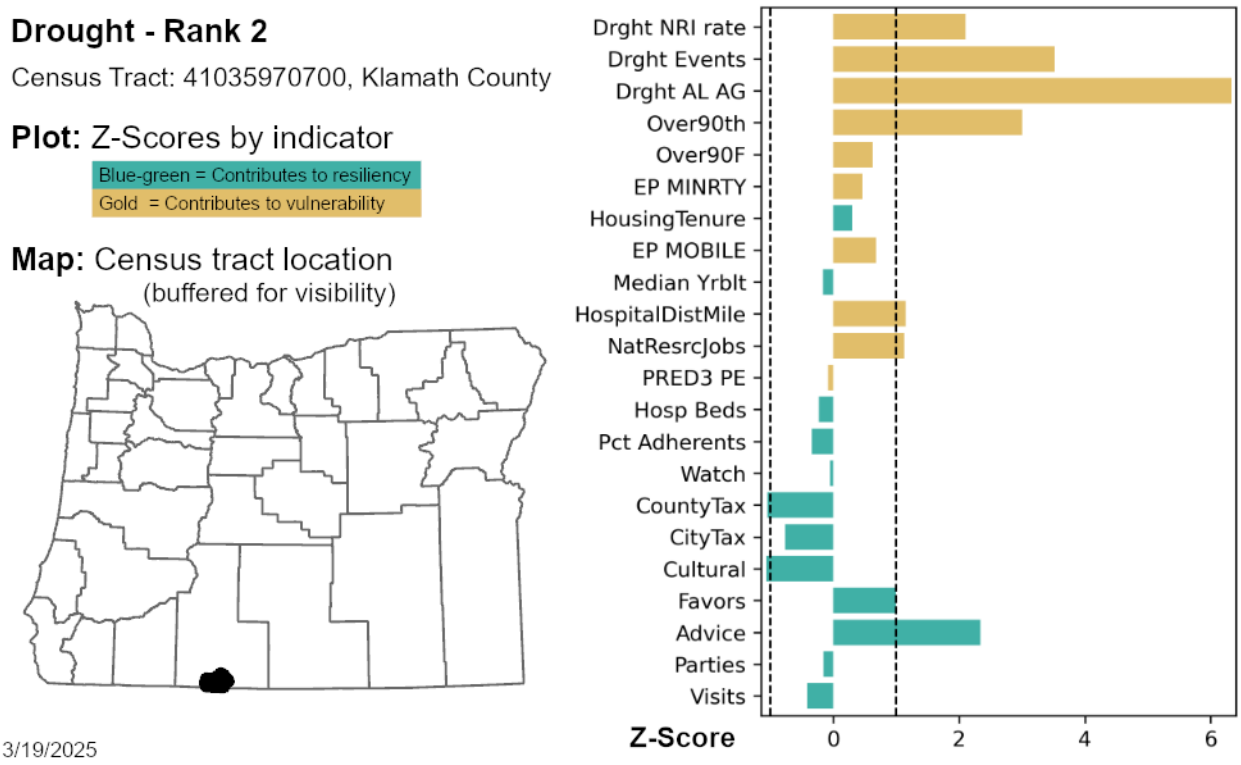
	Building Name	Value	Source
State-owned	Brown Reservoir (Dept. State Lands)	unknown	OWRD

No critical facilities are identified for the drought hazard.

Drought Risk Rank 2 – Klamath County 41035970700

This census tract is located near Klamath Falls, Oregon, in southern Oregon. The NRI reports a relatively moderate drought risk for this area. The NRI does not estimate population at risk for this hazard. A higher-than-average number of hot days, a higher-than-average drought rate, coupled with higher-than-average drought events, drives risk in this analysis.

Figure 9.3.4-3: Second ranked census tract for drought hazard

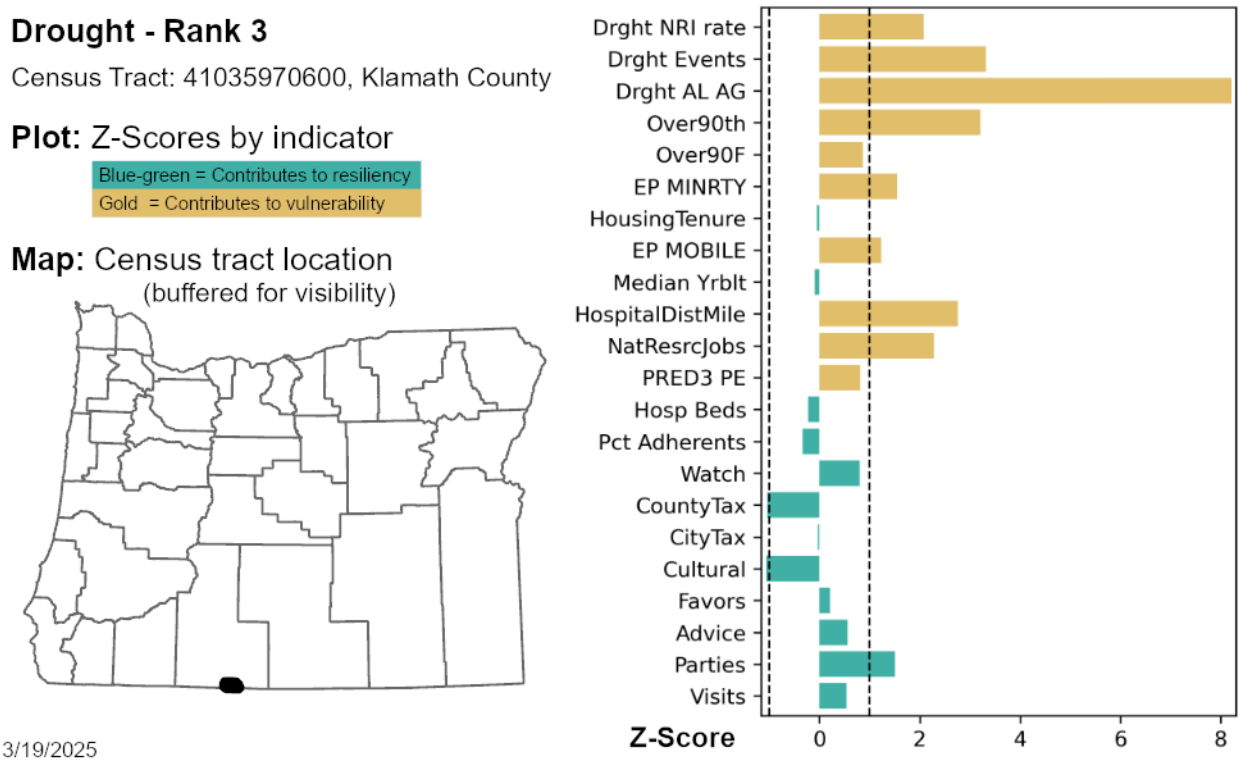


No state-owned buildings or critical facilities are identified for the drought hazard.

Drought Risk Rank 3 – Klamath County 41035970600

This census tract is located east of Klamath Falls, Oregon, in southern Oregon. The NRI reports a relatively moderate drought risk for this area. The NRI does not estimate population at risk for this hazard. High estimated social cohesion supports community resilience, but higher than average drought and heat occurrences drive risk in this area.

Figure 9.3.4-4: Third ranked census tract for drought hazard

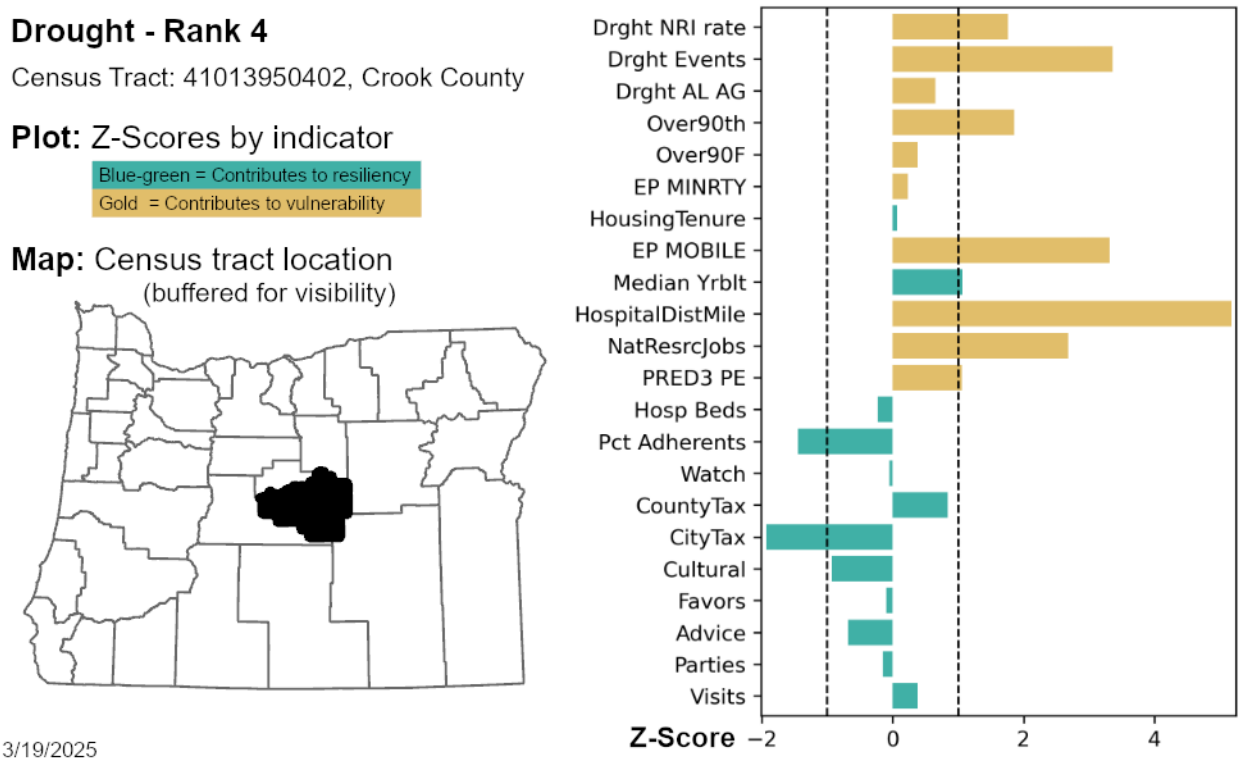


No state-owned buildings or critical facilities are identified for the drought hazard.

Drought Risk Rank 4 – Crook County 41013950402

This census tract is located east of Bend, Oregon, in central Oregon. The NRI reports a relatively low drought risk for this area, with a score of 83.1. The NRI does not estimate population at risk of this hazard. In this analysis, reliance on natural resource jobs, higher-than-average distances to hospitals, higher-than-average manufactured homes, and higher drought occurrences drive risk.

Figure 9.3.4-5: Fourth ranked census tract for drought hazard

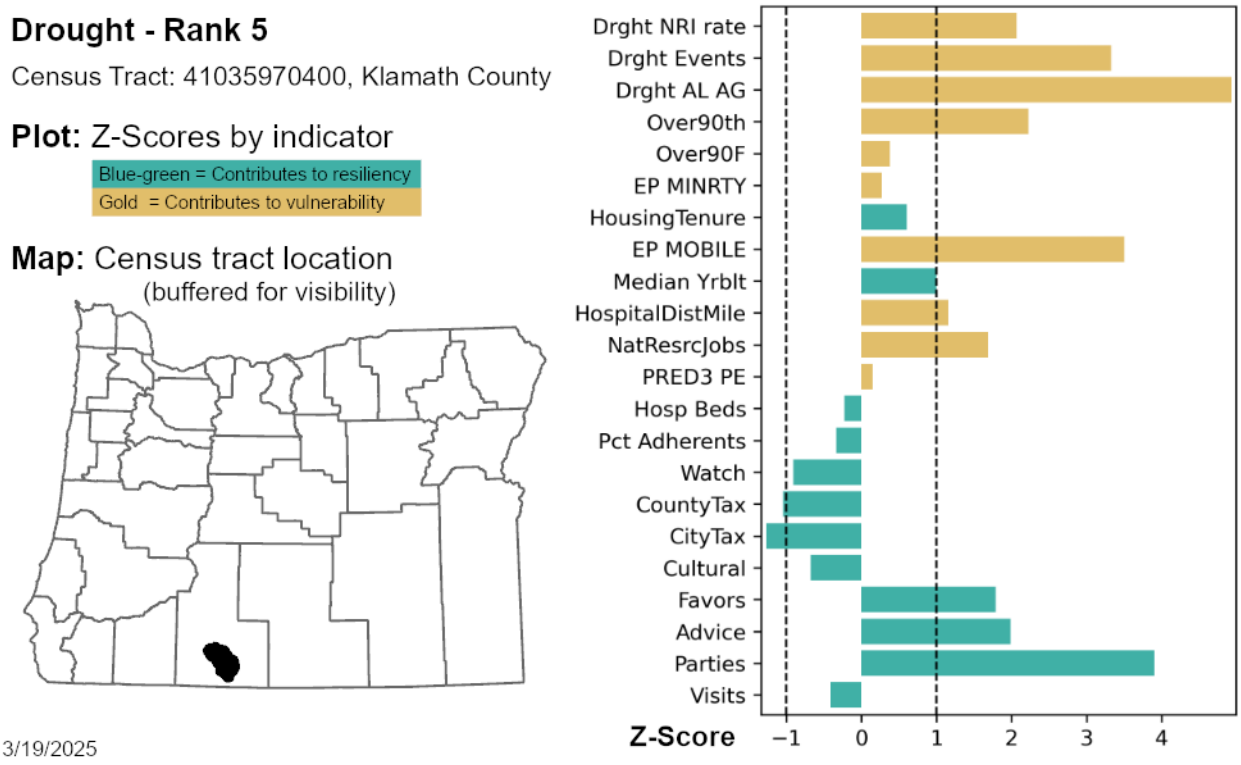


No state-owned buildings or critical facilities are identified for the drought hazard.

Drought Risk Rank 5 – Klamath County 41035970400

This census tract is located east of Klamath Falls, Oregon, in southern Oregon. The NRI reports a relatively moderate drought risk for this area. The NRI does not estimate population at risk for this hazard. In this analysis, higher than average drought occurrences drive risk in this area.

Figure 9.3.4-6: Fifth ranked census tract for drought hazard

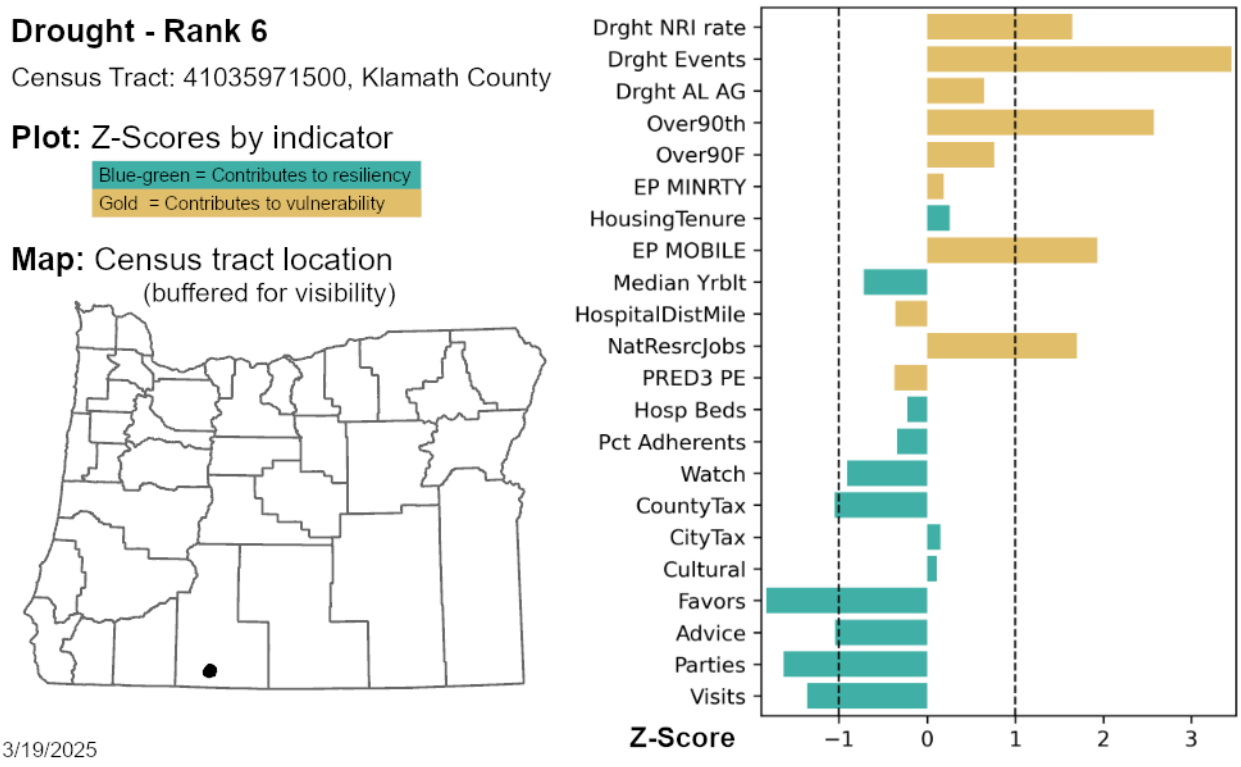


No state-owned buildings or critical facilities are identified for the drought hazard.

Drought Risk Rank 6-- Klamath County 41035971500

This census tract is located between Klamath Falls and Altamont, Oregon, in Southern Oregon. The NRI reports a relatively moderate drought risk for this area. The NRI does not estimate population at risk for this hazard. Droughts that affect agriculture, and a higher-than-average prevalence of drought events drive risk in this analysis.

Figure 9.3.4-7: Sixth ranked census tract for drought hazard

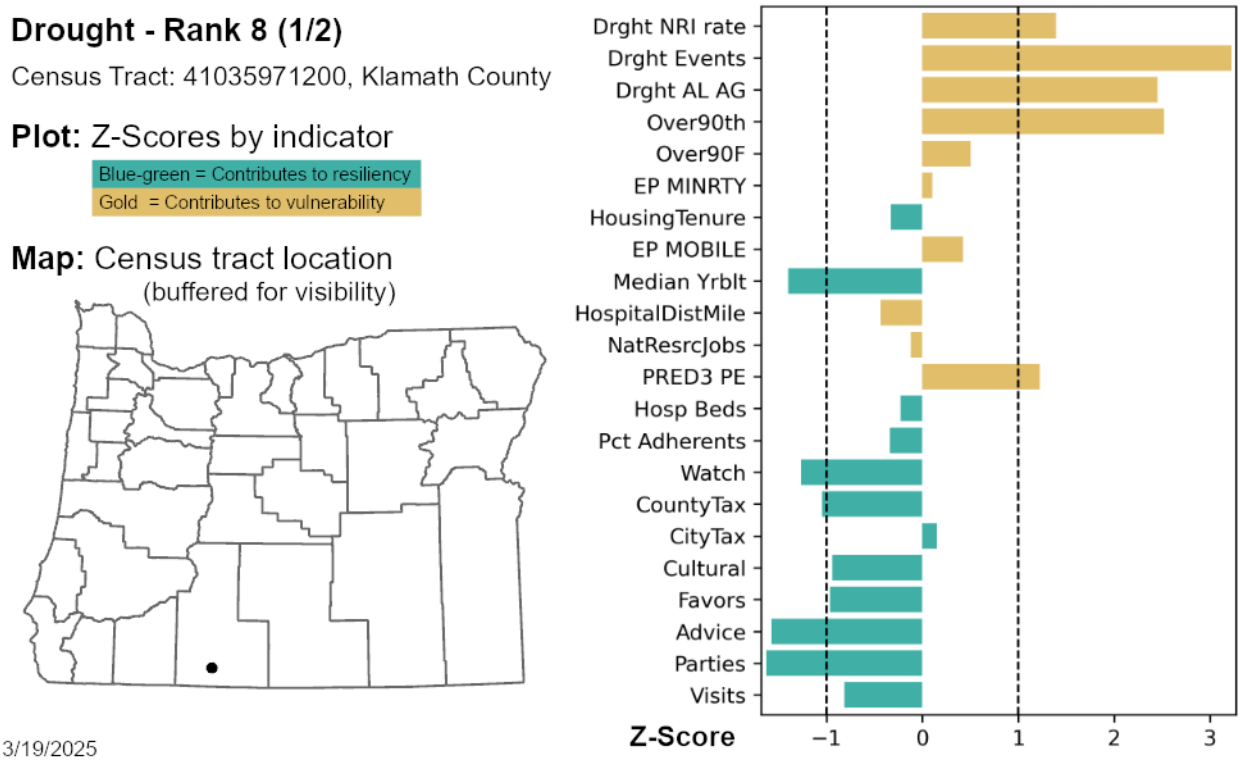


No state-owned buildings or critical facilities are identified for the drought hazard.

Drought Risk Rank 7 – Klamath County 41035971200

This census tract is located south of Klamath Falls, in southern Oregon. The NRI reports a relatively very low drought risk for this area. The NRI does not estimate population at risk for this hazard. Droughts that affect agriculture drive risk in this analysis.

Figure 9.3.4-8: Eighth ranked census tract for drought hazard

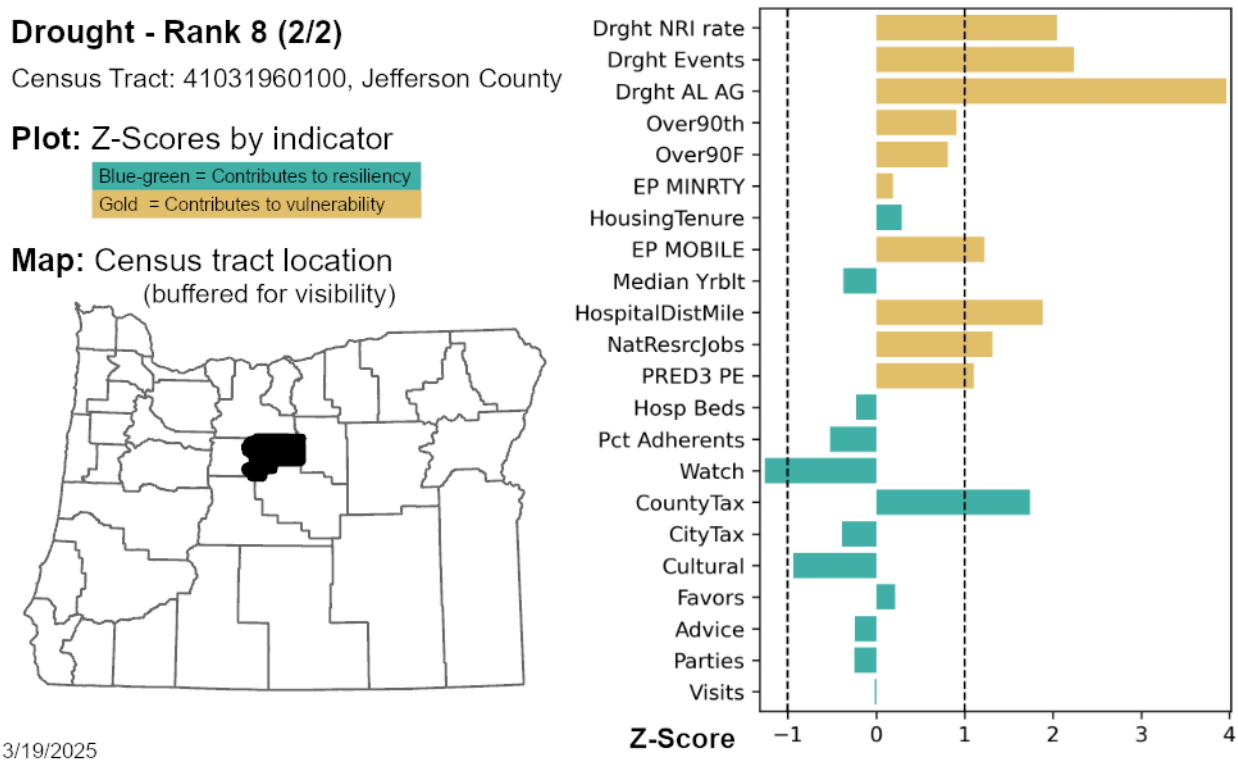


No state-owned buildings or critical facilities are identified for the drought hazard.

Drought Risk Rank 8—Jefferson County 41031960100

This census tract in Jefferson County is rural and remote. Drought affects agricultural activities, and natural resource jobs.

Figure 9.3.4-9: Eighth ranked census tract for drought hazard



No state-owned buildings or critical facilities are identified for the drought hazard.

Drought Risk Rank 9 – Grant County 41031960100

This census tract is located west of Baker City, in eastern Oregon. The NRI reports a relatively low drought risk for this area, with a score of 82.1. The NRI does not estimate population at risk of this hazard. In this analysis, local tax capacity and low social cohesion and community resilience negatively influence drought risk. Additionally, a reliance on natural resource jobs, and higher than average distance to hospitals drive risk in this area.

Figure 9.3.4-10: Ninth ranked census tract for drought hazard

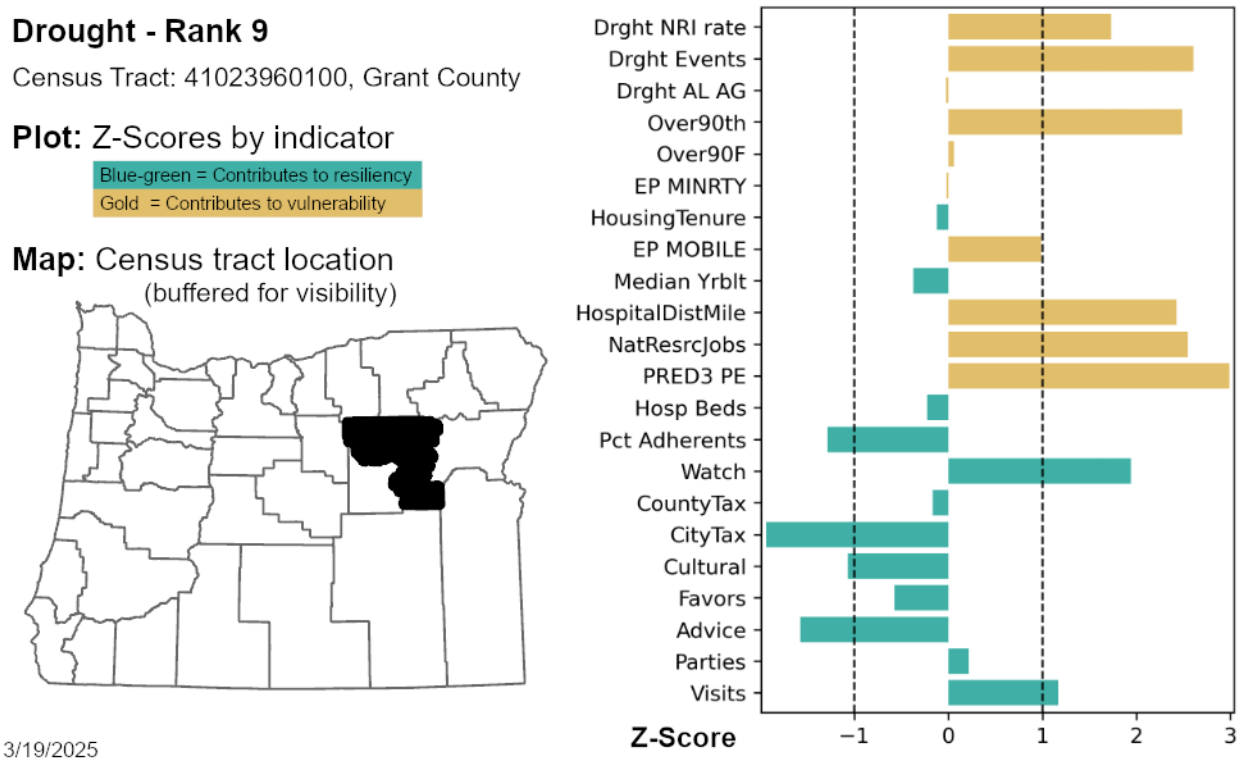


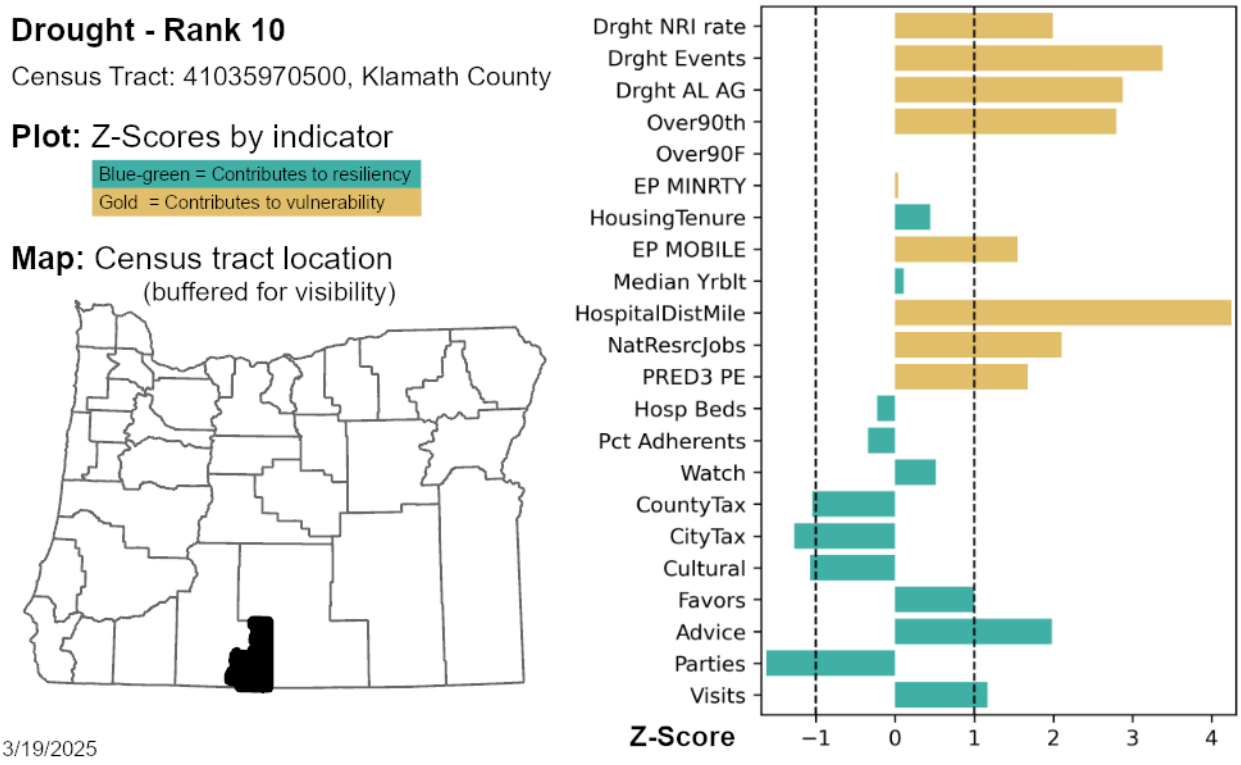
Table 9.3.4-4: State-owned buildings or critical facilities

	Building Name	Value ($)	Source
State-owned	Bull Prairie Reservoir (ODFW), Canyon Creek Meadows Dame (ODFW)	unknown	OWRD
State-owned	Bates Reservoir (OSP)	unknown	OWRD

Drought Risk Rank 10 – Klamath County 41035970500

This census tract is located east of the city of Klamath Falls, Oregon, in southern Oregon. The NRI reports a relatively low drought risk for this area. The NRI does not estimate population at risk for this hazard. In this analysis a high number of drought events coupled with low community resilience drive risk.

Figure 9.3.4-11: Tenth ranked census tract for drought hazard



No state-owned buildings or critical facilities are identified for the drought hazard.

9.3.5 Extreme Heat

9.3.5.1 Hazard Scenario

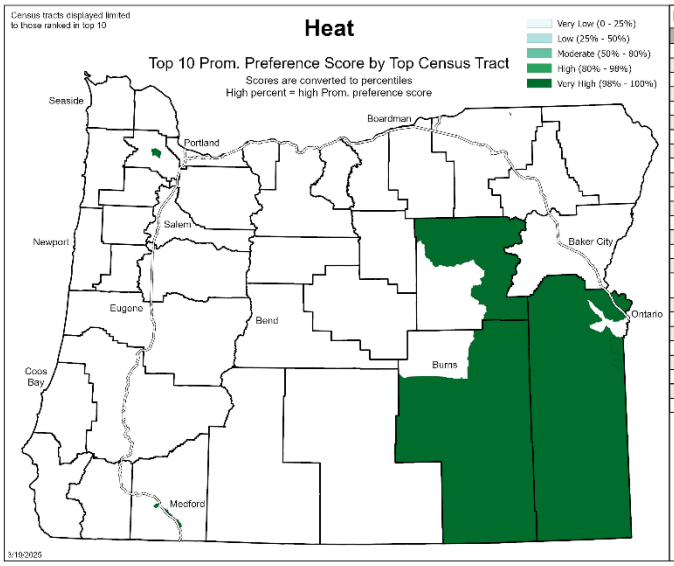
Mean number of days that are above the historic 90th percentile temp.

Mean number of days above 90 degrees Fahrenheit.

Ranking did not account for acclimatization or heat island effects.

9.3.5.2 Top Ranked Extreme Heat Risk Areas

Figure 9.3.5-1: Top Ranked Risk Areas in Heat Risk Areas



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Heat	Over90th	1	0.05	Mean days that are above the historic 90th percentile temp
Heat	Over90F	1	0.05	Mean days above 90 degrees Fahrenheit
Heat	Heat_Events	1	0.05	Number of heat events.
Heat	Heat_ALAG	1	0.05	Annualized loss to agriculture from heat.
Heat	Heat_ALPOP	1	0.05	Annualized loss to population from heat.
Heat	OutdoorJobs	1	0.05	Rate of jobs that occur outside.
Heat	TreeCan_avg	-1	0.05	Tree canopy density
General	EP_MINRTY	1	0.046	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.046	Housing tenure from the US Census.
General	EP_MOBILE	1	0.046	Percentage of people that live in mobile homes
General	Median_Yrblt	-1	0.046	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.046	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.046	Rate of natural resource jobs.
General	PRED3_PE	1	0.046	Community Resilience Estimate
General	Hosp_Beds	-1	0.046	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.046	Percentage of members to a religious group
General	Mitigation	-1	0.046	Number of migitation projects (grouped by zip code and evenly distributed to overlaying tracts)
General	Watch	-1	0.046	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.046	County tax rate
General	CityTax	-1	0.046	City tax rate
General	Cultural	-1	0.009	Number of cultural-related buildings
General	Favors	-1	0.009	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.009	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.009	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.009	Neighborliness: Has visited neighbor's house

Table 9.3.5-1: Oregon Natural Hazard Risk Assessment Rank Compared to the National Risk Index

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating	Exposed Population According to NRI
1	41029000100	Jackson	Relatively low	5860
2	41025960200	Harney	Relatively low	2145
3	41045970700	Malheur	Relatively moderate	1740
4	41045970900	Malheur	Relatively high	5653
5	41059950201	Umatilla	Relatively high	4171
6	41045970200	Malheur	Relatively high	4979

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating	Exposed Population According to NRI
7	41029000800	Jackson	Relatively moderate	7284
8	41067032800	Washington	Relatively low	1309
9	41029002400	Jackson	Relatively low	2134
10	41023960100	Grant	Relatively low	1446

*Compared to census tracts nationwide

Table 9.3.5-2: Top 10 Census Tract Demographics

Census Tract	Heat Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41029000100	1	2063	2390	16%	1.00	0.99	-0.01
41025960200	2	2165	2261	4%	0.50	0.71	0.41
41045970700	3	1740	1975	14%	0.54	0.52	-0.04
41045970900	4	5670	6202	9%	0.69	0.70	0.01
41059950201	5	4171	3639	-13%	#N/A	0.97	#N/A
41045970200	6	4979	4621	-7%	0.97	0.86	-0.11
41029000800	7	7284	7075	-3%	0.90	0.85	-0.05
41067032800	8	1309	1290	-1%	0.22	0.17	-0.20
41029002400	9	2134	2397	12%	0.41	0.66	0.63
41023960100	10	2050	2214	8%	0.62	0.65	0.05

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

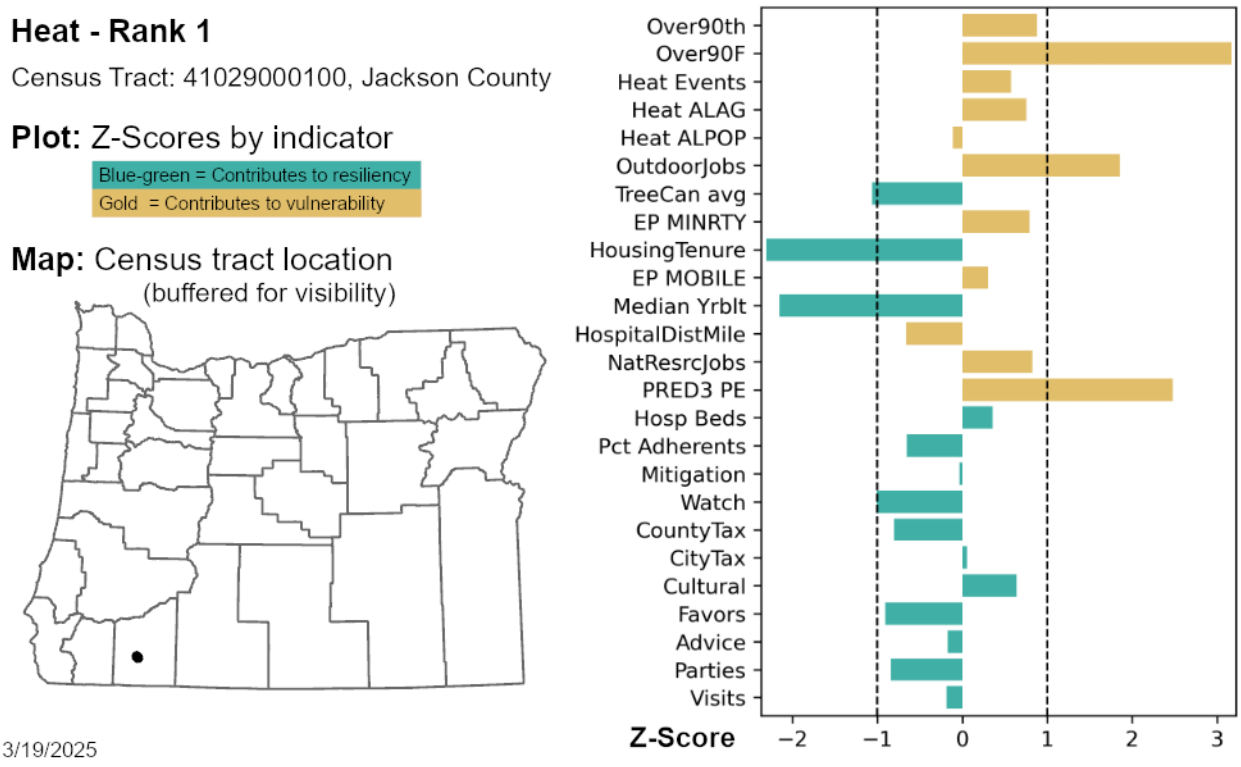
[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Extreme Heat Risk Rank 1 – Jackson County 41029000100

This census tract encompasses the city of Medford, Oregon, in southern Oregon. The NRI reports a relatively low heat risk in this area, with a score of 46.8. The NRI estimates the entire population (100%) of this census tract as at-risk of extreme heat. In this analysis, a higher prevalence of heat events, low community resilience, and an older housing stock drives risk.

Figure 9.3.5-2: First ranked census tract for heat hazard



No state-owned buildings or critical facilities identified.

Extreme Heat Risk Rank 2 – Harney County: 41025960200

This rural census tract encompasses much of Harney County. The NRI reports a relatively low heat risk in this area, with a score of 42.8. The NRI estimates the entire population (100%) of this census tract as at-risk of extreme heat. In this analysis, a higher-than-average reliance on outdoor jobs, natural resource jobs, low social cohesion, and higher than average distance to hospitals are the primary drivers of risk.

Figure 9.3.5-3: Second ranked census tract for heat hazard

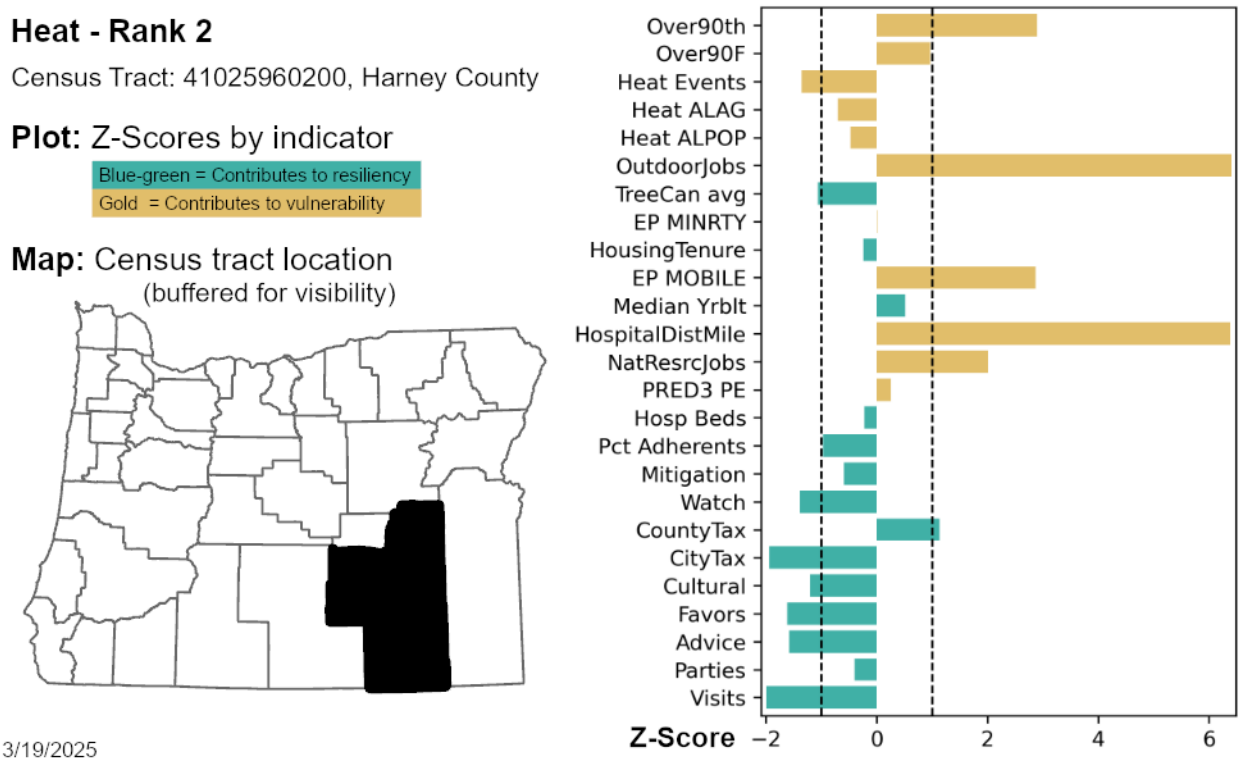


Table 9.3.5-3: State-owned buildings

	Building Name	Value ($)	Source
State-owned	Stinkingwater Mountain Sand Shed	431817	DOGAMI/DAS
State-owned	Pete French Round Barn	509322	DOGAMI/DAS
State-owned	Sagehen Hill RA Grounds	835829	DOGAMI/DAS
State-owned	Stinking Water Scoop Shed	82741	DOGAMI/DAS
State-owned	Sagehen Hill RA Grounds	486577	DOGAMI/DAS
State-owned	Frenchglen Hotel	690192	DOGAMI/DAS
State-owned	Frenchglen Hotel	175447	DOGAMI/DAS

	Building Name	Value ($)	Source
State-owned	Buchanan Springs RA Shelter	106513	DOGAMI/DAS
State-owned	Site Systems – Steens Radio Operating Exp Grounds	31564	DOGAMI/DAS
State-owned	Steens Radio Building	76217	DOGAMI/DAS
State-owned	Site Systems – King Mountain M/W Grounds	31564	DOGAMI/DAS
State-owned	King Mountain M/W Building	60474	DOGAMI/DAS
State-owned	King Mountain M/W Battery Building	60474	DOGAMI/DAS
State-owned	Alkali Lake MS Deicer Building	156455	DOGAMI/DAS
State-owned	Alkali Lake MS Residence Garage	104851	DOGAMI/DAS
State-owned	Alkali Lake MS Residence Garage	104851	DOGAMI/DAS
State-owned	Alkali Lake MS Mobile Home 17	274408	DOGAMI/DAS
Critical facility	DREWSEY ELEMENTARY SCHOOL	190960	DOGAMI/DAS
Critical facility	CRANE ELEMENTARY SCHOOL	1070893	DOGAMI/DAS
Critical facility	CRANE UNION HIGH SCHOOL	1581720	DOGAMI/DAS
Critical facility	CRANE UNION HIGH SCHOOL	92838	DOGAMI/DAS
Critical facility	CRANE UNION HIGH SCHOOL	202202	DOGAMI/DAS
Critical facility	CRANE UNION HIGH SCHOOL	68603	DOGAMI/DAS
Critical facility	CRANE UNION HIGH SCHOOL	165974	DOGAMI/DAS
Critical facility	CRANE UNION HIGH SCHOOL	165974	DOGAMI/DAS
Critical facility	CRANE ELEMENTARY SCHOOL	98478	DOGAMI/DAS
Critical facility	FIELDS ELEMENTARY SCHOOL	1111350	DOGAMI/DAS
Critical facility	FIELDS ELEMENTARY SCHOOL	421350	DOGAMI/DAS
Critical facility	DIAMOND ELEMENTARY SCHOOL	39964	DOGAMI/DAS
Critical facility	CRANE UNION HIGH SCHOOL	783727	DOGAMI/DAS
Critical facility	CRANE UNION HIGH SCHOOL	88801	DOGAMI/DAS
Critical facility	CRANE ELEMENTARY SCHOOL	6311	DOGAMI/DAS

	Building Name	Value ($)	Source
Critical facility	DIAMOND ELEMENTARY SCHOOL	39964	DOGAMI/DAS
Critical facility	Double O Elementary School	323300	DOGAMI/DAS
Critical facility	Frenchglen Elementary School	288690	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	33750	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	BUREAU OF LAND MANAGEMENT – BURNS FIELD OFFICE	2016150	DOGAMI/DAS
Critical facility	Burns Municipal Airport	2654381	DOGAMI/DAS
Critical facility	Roaring Springs Ranch Airport	402150	DOGAMI/DAS
Critical facility	El Rancho Airport	85950	DOGAMI/DAS
Critical facility	Wildhorse Valley Airport	750000	DOGAMI/DAS
Critical facility	Barton Lake Ranch	377700	DOGAMI/DAS
Critical facility	Wagontire	270450	DOGAMI/DAS
Critical facility	Arnold Airstrip	750000	DOGAMI/DAS
Critical facility	Whitehorse Ranch Airport	750000	DOGAMI/DAS

Extreme Heat Risk Rank 3– Malheur County 41045970700

This census tract is in eastern Oregon, on the border with Idaho. The NRI reports a relatively moderate heat risk in this area, with a score of 71.9. The NRI estimates the entire population (100%) of this census tract as at-risk of extreme heat. Extreme high and low temperatures, and a higher-than-average annualized loss to population due to heat drives risk in this area. Additionally, variable social cohesion and slightly lower community resilience affects extreme heat risks in this area.

Figure 9.3.5-4: Third ranked census tract for heat hazard

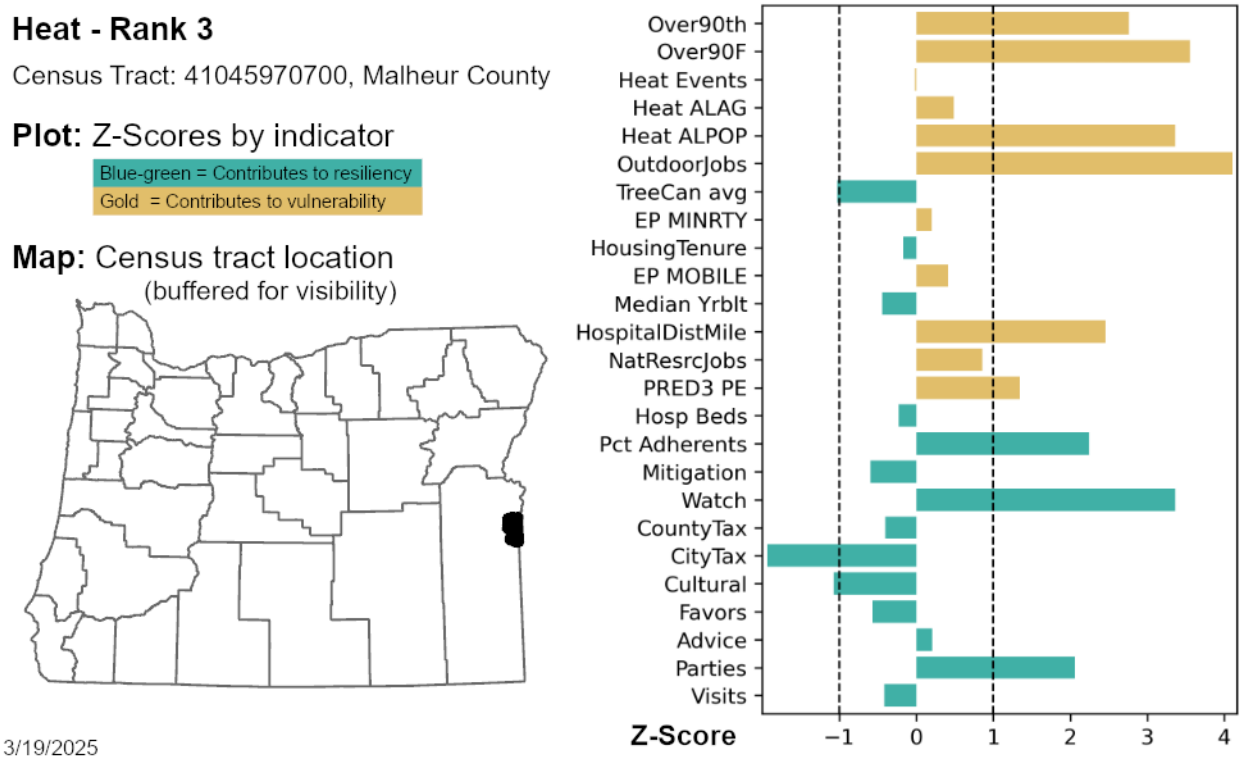


Table 9.3.5-4: State owned buildings and Critical Facilities 41045970700

	Name	Value	Source
State-owned	Vault Single – CXT (Indian Creek-ADA)	38472	DOGAMI/DAS
State-owned	Vault Single – CXT (Indian Creek Boat Ramp-ADA)	20675	DOGAMI/DAS
Critical Facility	ADRIAN HIGH SCHOOL	2844900	DOGAMI/DAS
Critical Facility	ADRIAN HIGH SCHOOL	3365100	DOGAMI/DAS
Critical Facility	ADRIAN HIGH SCHOOL	3127050	DOGAMI/DAS
Critical Facility	ADRIAN HIGH SCHOOL	431400	DOGAMI/DAS

	Name	Value	Source
Critical Facility	ADRIAN HIGH SCHOOL	1031550	DOGAMI/DAS
Critical Facility	ADRIAN HIGH SCHOOL	533850	DOGAMI/DAS
Critical Facility	ADRIAN HIGH SCHOOL	139950	DOGAMI/DAS
Critical Facility	ADRIAN HIGH SCHOOL	764400	DOGAMI/DAS

Extreme Heat Risk Rank 4 – Malheur County 41045970900

This census tract encompasses much of Malheur County. The NRI reports a relatively high heat risk in this area, with a score of 89.9. According to the NRI, almost all (99.7) of the population is at risk to this hazard. In this analysis, higher than average distance to hospitals and higher than average annualized loss to the population due to heat events drives risk.

Figure 9.3.5-5: Fourth ranked census tract for heat hazard

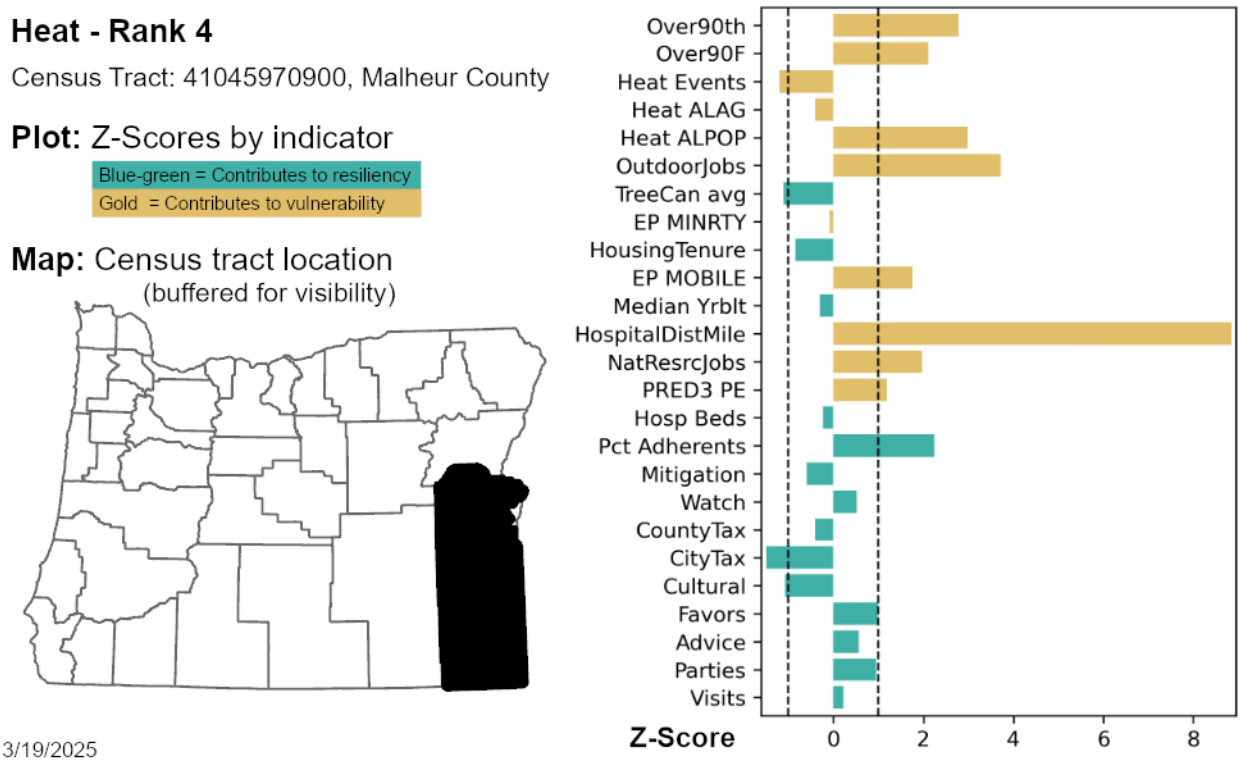


Table 9.3.5-5: State-owned buildings or critical facilities

No state-owned building or critical facilities identified.

Extreme Heat Risk Rank 5 – Umatilla County 41059950201

This census tract is located in Milton-Freewater, in the northeast corner of Oregon. The NRI reports a relatively high heat risk in this area, with a score of 82.2. The NRI estimates the entire population (100%) of this census tract as at-risk of extreme heat. In this analysis, higher than average distances to hospitals, somewhat low social cohesion, and higher prevalence of heat events and loss to the population as a result of these heat events, drives heat risk in this area.

Figure 9.3.5-6: Fifth ranked census tract for heat hazard

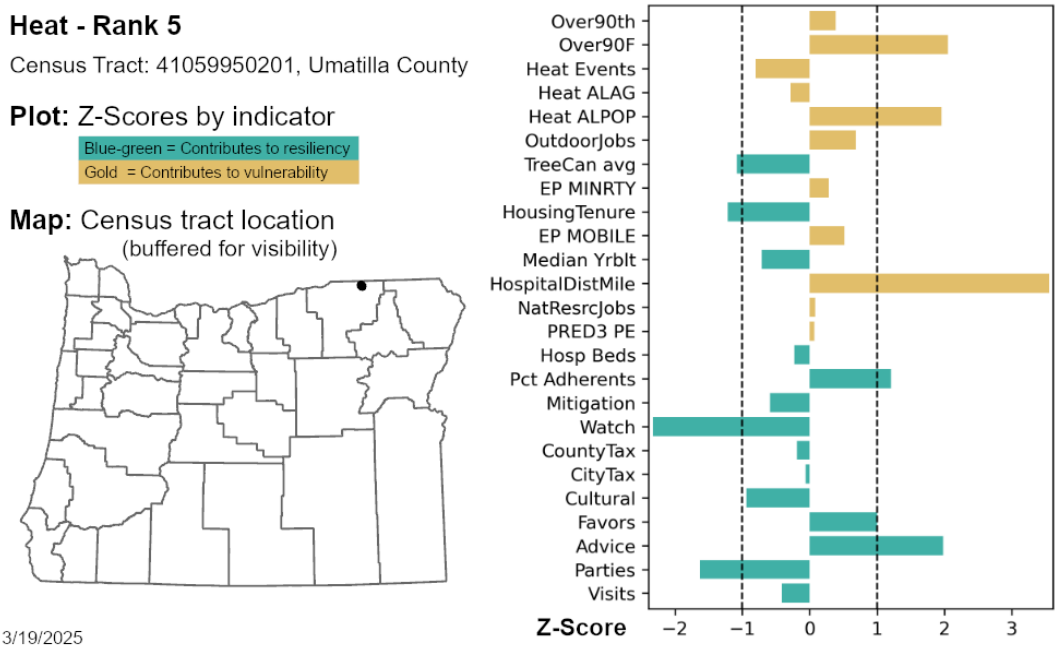


Table 9.3.5-6: Critical Facilities 41059950201

	Building Name	Value	Source	
Critical Facility	Ferndale Elementary School	unknown	RAPT	
Critical Facility	Mcloughlin High School	unknown	RAPT	
Critical Facility	Gib Olinger Elementary School	unknown	RAPT	
Critical Facility	Cascade Valley Assisted Living	unknown	RAPT	
Critical Facility	Evergreen Oregon Rehabilitation	unknown	RAPT	

No state-owned building identified.

Extreme Heat Risk Rank 6 – Malheur County 4105970200

This census tract encompasses the northeast corner of Malheur County in eastern Oregon. The NRI reports a relatively high heat risk in this area, with a score of 91.5. The NRI estimates the entire population (100%) of this census tract as at-risk of extreme heat. In this analysis, high heat events and higher-than-average annualized loss to the population drives heat risk. Additionally, a reliance on natural resource jobs and outdoor jobs influences heat risk.

Figure 9.3.5-7: Sixth ranked census tract for heat hazard

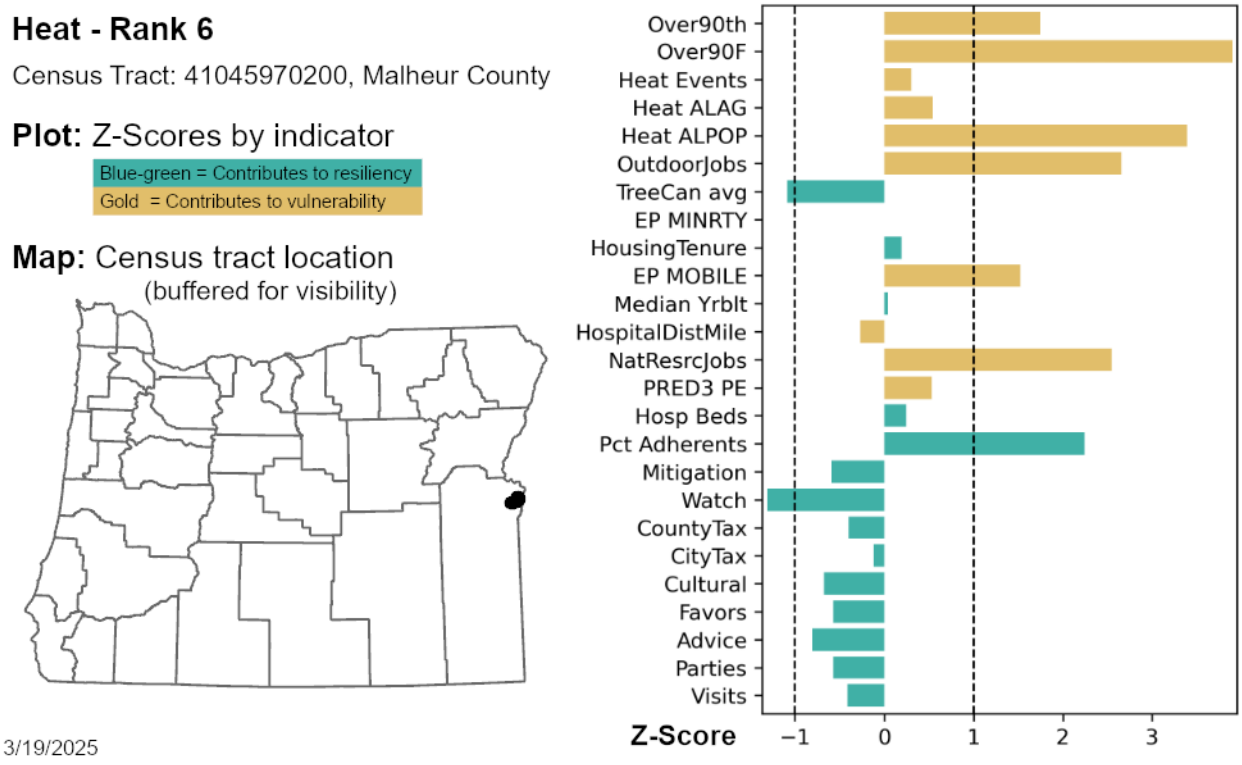


Table 9.3.5-7: Critical facilities 41045970200

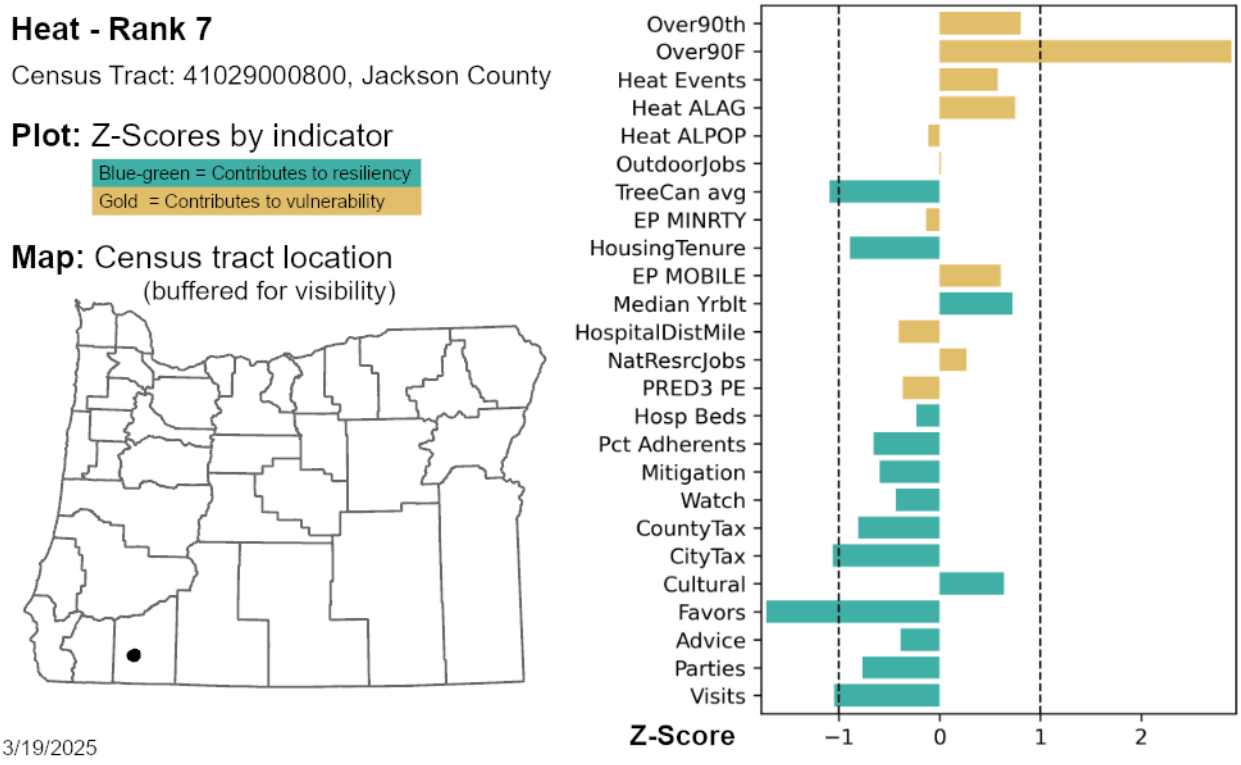
	Building Name	Value	Source
Critical Facility	FOUR RIVERS COMMUNITY SCHOOL	1599450	DOGAMI/DAS
Critical Facility	TREASURE VALLEY CHRISTIAN SCHOOL	1092000	DOGAMI/DAS
Critical Facility	AIKEN ELEMENTARY SCHOOL	5991000	DOGAMI/DAS
Critical Facility	Communication Structure	91050	DOGAMI/DAS
Critical Facility	MALHEUR RIVER CLINIC	2459400	DOGAMI/DAS
Critical Facility	Ontario Municipal Airport	1442850	DOGAMI/DAS

	Building Name	Value	Source
Critical Facility	ONTARIO, CITY OF	178500	DOGAMI/DAS

No state-owned buildings identified.

Extreme Heat Risk Rank 7 – Jackson County 41029000800

Figure 9.3.5-8: Seventh ranked census tract for heat hazard



No state-owned buildings or critical facilities identified.

Extreme Heat Risk Rank 8 – Washington County 41067032800

This census tract is located northwest of Hillsboro, Oregon, in northwest Oregon. The NRI reports a relatively low heat risk in this area, with a score of 41. The NRI estimates the entire population (100%) of this census tract as at-risk of extreme heat. Low social cohesion, and a reliance on outdoor jobs and natural resource jobs, drives risk in this analysis.

Figure 9.3.5-9: Eighth ranked census tract for heat hazard

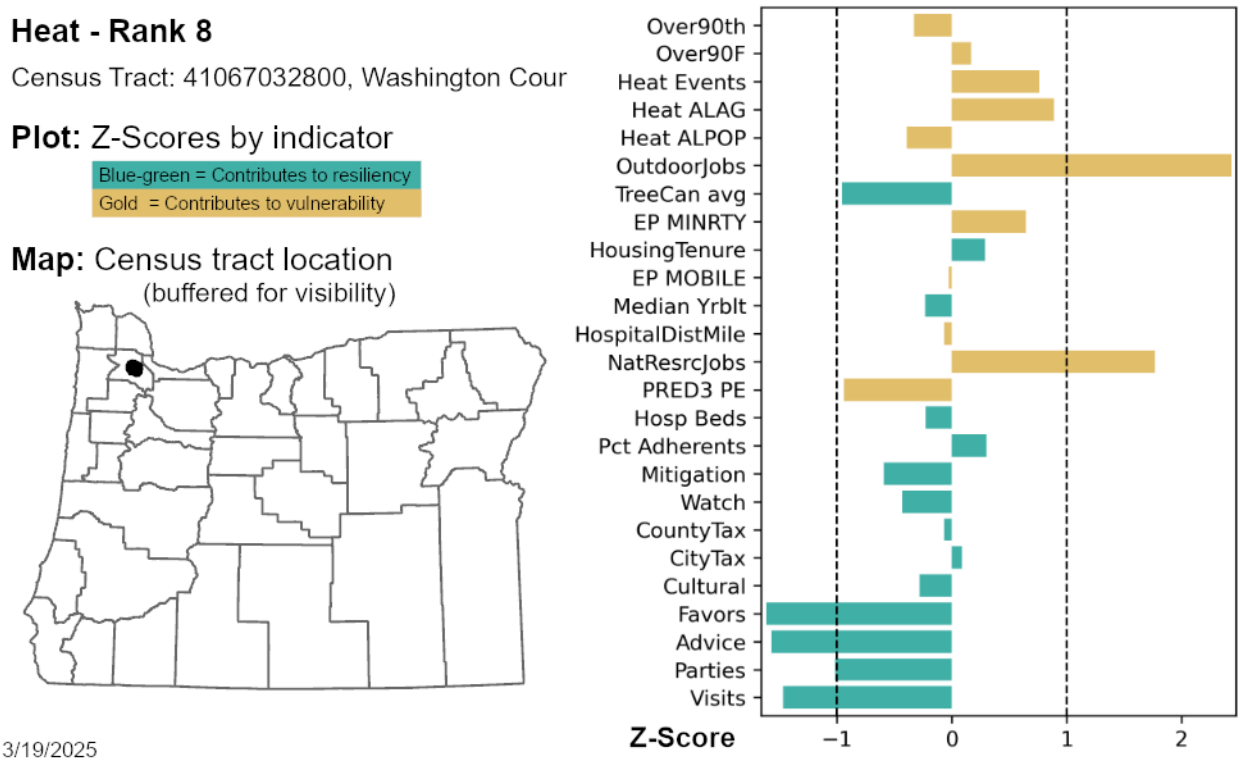


Table 9.3.5-8: State-owned buildings and Critical Facilities 41067032800

	Building Name	Value	Source
State-owned	North Plains Scale House	69027	DOGAMI/DAS
State-owned	Site Systems - North Plains Scale House Grounds	69027	DOGAMI/DAS
Critical Facility	ST FRANCIS OF ASSISI SCHOOL	1490400	DOGAMI/DAS
Critical Facility	VISITATION CATHOLIC SCHOOL	1708050	DOGAMI/DAS
Critical Facility	School Building	345450	DOGAMI/DAS
Critical Facility	Communication Structure	81000	DOGAMI/DAS

	Building Name	Value	Source
Critical Facility	Olinger Airpark	861750	DOGAMI/DAS
Critical Facility	Sunset Air Strip	750000	DOGAMI/DAS
Critical Facility	Skyport	750000	DOGAMI/DAS
Critical Facility	Rieben	750000	DOGAMI/DAS

Extreme Heat Risk Rank 9 – Jackson County 41029002400

This rural census tract is east of Grant's Pass, Oregon, in southern Oregon. The NRI reports a relatively moderate heat risk in this area, with a score of 54.8. The NRI estimates the entire population of this census tract as at-risk of extreme heat. According to the NRI, nearly all (99.7%) of the population is at risk of extreme heat. In this analysis, low estimated social cohesion, coupled with a higher prevalence of high heat days, drives risk.

Figure 9.3.5-10: Ninth ranked census tract for heat hazard

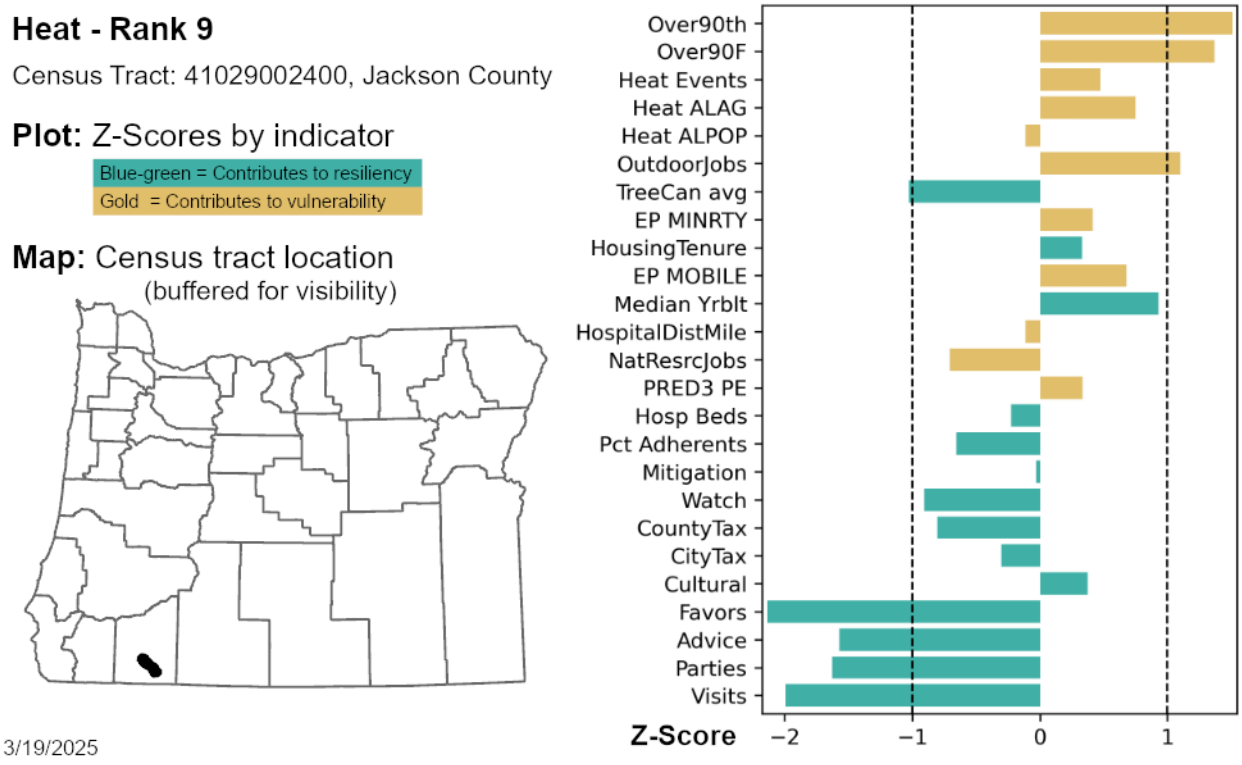


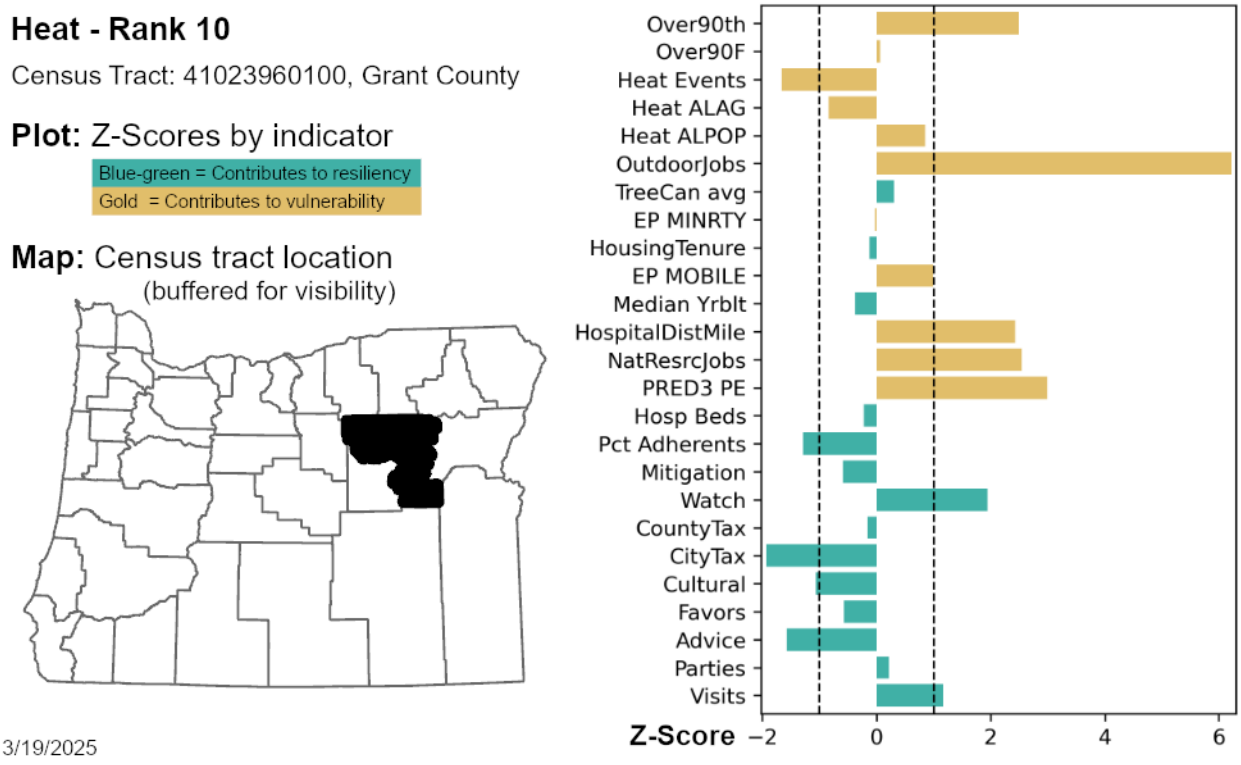
Table 9.3.5-9: State-owned buildings and critical facilities

	Building Name	Value	Source
State-owned	Unknown	93457	DOGAMI/DAS
Critical Facility	SAMS VALLEY ELEMENTARY SCHOOL	8069100	DOGAMI/DAS
Critical Facility	SAMS VALLEY ELEMENTARY SCHOOL	64950	DOGAMI/DAS
Critical Facility	PATRICK ELEMENTARY SCHOOL	357450	DOGAMI/DAS
Critical Facility	HANBY MIDDLE SCHOOL	5433450	DOGAMI/DAS
Critical Facility	PATRICK ELEMENTARY SCHOOL	7696500	DOGAMI/DAS

	Building Name	Value	Source
Critical Facility	Communication Structure	750000	DOGAMI/DAS
Critical Facility	Communication Structure	750000	DOGAMI/DAS
Critical Facility	Communication Structure	32100	DOGAMI/DAS
Critical Facility	Communication Structure	750000	DOGAMI/DAS
Critical Facility	Jackson County Fire District 3 - Sams Valley	774750	DOGAMI/DAS
Critical Facility	Sutton on Rogue Airport	750000	DOGAMI/DAS
Critical Facility	Firefly Ranch Airfield	234750	DOGAMI/DAS
Critical Facility	Snider Creek Airport	750000	DOGAMI/DAS
Critical Facility	East Oregon Cattle Co	750000	DOGAMI/DAS
Critical Facility	GOLD HILL STP	155400	DOGAMI/DAS

Extreme Heat Risk Rank 10 –Grant County 41023960100

Figure 9.3.5-11: Tenth ranked census tract for heat hazard



No state-owned buildings or critical facilities identified.

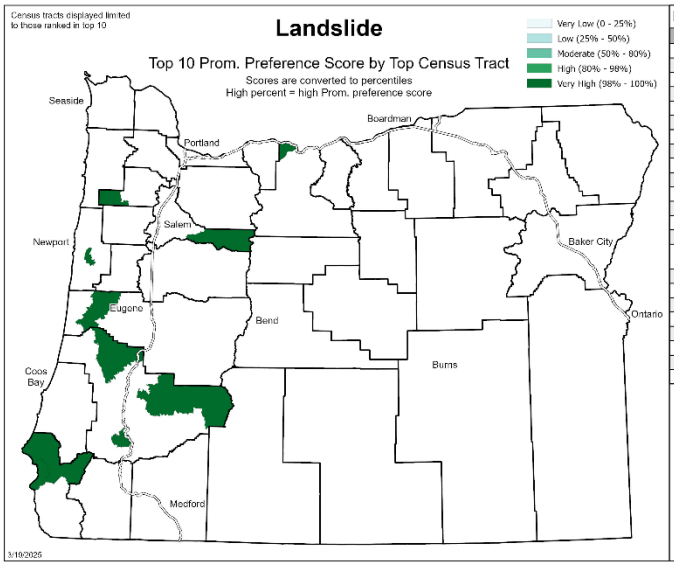
9.3.6 Landslide

9.3.6.1 Hazard Scenario

Landslide Susceptibility from the Statewide Landslide Information Database.

9.3.6.2 Top Ranked Risk Areas

Figure 9.3.6-1: Top Ranked Risk Areas in Landslide Risk Areas



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Landslide	LSS_pct_bld	1	0.07	Percentage of SBFO buildings exposed to existing landslide deposit.
Landslide	LSS_pct_CF	1	0.07	Percentage of critical facilities exposed to existing landslide deposit.
Landslide	Hwy_LSS_pct	1	0.07	Major roadway miles that are exposed to existing landslide deposits.
Landslide	Hist_LSS_ct	1	0.07	Percentage of historic buildings exposed to existing landslide deposit.
Landslide	LSS_Haz_Area	1	0.07	Area of tract in high or very high landslide hazard.
General	EP_MINRTY	1	0.046	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.046	Housing tenure from the US Census.
General	EP_MOBILE	1	0.046	Percentage of people that live in mobile homes
General	Median_Yrblt	-1	0.046	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.046	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.046	Rate of natural resource jobs.
General	PRED3_PE	1	0.046	Community Resilience Estimate
General	Hosp_Beds	-1	0.046	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.046	Percentage of members to a religious group
General	Mitigation	-1	0.046	Number of migitation projects (grouped by zip code and evenly distributed to overlaying tracts)
General	Watch	-1	0.046	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.046	County tax rate
General	CityTax	-1	0.046	City tax rate
General	Cultural	-1	0.009	Number of cultural-related buildings
General	Favors	-1	0.009	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.009	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.009	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.009	Neighborliness: Has visited neighbor's house

Table 9.3.6-1: Oregon Natural Hazard Risk Assessment Rank Compared to the National Risk Index

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating	Exposed Population According to NRI
1	41019100000	Douglas	Very high	2392
2	41047010600	Marion	Very high	1995
3	41039000500	Lane	Very high	2159
4	41015950202	Curry	Very high	1246
5	41015950100	Curry	Relatively high	2187
6	41065970600	Wasco	Very high	1361
7	41041951400	Lincoln	Very high	2864
8	41019030000	Douglas	Very high	2791

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating	Exposed Population According to NRI
9	41019200000	Douglas	Relatively high	4232
10	41071030502	Yamhill	Very high	2526

*Compared to census tracts nationwide

Table 9.3.6-2: Top 10 Census Tract Demographics

Census Tract	Landslide Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41019100000	1	3103	3283	6%	0.56	0.56	0.00
41047010600	2	2661	2126	-20%	0.30	0.43	0.13
41039000500	3	2244	2148	-4%	0.53	0.56	0.02
41015950202	4	1923	2074	8%	#N/A	0.34	#N/A
41015950100	5	3296	3226	-2%	0.66	0.56	-0.10
41065970600	6	3007	2965	-1%	0.88	0.67	-0.21
41041951400	7	3044	3003	-1%	0.48	0.77	0.28
41019030000	8	4047	4107	1%	0.39	0.35	-0.04
41019200000	9	4902	4912	0%	0.87	0.91	0.04
41071030502	10	5205	4697	-10%	0.84	0.65	-0.18

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Landslide Susceptibility Rank 1 – Douglas County 41019100000

This census tract is located east of Roseburg, Oregon, in Southern Oregon. The NRI reports a very high landslide susceptibility in this area, with a perfect score of 100. The NRI estimates 77% of this census tract's population are susceptible to landslides. Low social cohesion, large distances to hospitals, and widespread landslide susceptibility are the primary drivers of susceptibility. A higher than statewide average number of buildings are exposed to potential landslides.

Figure 9.3.6-2: First ranked census tract for landslide hazard

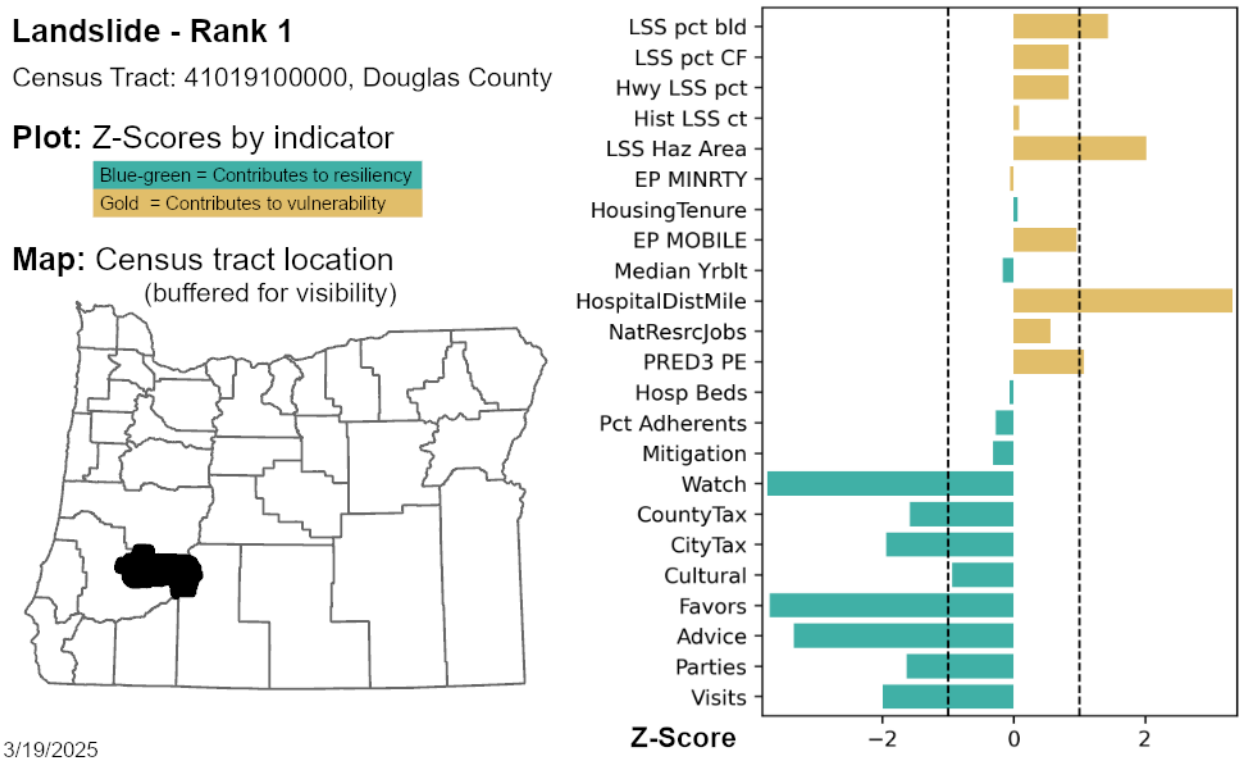


Table 9.3.6-3: State-owned buildings or critical facilities 41019100000

	Building Name	Value	Source
State-owned	Rock Creek Hatchery	259,624	DOGAMI/DAS
State-owned	Unknown	252,905	DOGAMI/DAS
Critical facility	Toketee Elementary School	516,450	DOGAMI/DAS
Critical facility	Steamboat Maintenance Station	127,168	DOGAMI/DAS

Landslide Susceptibility Rank 2 – Marion County 41047010600

This census tract is located east of Salem, Oregon, in the Willamette Valley. The NRI reports a very high landslide susceptibility in this area, with a perfect score of 100. The NRI estimates 75% of this census tract's population are susceptible to landslide hazard events. Low social cohesion, large distances to hospitals, widespread landslide susceptibility across the area of the census tract, and critical facilities located with landslide susceptibility areas, drive susceptibility in this analysis.

Figure 9.3.6-3: Second ranked census tract for landslide hazard

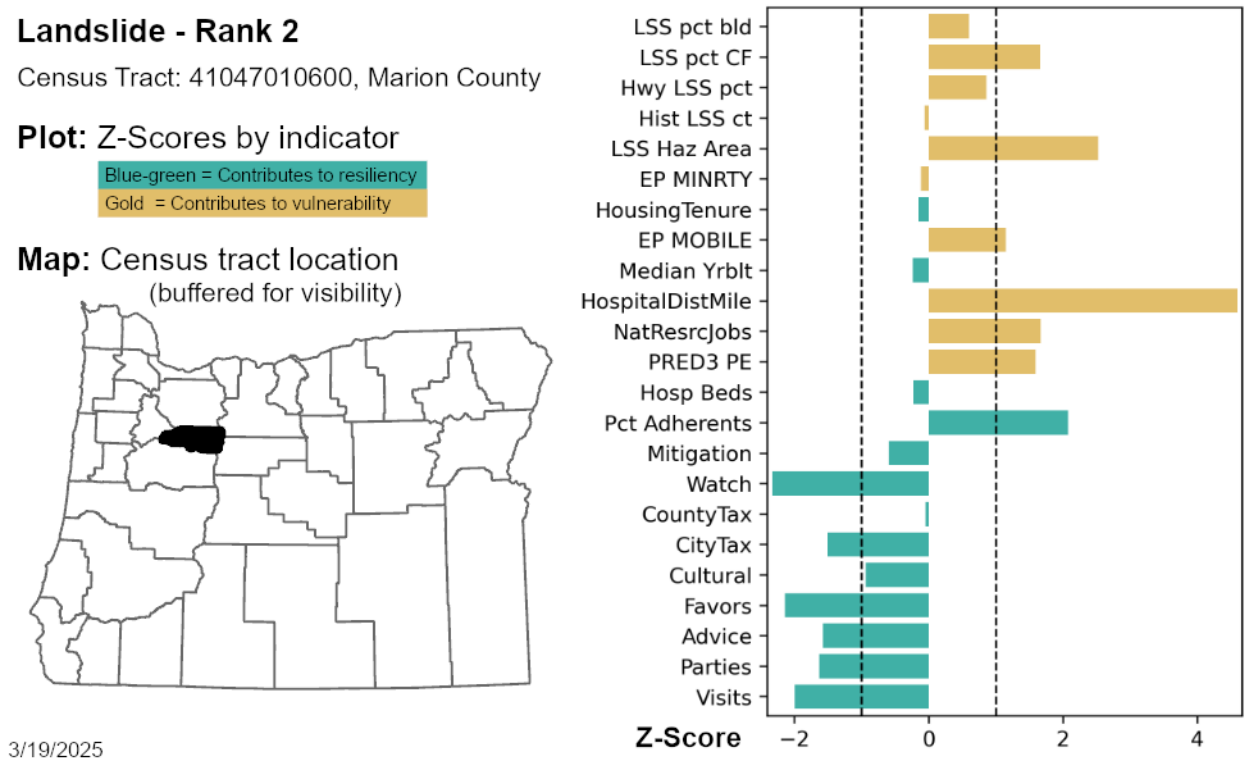


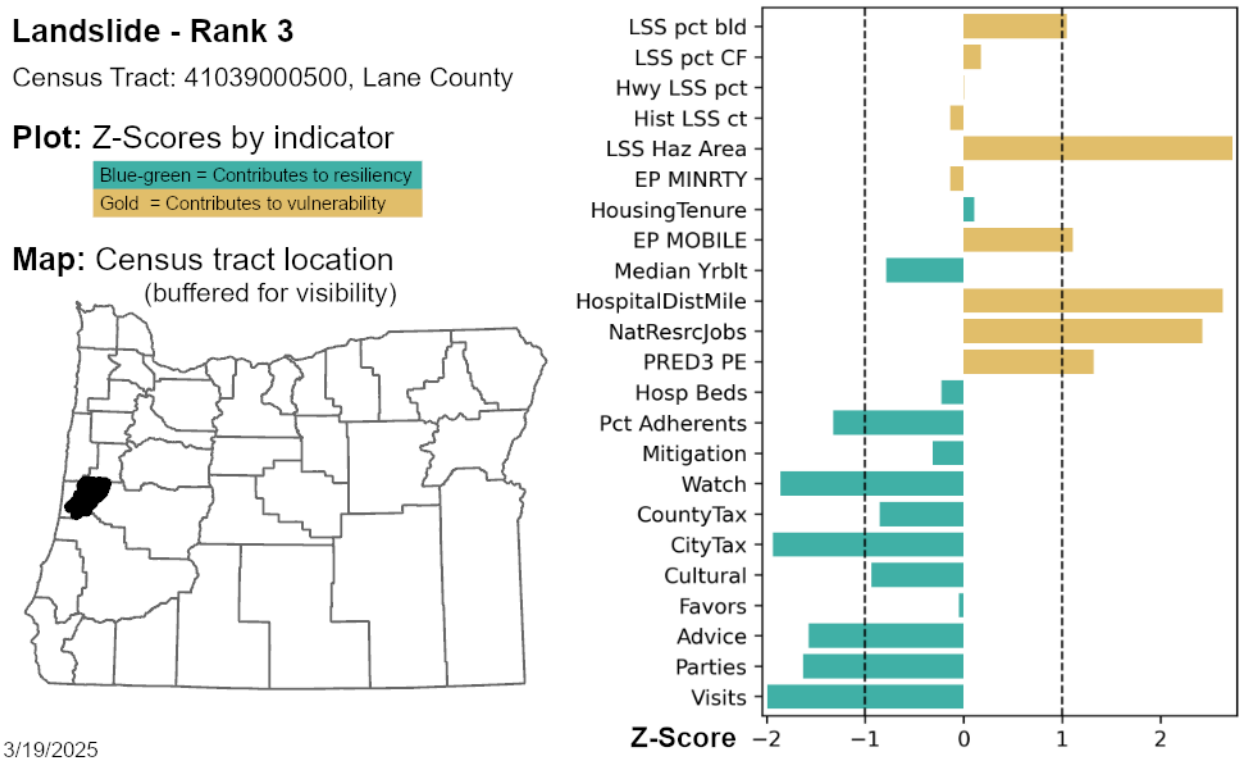
Table 9.3.6-4: State-owned buildings or critical facilities 41047010600

	Building Name	Value	Source
State-owned	Unknown	127,555	DOGAMI/DAS
State-owned	Unknown	91,448	DOGAMI/DAS
State-owned	Unknown	251,538	DOGAMI/DAS
Critical facility	Communications Structure	67,950	DOGAMI/DAS
Critical facility	Stayton RFPD	230,400	DOGAMI/DAS

Landslide Susceptibility Rank 3 – Lane County 41039000500

This rural census tract is located northeast of the coastal town of Florence, Oregon. The NRI reports a very high landslide susceptibility in this area, with a score of 100. The NRI estimates 96% of this census tract's population is susceptible to a landslide. In this analysis, widespread landslide susceptibility, coupled with low social cohesion and community resilience, and large distances to hospitals, drive overall susceptibility to harm in a landslide event.

Figure 9.3.6-4: Third ranked census tract for landslide hazard



No State-owned buildings or critical facilities in landslide susceptibility area. 41039000500

Landslide Susceptibility Rank 4 – Curry County 41015950202

This rural census tract is located north of Gold Beach, Oregon, on the southern Oregon coast. The NRI reports a very high landslide risk in this area, with a score of 99.7. The NRI estimates 64% of this census tract's population are susceptible to landslides. In this analysis, low taxing capacity, coupled with higher-than-average landslide susceptibility in areas with highways and buildings are the primary drivers of susceptibility to landslides, potentially due to a lower capacity to issue bonds or other tax mechanisms to adapt or respond in the event of a landslide. Additionally, low community resilience as estimated by the Census' Community Resilience Estimates (CRE) and large distances to hospitals drive susceptibility in this area.

Figure 9.3.6-5: Fourth ranked census tract for landslide hazard

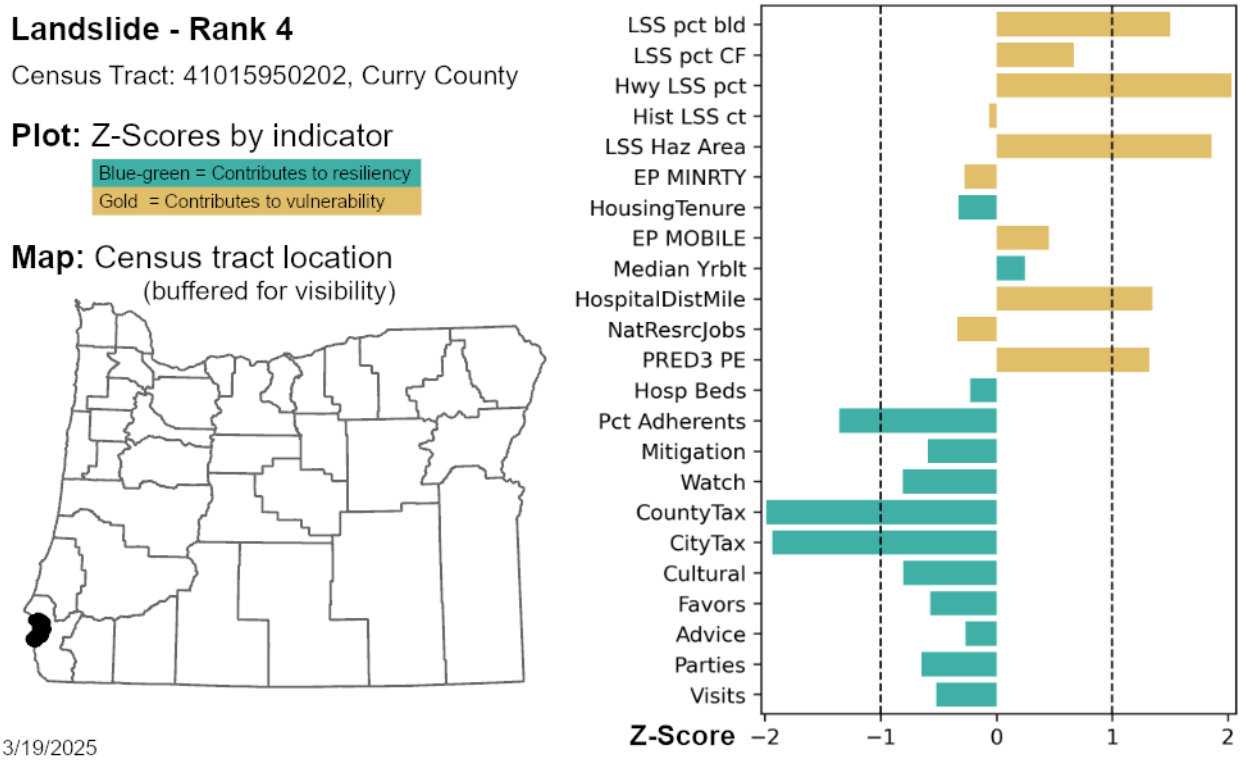


Table 9.3.6-5: State-owned buildings 41047010600

	Building Name	Value	Source
State-owned	Unknown	1,005,735	DOGAMI/DAS
State-owned	Unknown	929,953	DOGAMI/DAS

No critical facilities identified.

Landslide Susceptibility Rank 5 – Curry County 41015950100

This rural coastal census tract encompasses Port Orford, Oregon, on Oregon's southern coast. The NRI reports a relatively high landslide susceptibility in this area, with a score of 99.1. The NRI estimates that two-thirds (66.3%) of this census tract's population are susceptible to a landslide. Low social cohesion and high landslide susceptibility area are the primary drivers in this analysis.

Figure 9.3.6-6: Fifth ranked census tract for landslide hazard

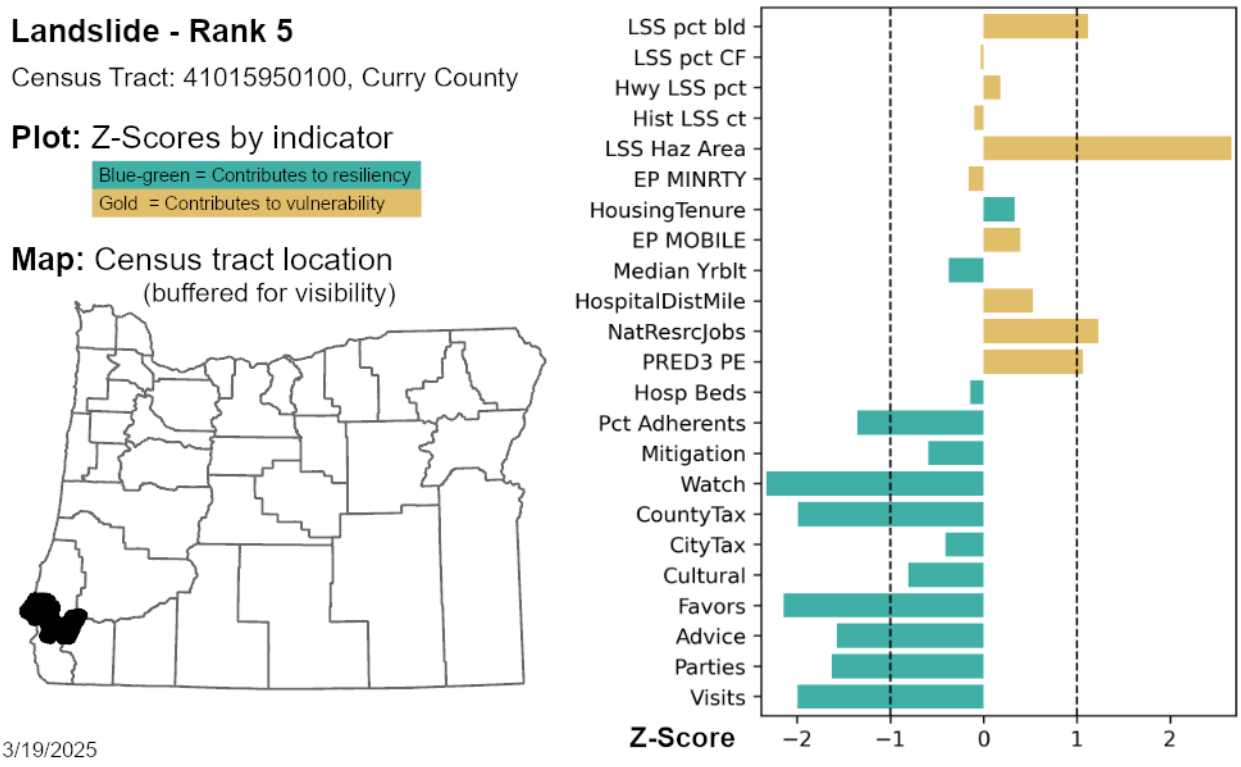


Table 9.3.6-6: Critical facilities 41047010600

	Building Name	Value	Source
Critical facility	Communication Structure	268,050	DOGAMI/DAS
Critical facility	Unknown	142,009	DOGAMI/DAS

No state-owned buildings identified.

Landslide Susceptibility Rank 6 – Wasco County 41065970600

This census tract encompasses Mosier and The Dalles, Oregon, in the Columbia River Gorge. The NRI reports a very high landslide susceptibility in this area, with a score of 99.5. The NRI estimates nearly half (45.2%) of this census tract's population are susceptible to a landslide. In this analysis, critical facilities and historic buildings within the landslide susceptibility area are the primary drivers of this susceptibility ranking.

Figure 9.3.6-7: Sixth ranked census tract for landslide hazard

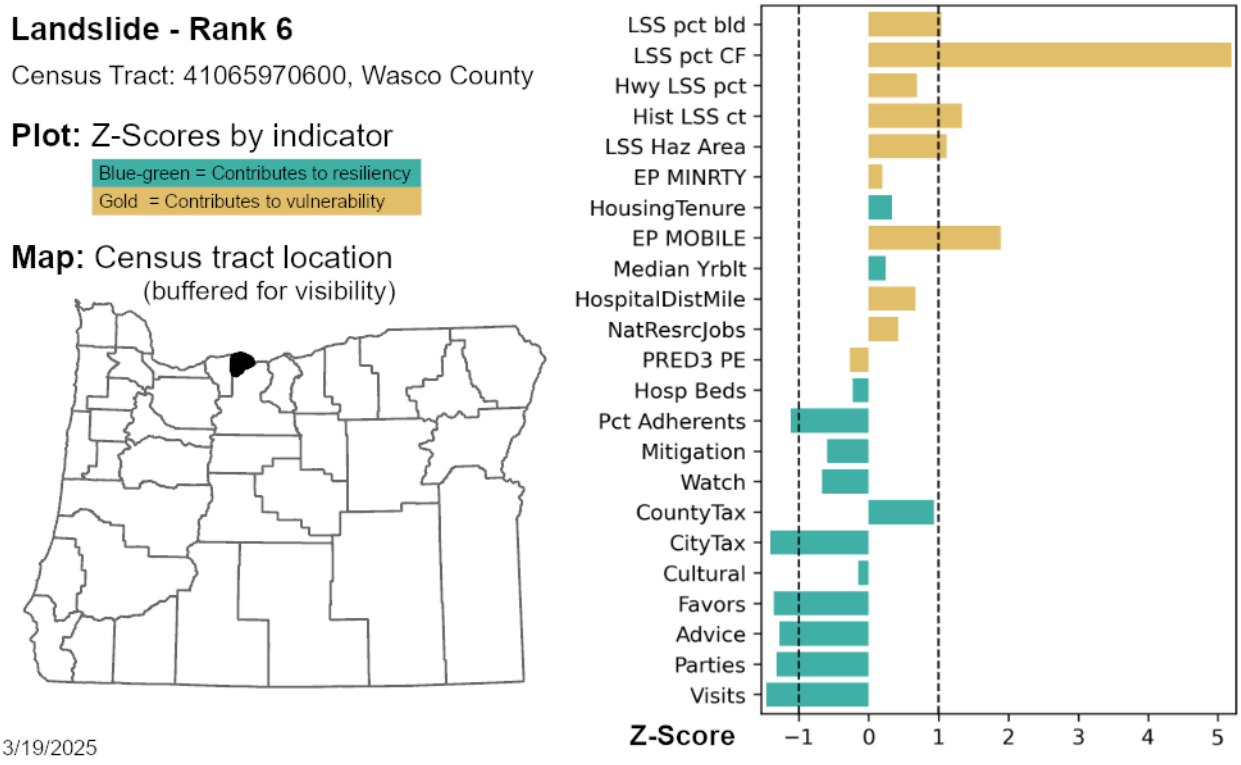


Table 9.3.6-7: State-owned buildings or critical facilities 41047010600

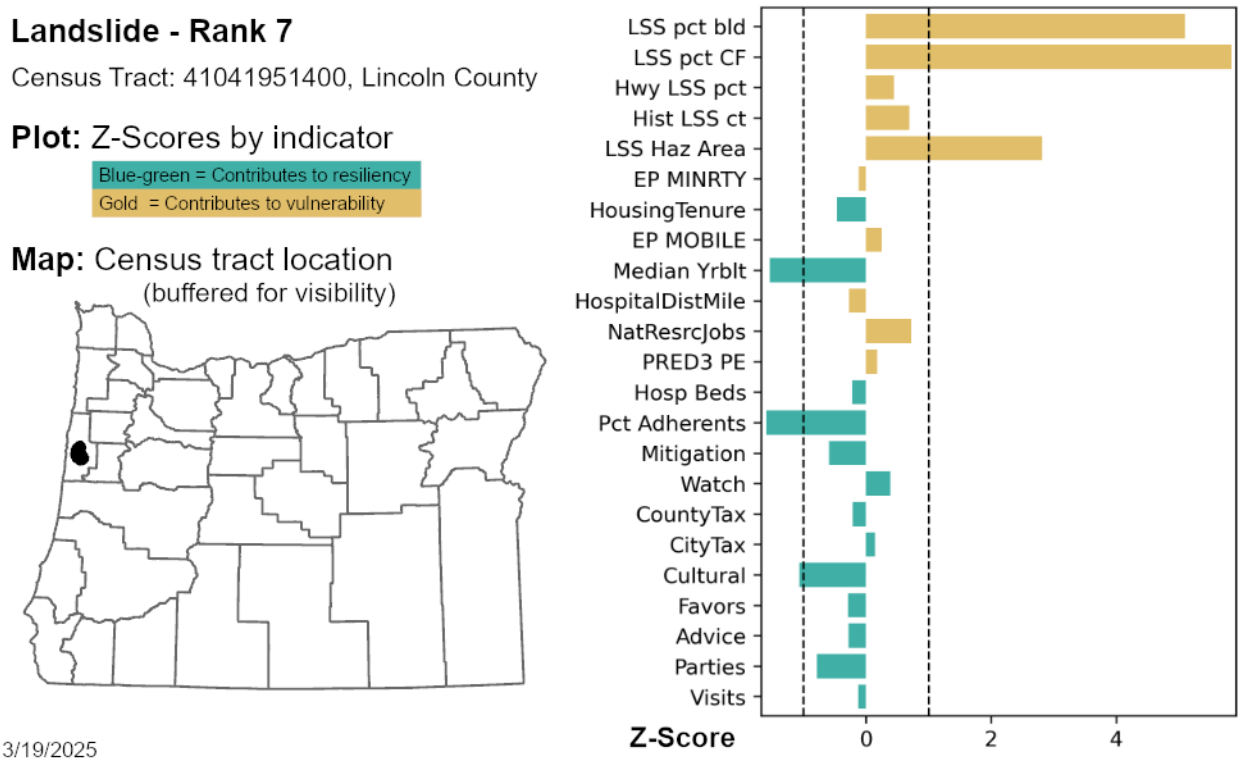
	Building Name	Value	Source
State-owned	Unknown AGR	345,336	DOGAMI/DAS
State-owned	Unknown AGR	475,424	DOGAMI/DAS
Critical facility	Mosier Fire Department	unknown	RAPT
Critical facility	Mosier Community School	unknown	RAPT
Critical facility	Mosier STP	unknown	RAPT

Landslide Susceptibility Rank 7 – Lincoln County 41041950400

This census tract is located east of the coastal city of Newport, Oregon. The NRI reports a very high landslide susceptibility in this area, with a score of 99.5. The NRI estimates 94% of this census tract's population are susceptible to a landslide. In this analysis, widespread landslide susceptibility and exposed buildings in landslide areas are the primary drivers of this susceptibility ranking.

may be susceptible to landslide damage when compared to other census tracts in the state.

Figure 9.3.6-8: Seventh ranked census tract for landslide hazard

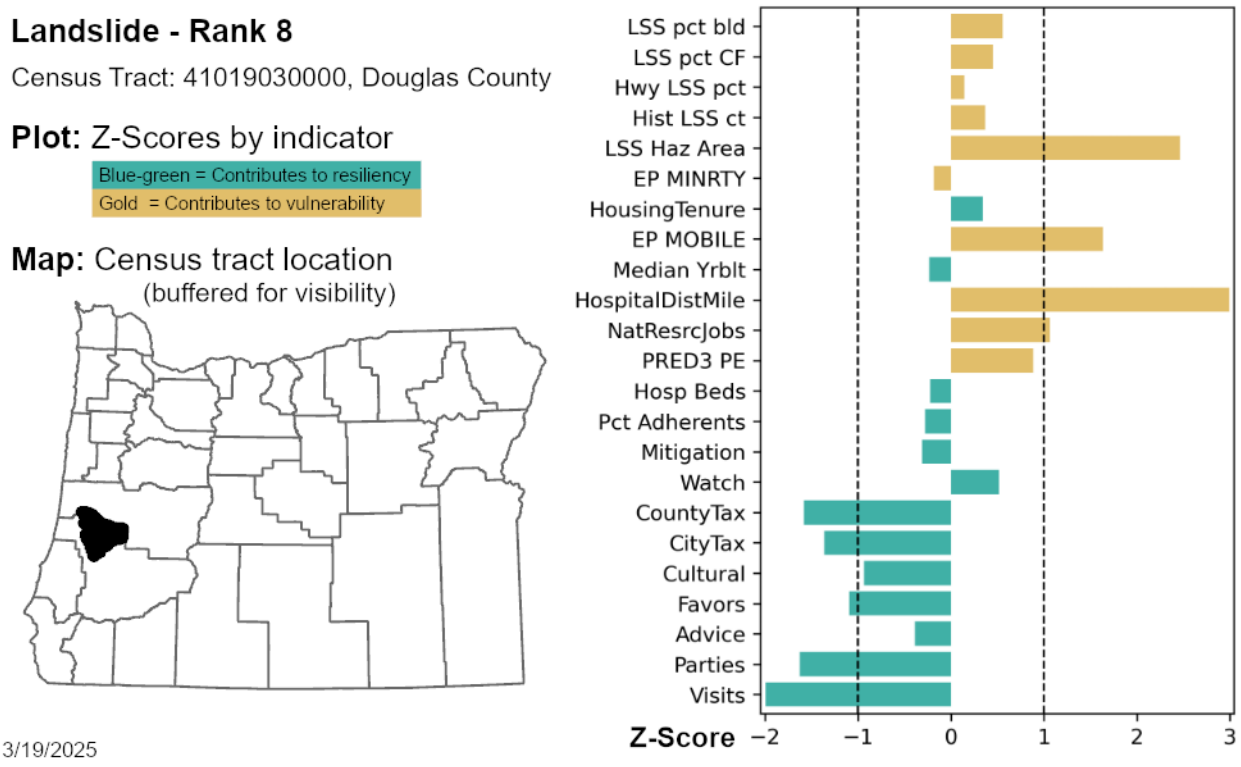


No State-owned buildings or critical facilities in landslide susceptibility area. 41041950100

Landslide Susceptibility Rank 8 — Douglas County 41019030000

This rural census tract is located northwest of Roseburg, Oregon, in southern Oregon. The NRI reports a very high landslide susceptibility in this area, with a score of 100. The NRI estimates around two-thirds (69%) of this census tract's population are susceptible to landslide. In this analysis, low social cohesion, large distances to hospitals, and widespread landslide susceptibility hazard areas are the primary drivers of this susceptibility ranking.

Figure 9.3.6-9: Eighth ranked census tract for landslide hazard

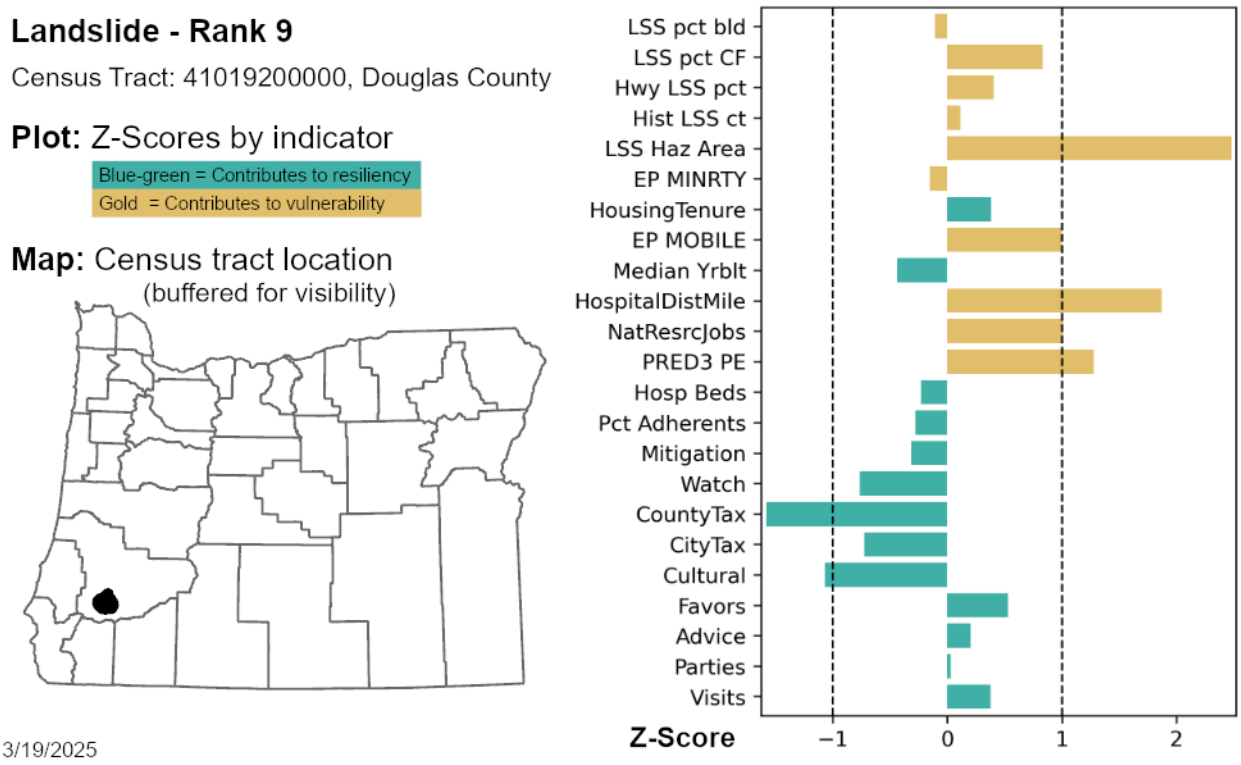


No State-owned buildings or critical facilities in landslide susceptibility area.

Landslide Susceptibility Rank 9 – Douglas County 410192200000

This rural census tract is located north of the coastal city of Newport, Oregon. The NRI reports a very high landslide susceptibility in this area, with a score of 99.9. The NRI estimates around half (56%) of this census tract's population are susceptible to a landslide. In this analysis, lower social cohesion coupled with higher exposure of buildings and critical facilities in the landslide hazard area drive this susceptibility ranking.

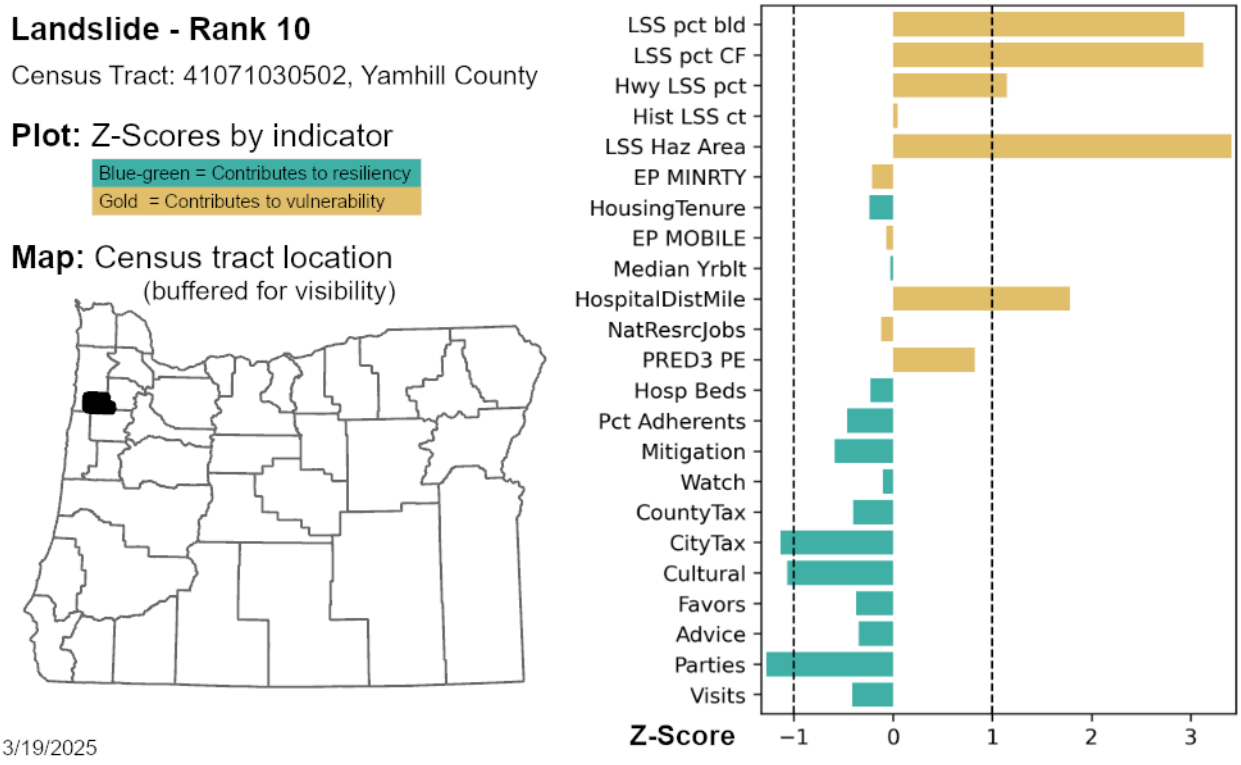
Figure 9.3.6-10: Ninth ranked census tract for landslide hazard



No State-owned buildings or critical facilities in landslide susceptibility area.

Landslide Susceptibility Rank 10 – Yamhill County 41071030502

Figure 9.3.6-11: Tenth ranked census tract for landslide hazard



No State-owned buildings or critical facilities in the landslide susceptibility area.

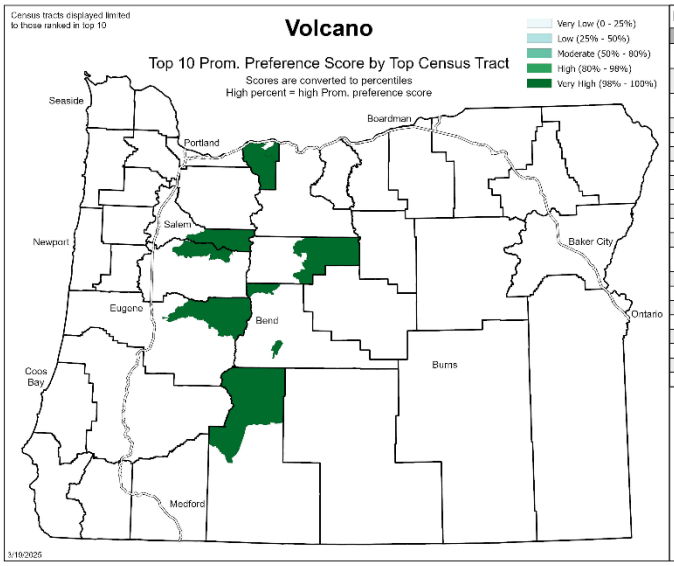
9.3.7 Volcano

9.3.7.1 Hazard Scenario

Lahar inundation zones	USGS (Mt. Jefferson, Sisters, Crater Lake)
Lahar inundation zones	Mt. Hood – DOGAMI (Burns and others, 2011)

9.3.7.2 Top Ranked Volcano Risk Areas

Figure 9.3.7-1: Top Ranked Risk Areas in Volcano Risk Areas



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Volcano	LAH_pct_bld	1	0.117	Percentage of SBFO buildings exposed to volcanic lahar hazard of any size.
Volcano	LAH_pct_CF	1	0.117	Percentage of critical facilities exposed to volcanic lahar hazard of any size.
Volcano	Hist_Lahar_ct	1	0.117	Percentage of historic buildings exposed to volcanic lahar hazard of any size.
General	EP_MINRTY	1	0.046	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.046	Housing tenure from the US Census.
General	EP_MOBILE	1	0.046	Percentage of people that live in mobile homes
General	Modern_Yrblt	-1	0.046	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.046	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.046	Rate of natural resource jobs.
General	PRED3_PE	1	0.046	Community Resilience Estimate
General	Hosp_Beds	-1	0.046	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.046	Percentage of members to a religious group
General	Mitigation	-1	0.046	Number of migitation projects (grouped by zip code and evenly distributed to overlaying tracts)
General	Watch	-1	0.046	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.046	County tax rate
General	CityTax	-1	0.046	City tax rate
General	Cultural	-1	0.009	Number of cultural-related buildings
General	Favors	-1	0.009	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.009	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.009	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.009	Neighborliness: Has visited neighbor's house

Table 9.3.7-1: Oregon Natural Hazard Risk Assessment Rank Compared to the National Risk Index

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating *	Exposed Population According to NRI
1	41019030000	Marion	Very low	na
2	41035970100	Klamath	No rating	na
3	41017000501	Deschutes	Not applicable	na
5	41027950400	Hood River	Very high	5508
4	41017000301	Deschutes	Not applicable	na
6	41027950100	Hood River	Very high	4446
7	41039000100	Lane	Not applicable	na

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating *	Exposed Population According to NRI
8	41031960100	Jefferson	Relatively low	2123
9	41043030201	Linn	Relatively low	2551
10	41039001804	Lane	Not applicable	na

*Compared to census tracts nationwide

Table 9.3.7-2: Top 10 Census Tract Demographics

Census Tract	Volcano Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41019030000	1	4047	4107	1%	0.39	0.35	-0.11
41035970100	2	3301	3546	7%	0.76	0.57	-0.25
41017000501	3	3057	3013	-1%	#N/A	0.05	#N/A
41027950400	4	5519	5455	-1%	0.81	0.82	0.01
41017000301	5	4679	4024	-14%	#N/A	0.11	#N/A
41027950100	6	4449	4873	10%	0.64	0.74	0.16
41039000100	7	5232	4838	-8%	0.16	0.25	0.59
41031960100	8	2482	2163	-13%	0.38	0.50	0.33
41043030201	9	3501	3216	-8%	#N/A	0.50	#N/A
41039001804	10	3687	4312	17%	0.20	0.17	-0.14

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Volcano Risk Rank 1 – Marion County 41047010600

This census tract is located east of Salem and encompasses the towns of Lyons and Mill City. The NRI reports a very low volcanic risk in this area, with a score of 40.4. The NRI estimates nearly all (98.9%) of the population in this census tract to be at risk of volcanic hazards. In this analysis, buildings and critical facilities exposed to lahar flows and higher than average distance to hospitals drives risk.

Figure 9.3.7-2: First ranked census tract for volcano hazard

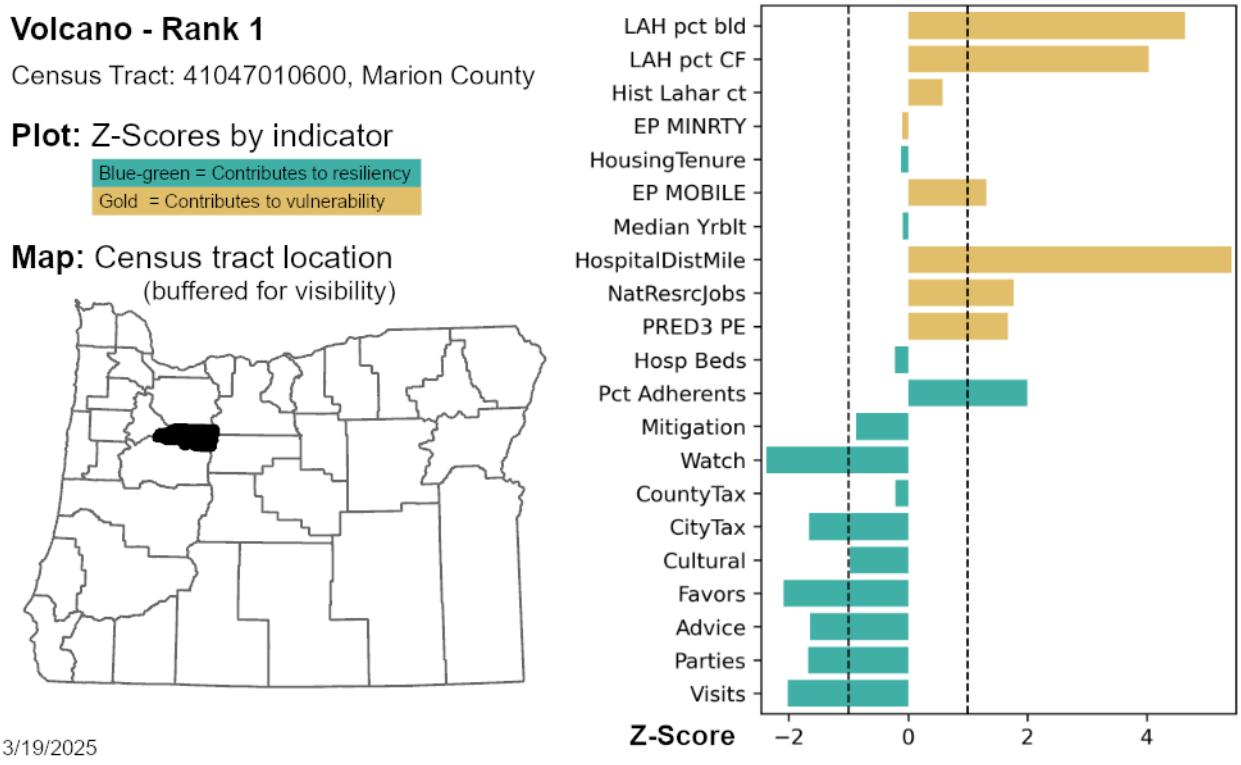


Table 9.3.7-3: State-owned buildings 41047010600

	Building Name	Value	Source
State-owned	Storage	123725	DOGAMI/DAS
State-owned	Detroit Maintenance Station Grounds	1859548	DOGAMI/DAS
State-owned	Detroit Maintenance Station Grounds	1005053	DOGAMI/DAS
State-owned	Unknown	291080	DOGAMI/DAS
State-owned	North Santiam Boat Ramp Restroom	153767	DOGAMI/DAS
State-owned	ODOT Maintenance Station	161240	DOGAMI/DAS
State-owned	Ranger station garage	694500	DOGAMI/DAS

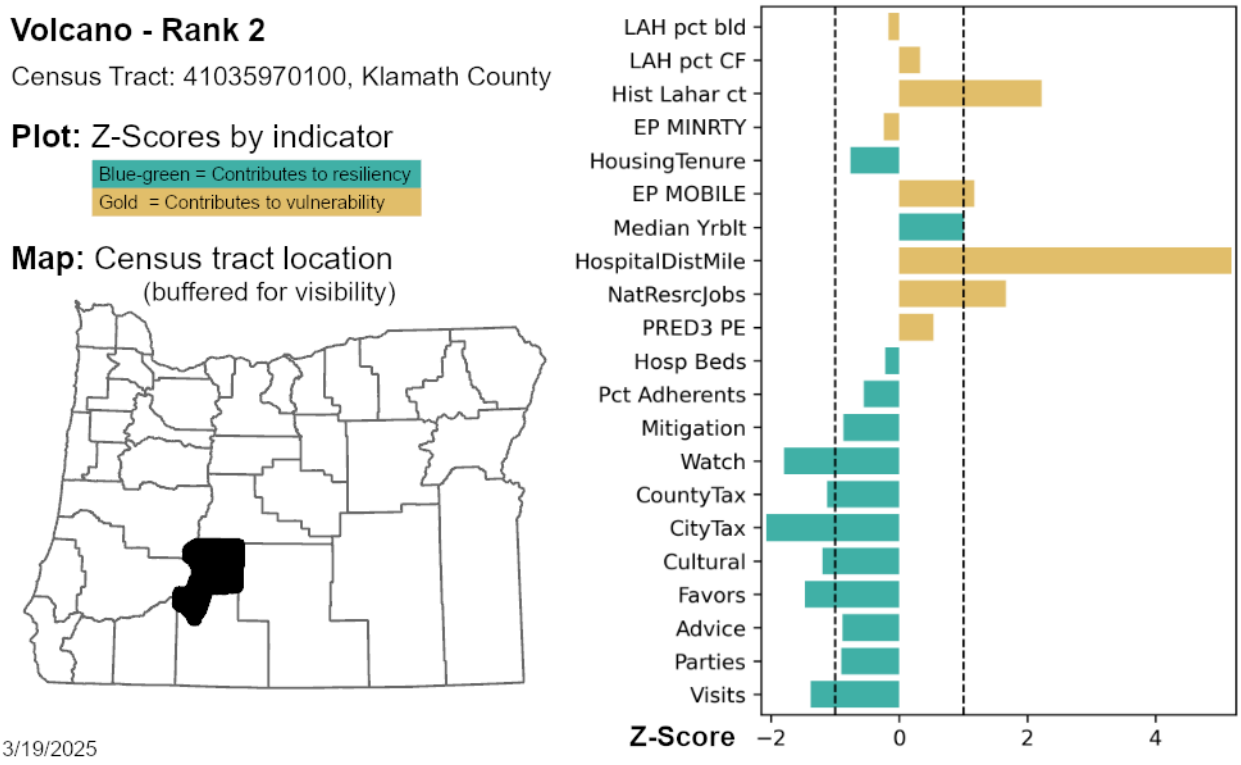
	Building Name	Value	Source
State-owned	Storage	462550	DOGAMI/DAS
State-owned	Restroom	174780	DOGAMI/DAS
State-owned	Site Systems - Minto Creek Stockpile Grounds	86142	DOGAMI/DAS
State-owned	Minto Creek Scoop Shed	215659	DOGAMI/DAS
State-owned	The Maples RA Pumphouse/ Storage	117943	DOGAMI/DAS
State-owned	Site Systems - The Maples RA Grounds	86142	DOGAMI/DAS
State-owned	The Maples RA New Restroom	430171	DOGAMI/DAS

No critical facilities identified.

Volcano Risk Rank 2 – Klamath County 41035970100

Klamath County 41035970100NRI does not report a volcanic risk in this area and does not provide a score for this hazard in this area. The NRI does not estimate people at risk for this hazard. Risk is primarily driven by historic lahar flows and greater distance to hospitals.

Figure 9.3.7-3: Second ranked census tract for volcano hazard



No state-owned buildings or critical facilities identified.

Volcano Risk Rank 3 – Deschutes County 41017000501

This census tract is located northwest of Bend, Oregon, in central Oregon. The NRI does not report a volcanic risk in this area and does not provide a score for this hazard in this area. The NRI does not estimate people at risk for this hazard. Historic lahar flows and exposures of critical facilities and buildings, in addition to large distances to hospitals, drive risk.

Figure 9.3.7-4: Third ranked census tract for volcano hazard

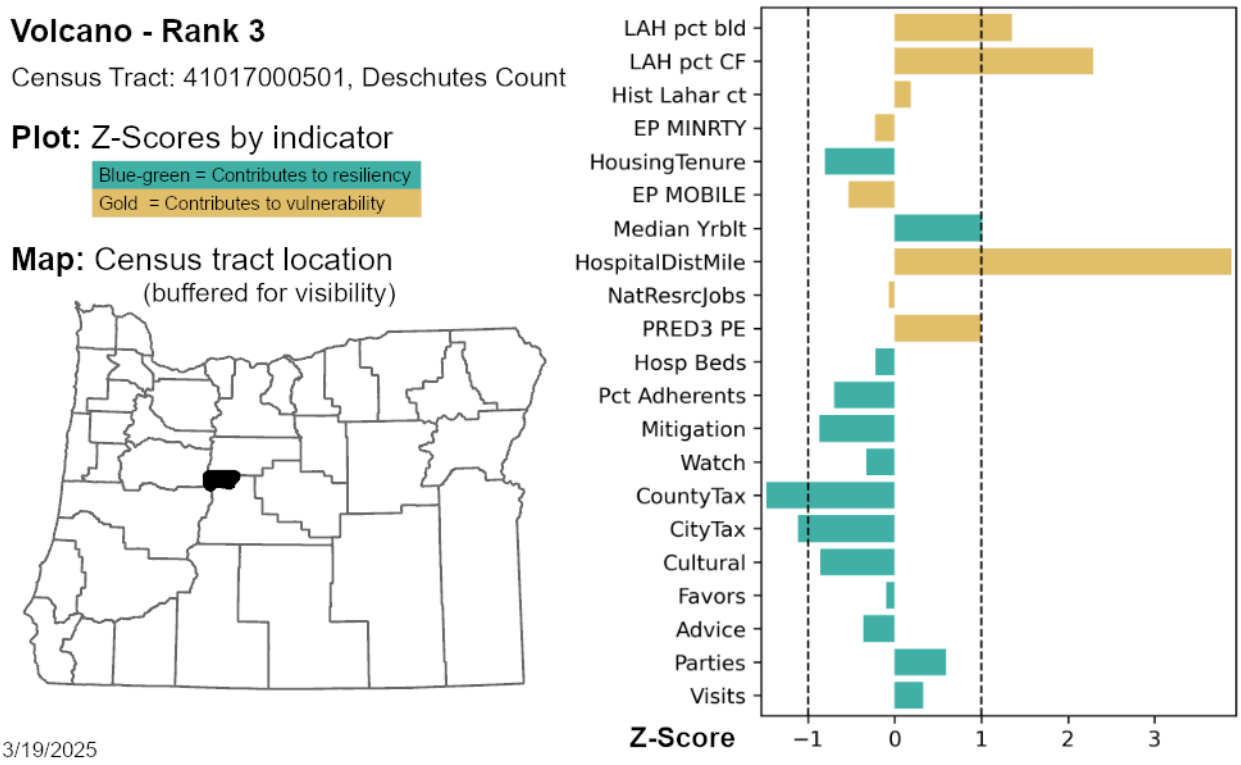


Table 9.3.7-4: State-owned buildings 41017000501

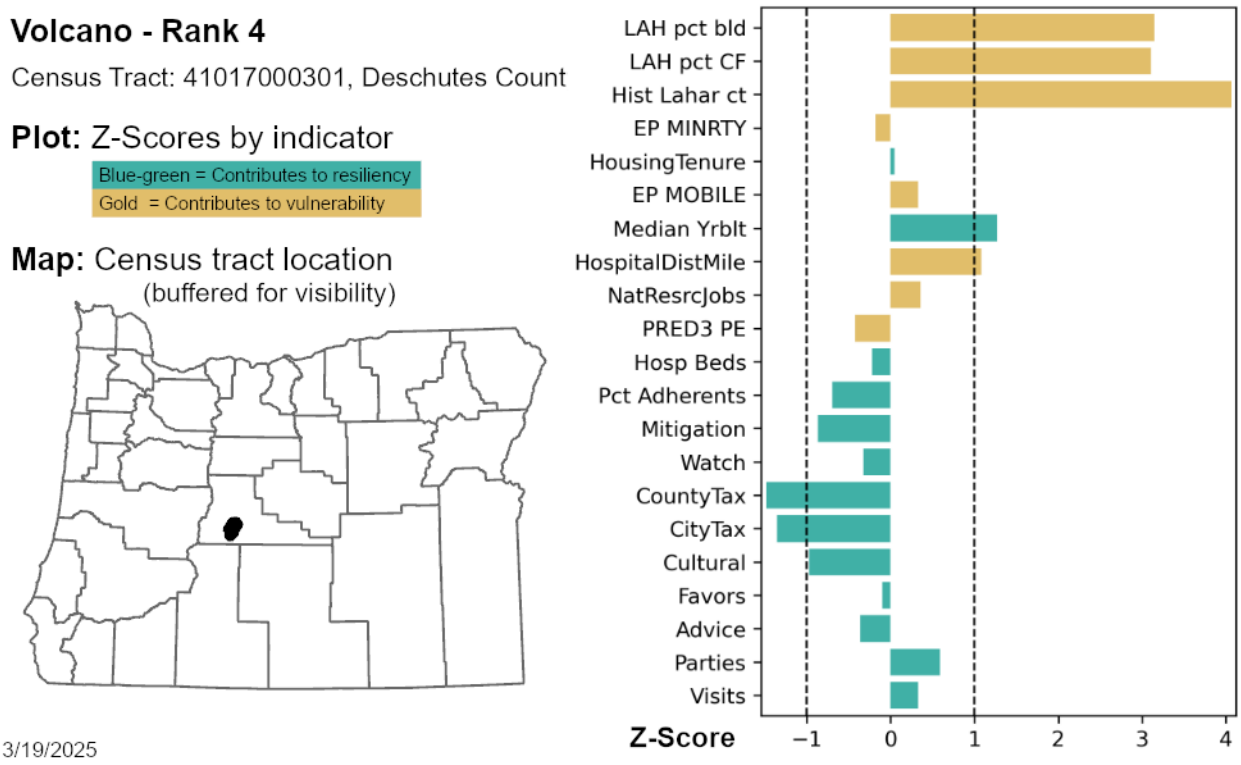
	State-owned Buildings	Value	Source
State-owned	Sisters Sub-Unit	1899604	DOGAMI/DAS
State-owned	Sisters Sub-Unit	94103	DOGAMI/DAS

No critical facilities identified.

Volcano Risk Rank 4 – Deschutes County 41017000301

This census tract is located south of Bend and Sunriver, Oregon, in central Oregon. The NRI does not report a volcanic risk in this area and does not provide a score for this hazard in this area. The NRI does not estimate people at risk for this hazard. Historic lahar flows primarily drive risk.

Figure 9.3.7-5: Fourth ranked census tract for volcano hazard



No state-owned buildings or critical facilities identified in volcano hazard zone

Volcano Risk Rank 5 – Hood River County 41027950400

This census tract is located adjacent to Hood River, Oregon in the Columbia River Gorge. The NRI reports a very high volcanic risk in this area, with a score of 99.3. The NRI estimates nearly all (99.7%) of the population in this census tract to be at risk of this hazard. Reliance on natural resource jobs and historic lahar flows primarily drive risk in this analysis.

Figure 9.3.7-6: Fifth ranked census tract for volcano hazard

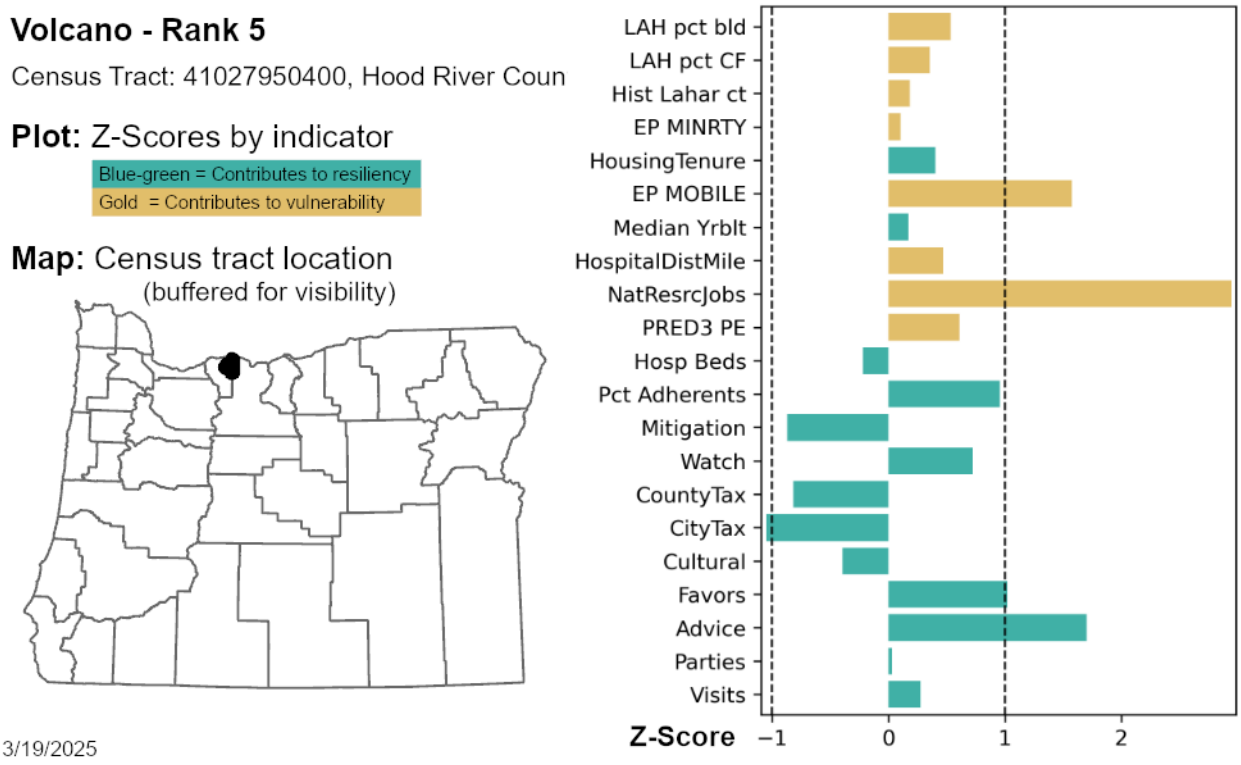


Table 9.3.7-5: State-owned buildings 41027950400

	Building Name 41027950400	Value	Source
State-owned	Unknown	424668	DOGAMI/DAS

No critical facilities identified.

Volcano Risk Rank 6 – Hood River County:

This census tract encompasses much of Hood River County, in the Columbia River Gorge. The NRI reports a very high volcanic risk in this area, with a score of 98.6. The NRI estimates nearly all (99.9%) of the population in this census tract to be at risk for this hazard. Historic lahar flows, and exposure of state-owned buildings and critical facilities to lahar flows, drives risk in this analysis.

Figure 9.3.7-7: Sixth ranked census tract for volcano hazard

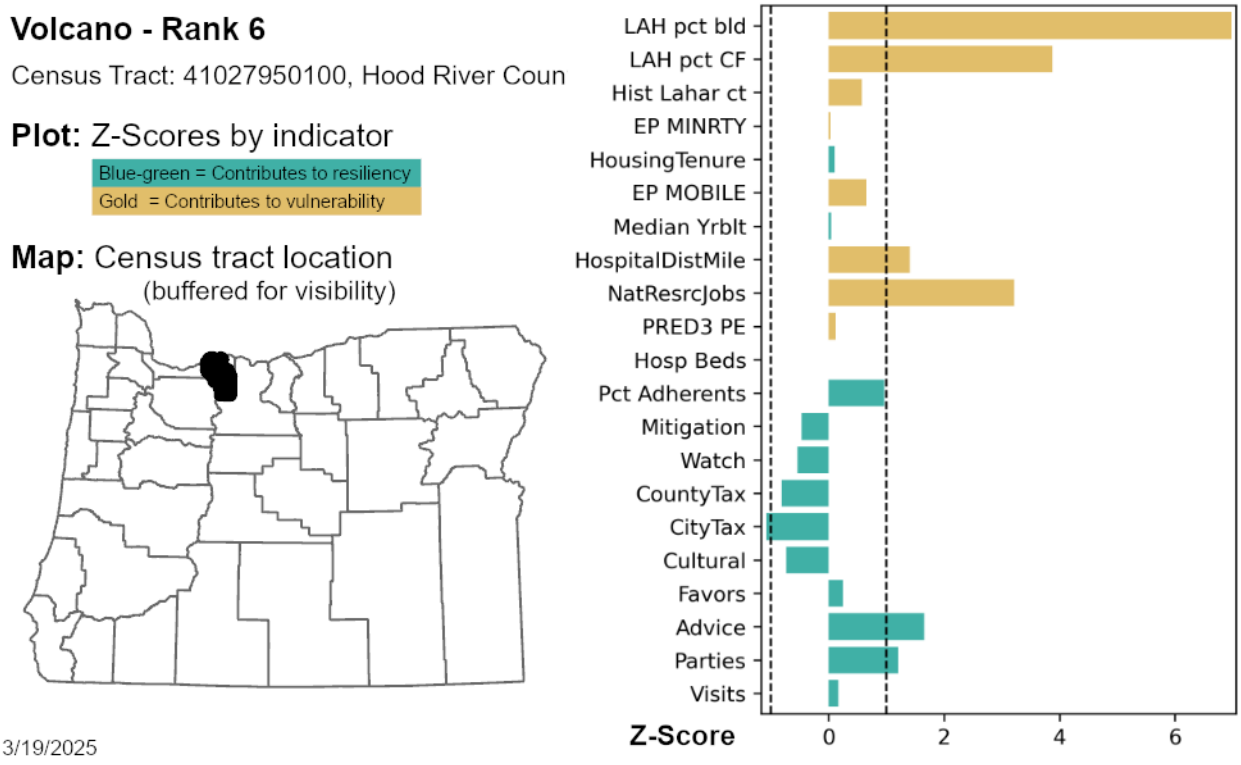


Table 9.3.7-6: State-owned buildings 41027950100

	Building Name	Value	Source
State-owned	Parkdale Maintenance Station New Grounds	2026059	DOGAMI
State-owned	Parkdale Maintenance Station New Grounds	421722	DOGAMI
State-owned	Parkdale Maintenance Station New Grounds	1757869	DOGAMI
State-owned	Fire Guard Station, maintenance building	344838	DOGAMI
State-owned	Unknown	1485289	DOGAMI
State-owned	Dept of Forestry, house	321233	DOGAMI

No critical facilities identified.

Volcano Risk Rank 7 – Lane County 41039000100

This census tract is east of Eugene and Springfield, Oregon, in the Willamette Valley. The NRI does not report a volcanic risk in this area and does not score this hazard. The NRI does not estimate people at risk for this hazard. Exposure of buildings and critical facilities to potential lahars and historic lahar flows are the primary drivers of risk. Additionally, higher than average distances to hospitals drive risk.

Figure 9.3.7-8: Seventh ranked census tract for volcano hazard

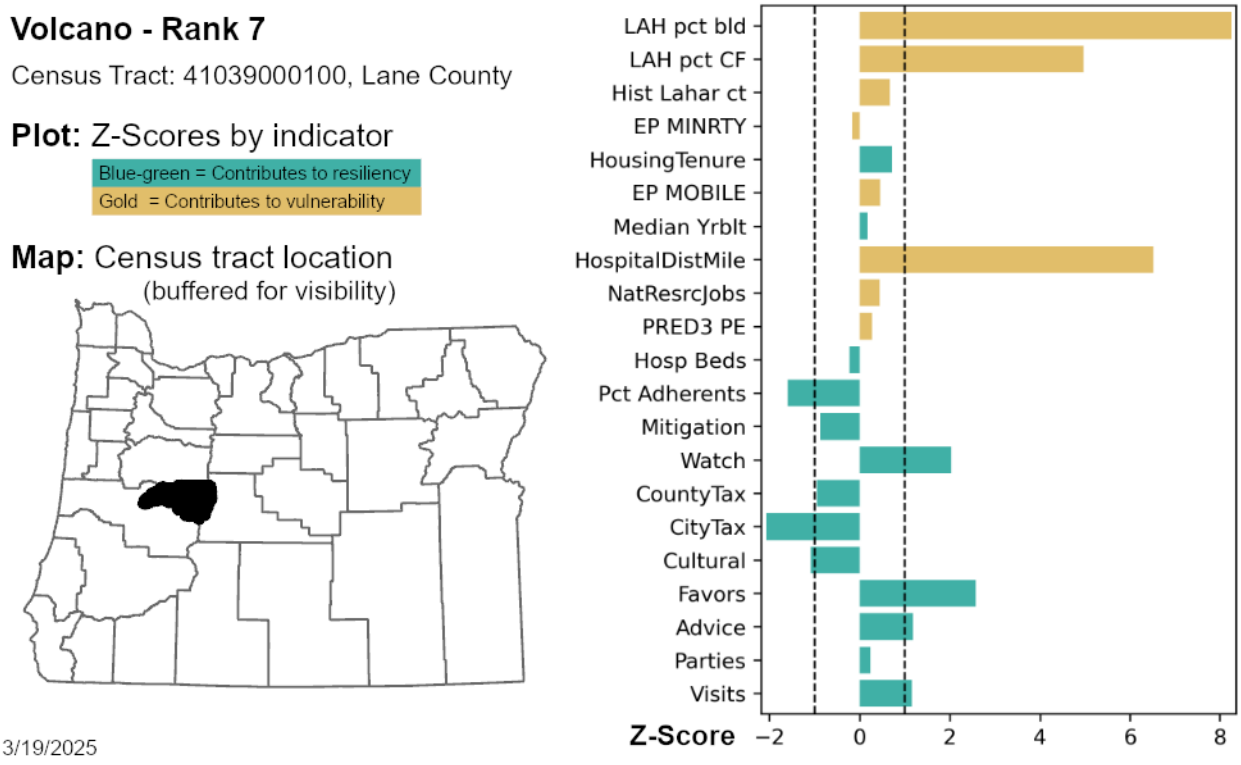


Table 9.3.7-7: State-owned buildings 41039000100

	Building Name 41039000100	Value	Source
State-owned	Unknown	1112233	DOGAMI/DAS
State-owned	McKenzie River Ranger Station	846509	DOGAMI/DAS
State-owned	Holman Guard Station	1026117	DOGAMI/DAS
State-owned	ODOT McKenzie Bridge Maintenance Station	1161757	DOGAMI/DAS
State-owned	McKenzie River Ranger Station	708786	DOGAMI/DAS
State-owned	McKenzie River Ranger Station	690311	DOGAMI/DAS
State-owned	Unknown	681544	DOGAMI/DAS

	Building Name 41039000100	Value	Source
State-owned	ODOT McKenzie Maintenance Station	1040027	DOGAMI/DAS
State-owned	McKenzie Hatchery	4366318	DOGAMI/DAS
State-owned	McKenzie River Ranger Station	850963	DOGAMI/DAS
State-owned	Unknown	1004841	DOGAMI/DAS
State-owned	Unknown	769060	DOGAMI/DAS
State-owned	Unknown	1063182	DOGAMI/DAS
State-owned	McKenzie River Ranger Station	680673	DOGAMI/DAS
State-owned	McKenzie Bridge Maintenance Station Grounds	2159576	DOGAMI/DAS
State-owned	McKenzie Bridge State Airport (00S)	667242	DOGAMI/DAS
State-owned	McKenzie Bridge Deicer Building	934370	DOGAMI/DAS
State-owned	Site Systems - McKenzie Bridge MS Grounds	667242	DOGAMI/DAS
State-owned	Offices, Fire House, & Equipment Storage	1026117	DOGAMI/DAS
State-owned	Leaburg Hatchery Residence Duplex	667242	DOGAMI/DAS
State-owned	Leaburg Hatchery Garage	667242	DOGAMI/DAS
State-owned	Leaburg Hatchery Residence Duplex	667242	DOGAMI/DAS
State-owned	Leaburg Hatchery Spawning House	667242	DOGAMI/DAS
State-owned	Leaburg Hatchery Offices/Garage/Shop/River Building	667242	DOGAMI/DAS
State-owned	Leaburg Hatchery Residence Duplex	667242	DOGAMI/DAS
State-owned	Leaburg Hatchery Garage/Truck Shop/Paint	667242	DOGAMI/DAS
State-owned	Leaburg Hatchery Residence and Garage Utility	667242	DOGAMI/DAS
State-owned	Leaburg Hatchery Garage	667242	DOGAMI/DAS
State-owned	Site Systems - Walterville Scale House Grounds	667242	DOGAMI/DAS
State-owned	Walterville Scale House	719280	DOGAMI/DAS

No critical facilities identified.

Volcano Risk Rank 8 – Jefferson County:

This census tract is located to the northeast of Bend, Oregon, in central Oregon. The NRI reports a relatively low volcanic risk in this area, with a score of 58.2. The NRI estimates 85% of the population of the census tract to be at risk of this hazard. Higher than average distances to hospitals, and slightly lower than average social cohesion drives risk in this area.

Figure 9.3.7-9: Eighth ranked census tract for volcano hazard

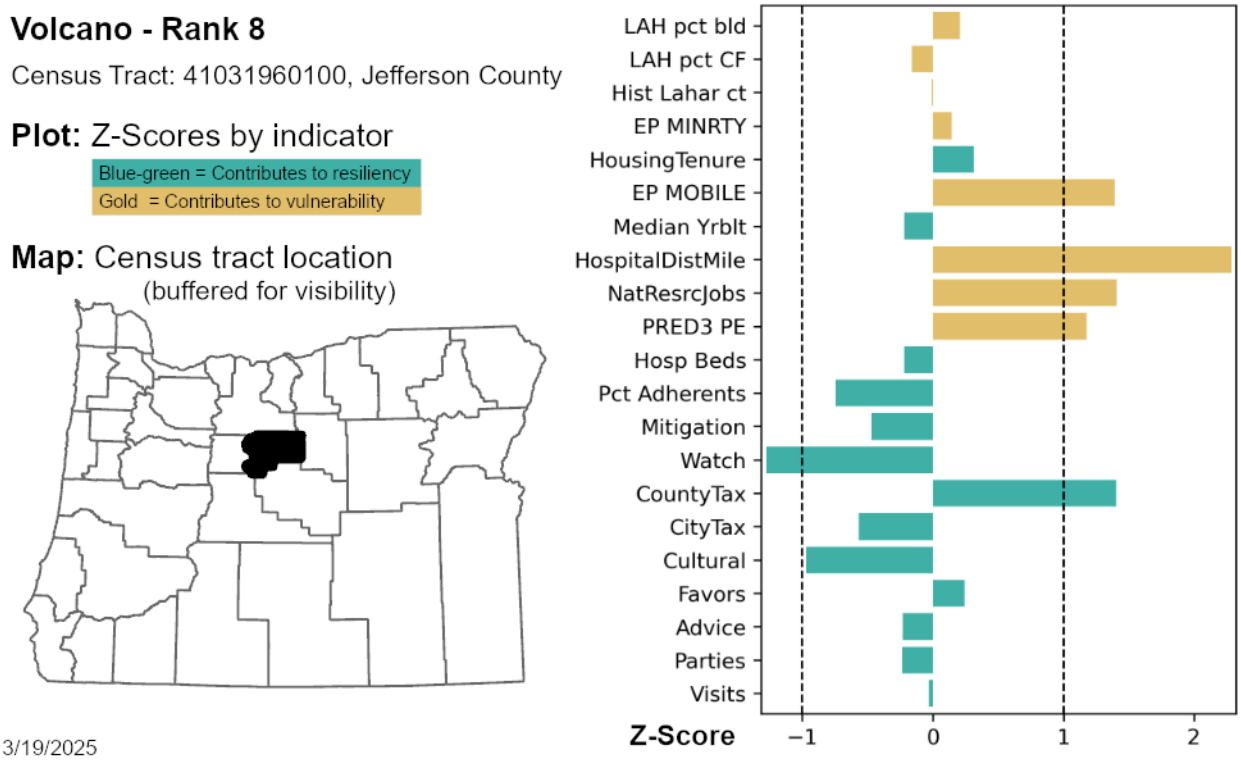


Table 9.3.7-8: State-owned buildings 41031960100

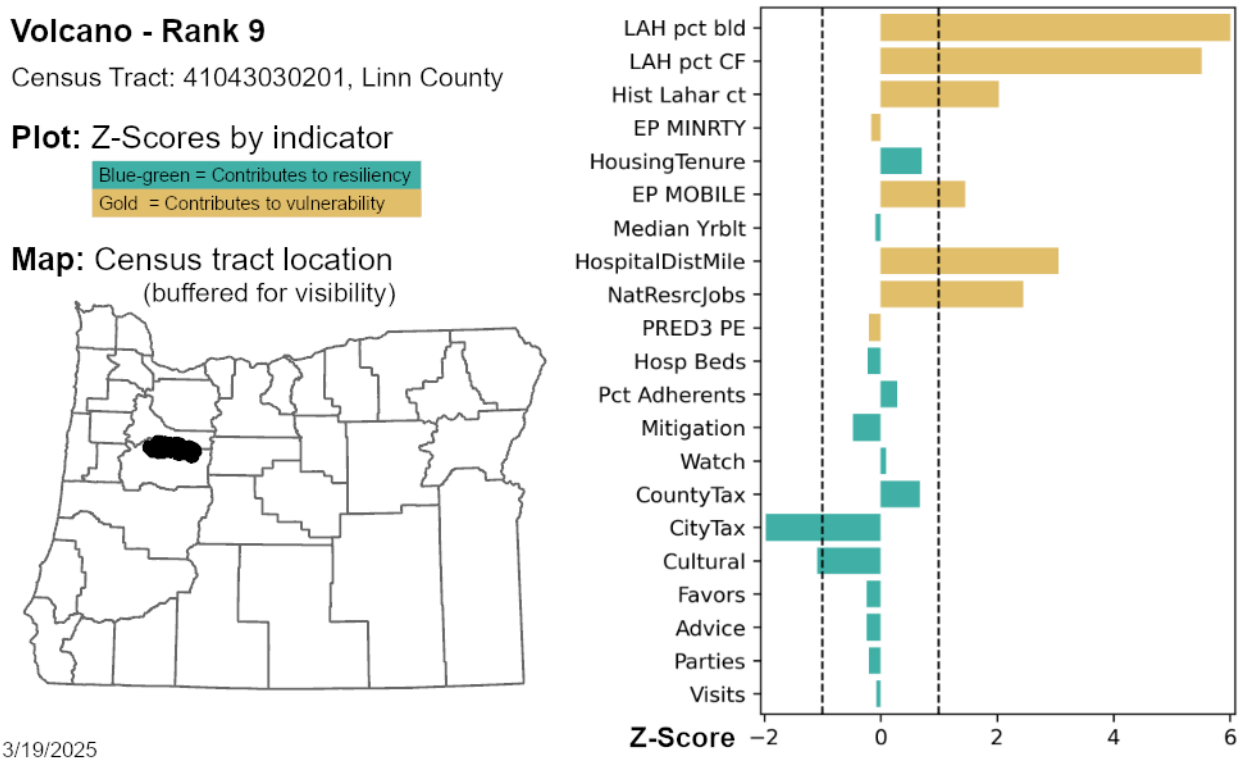
	Building Name	Value	Source
State-owned	Unknown	39065	DOGAMI/DAS

No critical facilities identified.

Volcano Risk Rank 9 – Linn County:

This census tract is located east of Albany, Oregon, in the Willamette Valley. The NRI reports a relatively low volcanic risk in this area, with a score of 78.2. The NRI estimates 72% of the population within this census tract to be at risk of volcanic hazards. Exposure of critical facilities and state-owned buildings, coupled with historic lahar flows drive risk.

Figure 9.3.7-10: Ninth ranked census tract for volcano hazard

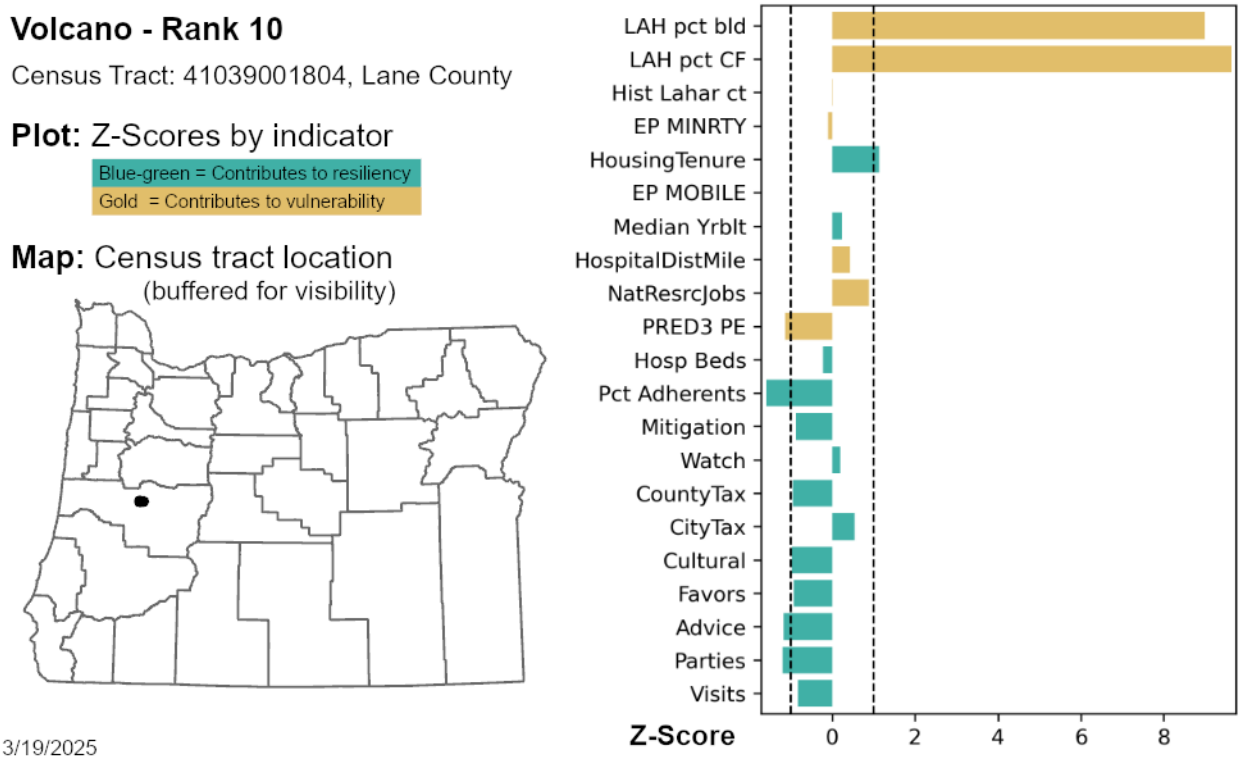


No state-owned buildings or critical facilities identified.

Volcano Risk Rank 10 – Lane County:

This census tract is located east of Eugene, Oregon, in the Willamette Valley. The NRI does not report a volcanic risk in this area and does not score this hazard. The NRI does not estimate people at risk for this hazard. Exposure of critical facilities and state-owned buildings, coupled with historic lahar flows, are the primary drivers of risk.

Figure 9.3.7-11: Tenth ranked census tract for volcano hazard



No state-owned buildings or critical facilities identified in volcano hazard zone.

9.3.8 Wildfire

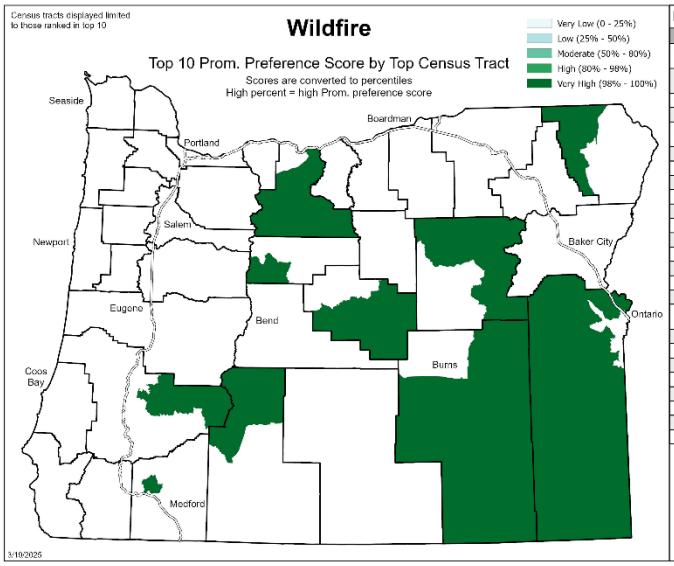
9.3.8.1 Hazard Scenario

Burn probability Oregon Dept. of Forestry (McEvoy and others, 2023)

The Pacific Northwest Quantitative Wildfire Risk Assessment (QWRA): Methods and Results (McEvoy and others, 2023) is a comprehensive report that includes a database of spatial information related to wildfire hazard developed by the United States Forest Service (USFS) for the states of Oregon and Washington. For this project, DOGAMI used the burn probability dataset from the QWRA to measure exposure to wildfire risk. While this risk assessment uses some of the same underlying data as the statewide wildfire hazard map developed by ODF and Oregon State University, this risk assessment and related maps are not intended for regulatory purposes. Rather, they will be used to identify state-owned buildings and critical facilities for possible mitigation actions. To learn more about the statewide wildfire hazard map, visit https://www.oregon.gov/odf/fire/pages/wildfire-hazard.aspx.

9.3.8.2 Top Ranked Wildfire Risk Areas

Figure 9.3.8-1: Top Ranked Risk Areas in Wildfire Risk Areas



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Wildfire	WF_pct_bld	1	0.05	Percentage of SBFO buildings exposed to Medium and High Burn Probability.
Wildfire	WF_pct_CF	1	0.05	Percentage of critical facilities exposed to Medium and High Burn Probability .
Wildfire	BurnProb	1	0.05	Burn probability from the QPNW.
Wildfire	Hwy_WF_pct	1	0.05	Percentage of highway within High Burn Probability zones
Wildfire	Hist_WF_ct	1	0.05	Percentage of historic buildings exposed to Medium and High Burn Probability.
Wildfire	Over90th	1	0.05	Mean days above the historic 90th percentile temp
Wildfire	Over90F	1	0.05	Mean days above 90 degrees Fahrenheit
General	EP_MINRTY	1	0.046	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.046	Housing tenure from the US Census.
General	EP_MOBILE	1	0.046	Percentage of people that live in mobile homes
General	Median_Yrblt	-1	0.046	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.046	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.046	Rate of natural resource jobs.
General	PRED3_PE	1	0.046	Community Resilience Estimate
General	Hosp_Beds	-1	0.046	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.046	Percentage of members to a religious group
General	Mitigation	-1	0.046	Number of migitation projects (grouped by zip code and evenly distributed to overlaying tracts)
General	Watch	-1	0.046	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.046	County tax rate
General	CityTax	-1	0.046	City tax rate
General	Cultural	-1	0.009	Number of cultural-related buildings
General	Favors	-1	0.009	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.009	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.009	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.009	Neighborliness: Has visited neighbor's house

Table 9.3.8-1: Oregon Natural Hazard Risk Assessment Rank Compared to the National Risk Index

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating *	Exposed Population According to NRI
1	41025960200	Harney	Very high	1,102
2	41013950402	Crook	Relatively high	1301

Oregon Rank	Census Tract	County	National Risk Index Hazard Rating *	Exposed Population According to NRI
3	41023960100	Grant	Relatively high	891
4	41031960303	Jefferson	Relatively high	395
5	41029002800	Jackson	Relatively high	362
6	41045970900	Malheur	Relatively high	679
7	41065970800	Wasco	Very high	1949
8	41035970100	Klamath	Relatively moderate	511
9	41063960200	Wallowa	Relatively high	216
10	41019100000	Douglas	Relatively moderate	481

*Compared to census tracts nationwide
NRI accessed 03/27/2025

Table 9.3.8-2: Top 10 Census Tract Demographics

Census Tract	Wildfire Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41025960200	1	2165	2261	4%	0.50	0.71	0.21
41031960303	2	564	678	20%	#N/A	0.36	#N/A
41029002800	3	4965	4765	-4%	0.52	0.63	0.11
41013950402	4	2397	2739	14%	#N/A	0.51	#N/A
41023960100	5	2050	2214	8%	0.62	0.65	0.03
41045970900	6	5670	6202	9%	0.69	0.70	0.01
41065970800	7	4542	4650	2%	0.71	0.73	0.03
41035970100	8	3301	3546	7%	0.76	0.57	-0.19
41063960200	9	1860	1877	1%	0.72	0.45	-0.28
41019100000	10	3103	3283	6%	0.56	0.56	0.00

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Wildfire Risk Rank 1 – Harney County 41025960200

This rural census tract encompasses much of Harney County. The NRI reports a very high risk of wildfire, with a score of 99.5 and a Risk Index Rating of Very High. According to the NRI, about half (51%) of the population in this area is at risk of this hazard. Large distances to hospitals primarily drive risk in this area. Although a rural census tract, a larger than statewide average percent of buildings, critical facilities and historic buildings could be harmed by wildfire. This is likely due to the large area covered by the census tract. A larger than statewide average number of people in the census tract live in mobile homes. Social cohesion indicators are below statewide average.

Figure 9.3.8-2: First ranked census tract for wildfire hazard

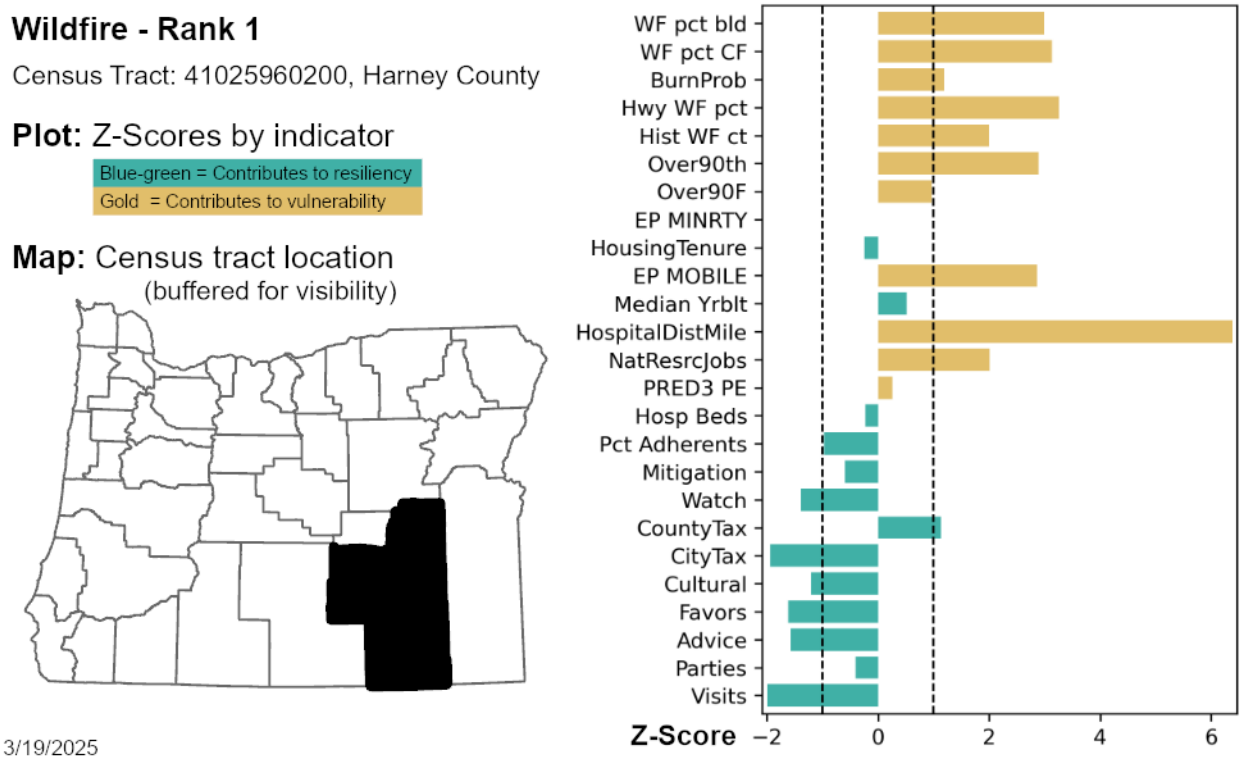


Table 9.3.8-3: State-owned buildings or critical facilities 41025960200

Type of Exposed Structure	Name	Value	Source
State-owned	Sand Shed	431817	DOGAMI/DAS
State-owned	Pete French Round Barn	509322	DOGAMI/DAS
State-owned	Sagehen Hill RA Grounds	835829	DOGAMI/DAS
State-owned	Sagehen Hill RA Grounds	486577	DOGAMI/DAS
State-owned	Frenchglen Hotel	690192	DOGAMI/DAS

Type of Exposed Structure	Name	Value	Source
State-owned	Frenchglen Hotel	175447	DOGAMI/DAS
State-owned	Buchanan Springs Rest Area	106513	DOGAMI/DAS
State-owned	Site Systems - Steens Radio Operating Exp Grounds	31564	DOGAMI/DAS
State-owned	Steens Radio Building	76217	DOGAMI/DAS
State-owned	Site Systems - King Mountain M/W Grounds	31564	DOGAMI/DAS
State-owned	King Mountain M/W Building	60474	DOGAMI/DAS
State-owned	King Mountain M/W Battery Building	60474	DOGAMI/DAS
State-owned	Alkali Lake MS Deicer Building	156455	DOGAMI/DAS
State-owned	Alkali Lake MS Residence Garage	104851	DOGAMI/DAS
State-owned	Alkali Lake MS Mobile Home 17	274408	DOGAMI/DAS
Critical Facility	DREWSEY ELEMENTARY SCHOOL	190960	DOGAMI/DAS
Critical Facility	PINE CREEK ELEMENTARY SCHOOL	330490	DOGAMI/DAS
Critical Facility	DIAMOND ELEMENTARY SCHOOL	10934	DOGAMI/DAS
Critical Facility	CRANE ELEMENTARY SCHOOL	1070893	DOGAMI/DAS
Critical Facility	CRANE UNION HIGH SCHOOL	1581720	DOGAMI/DAS
Critical Facility	CRANE UNION HIGH SCHOOL	92838	DOGAMI/DAS
Critical Facility	CRANE UNION HIGH SCHOOL	202202	DOGAMI/DAS
Critical Facility	CRANE UNION HIGH SCHOOL	68603	DOGAMI/DAS
Critical Facility	CRANE UNION HIGH SCHOOL	165974	DOGAMI/DAS
Critical Facility	CRANE UNION HIGH SCHOOL	165974	DOGAMI/DAS
Critical Facility	CRANE ELEMENTARY SCHOOL	98478	DOGAMI/DAS
Critical Facility	FIELDS ELEMENTARY SCHOOL	1111350	DOGAMI/DAS
Critical Facility	FIELDS ELEMENTARY SCHOOL	421350	DOGAMI/DAS
Critical Facility	DIAMOND ELEMENTARY SCHOOL	39964	DOGAMI/DAS
Critical Facility	CRANE UNION HIGH SCHOOL	783727	DOGAMI/DAS

Type of Exposed Structure	Name	Value	Source
Critical Facility	CRANE UNION HIGH SCHOOL	88801	DOGAMI/DAS
Critical Facility	CRANE ELEMENTARY SCHOOL	6311	DOGAMI/DAS
Critical Facility	DIAMOND ELEMENTARY SCHOOL	39964	DOGAMI/DAS
Critical Facility	Double O Elementary School	323300	DOGAMI/DAS
Critical Facility	Frenchglen Elementary School	288690	DOGAMI/DAS
Critical Facility	Communication Structure	750000	DOGAMI/DAS
Critical Facility	Communication Structure	33750	DOGAMI/DAS
Critical Facility	Communication Structure	750000	DOGAMI/DAS
Critical Facility	Communication Structure	750000	DOGAMI/DAS
Critical Facility	Communication Structure	750000	DOGAMI/DAS
Critical Facility	BUREAU OF LAND MANAGEMENT - BURNS FIELD OFFICE	2016150	DOGAMI/DAS
Critical Facility	Burns Municipal Airport	2654381	DOGAMI/DAS
Critical Facility	Roaring Springs Ranch Airport	402150	DOGAMI/DAS
Critical Facility	El Rancho Airport	85950	DOGAMI/DAS
Critical Facility	Wildhorse Valley Airport	750000	DOGAMI/DAS
Critical Facility	Barton Lake Ranch	377700	DOGAMI/DAS
Critical Facility	Wagontire	270450	DOGAMI/DAS
Critical Facility	Arnold Airstrip	750000	DOGAMI/DAS
Critical Facility	Whitehorse Ranch Airport	750000	DOGAMI/DAS

Wildfire Risk Rank 2 – Crook County 41013950402

This census tract is located east of Bend. The NRI reports a relatively high risk of wildfire, with a score of 98.3. According to the NRI, around half (54.2%) of the population in this area is at risk. Large distances to hospitals, and exposure of buildings, historic buildings, and critical facilities drive risk in this area.

Figure 9.3.8-3: Second ranked census tract for wildfire hazard

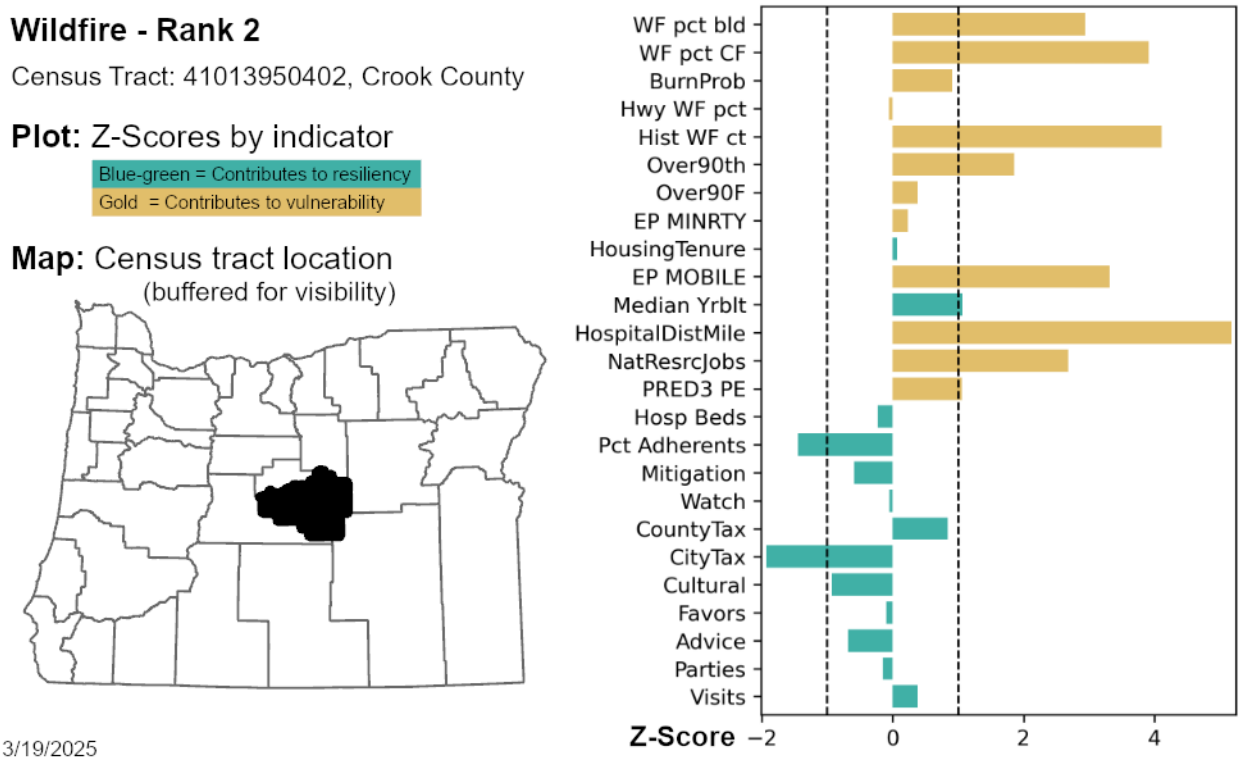


Table 9.3.8-4: State-owned buildings 41013950402

	Building Name 41013950402	Value	Source
State-owned	Prineville Reservoir State Park	8054379	DOGAMI/DAS
State-owned	Powder House Cove Boat Ramp	459018	DOGAMI/DAS
State-owned	Lookout Gerow Butte	331558	DOGAMI/DAS

No critical facilities identified.

Wildfire Risk Rank 3 – Grant County 41023960100

This rural census tract is located in Oregon's northeast corner west of Baker City. The NRI reports a relatively high risk of wildfire, with a score of 99.1. According to the NRI, around half (43.4%) of the population in this area is at risk. Low community resilience, indicated by the Community Resilience Estimate score, coupled with longer distances to hospitals and a higher prevalence of natural resource jobs, drive risk in this area. Additionally, while there is not a higher burn probability, there is a higher than stateside average of exposed structures and historic buildings exposed to potential wildfires in this area.

Figure 9.3.8-4: Third ranked census tract for wildfire hazard

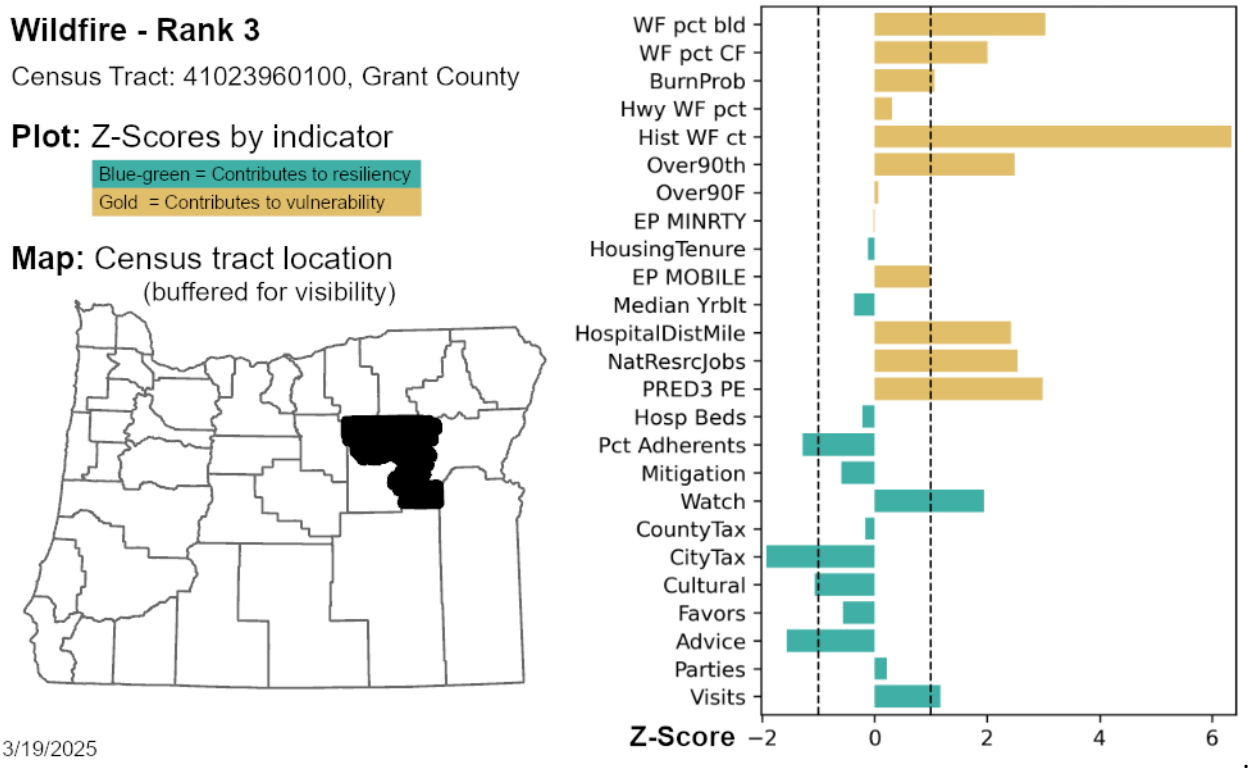


Table 9.3.8-5: State-owned buildings or critical facilities 41023960100

	Name	Total Building Value	Source
State-owned	Austin Maintenance Station	4,407,243	DOGAMI/DAS
State-owned	Bone Point M/W $ Radio Operations	66,220	DOGAMI/DAS
State-owned	Long Creek Maintenance Station	1,478,301	DOGAMI/DAS
State-owned	Tamarack M/W & Radio Operations	89,232	DOGAMI/DAS
Critical facility	Dayville School	6152537	DOGAMI/DAS
Critical facility	MALHEUR NATIONAL FOREST - SUPERVISORS OFFICE	4715000	DOGAMI/DAS
Critical facility	Grant County Road Dept	1132830	DOGAMI/DAS
Critical facility	Ponderosa Ranch Airport	754350	DOGAMI/DAS

	Name	Total Building Value	Source
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Land's Inn Ranch Airport	750000	DOGAMI/DAS
Critical facility	Cerny Airport	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Hi Country No 2 Airport	750000	DOGAMI/DAS
Critical facility	Inshallah International Airport	750000	DOGAMI/DAS
Critical facility	Miranda's Skyranch	750000	DOGAMI/DAS
Critical facility	Oxbow Ranch Airport	750000	DOGAMI/DAS
Critical facility	Seneca Emergency Airstrip	750000	DOGAMI/DAS
Critical facility	Wiley Creek Airport	750000	DOGAMI/DAS
Critical facility	Grant County Road Dept	748342	DOGAMI/DAS
Critical facility	Communication Structure	742950	DOGAMI/DAS
Critical facility	NATIONAL PARK SERVICE - JOHN DAY FOSSIL BEDS NATIONAL MONUMENT RANGER STATION	570450	DOGAMI/DAS
Critical facility	Communication Structure	516900	DOGAMI/DAS
Critical facility	Communication Structure	501450	DOGAMI/DAS
Critical facility	Dayville Fire Department	411853	DOGAMI/DAS
Critical facility	Communication Structure	402000	DOGAMI/DAS
Critical facility	Communication Structure	333000	DOGAMI/DAS
Critical facility	Communication Structure	265350	DOGAMI/DAS
Critical facility	Communication Structure	227250	DOGAMI/DAS
Critical facility	Communication Structure	202800	DOGAMI/DAS
Critical facility	Communication Structure	165450	DOGAMI/DAS
Critical facility	Communication Structure	114900	DOGAMI/DAS
Critical facility	Communication Structure	93900	DOGAMI/DAS
Critical facility	MT VERNON STP	88699	DOGAMI/DAS
Critical facility	CITY OF DAYVILLE	80550	DOGAMI/DAS
Critical facility	LONG CREEK STP	62850	DOGAMI/DAS
Critical facility	Communication Structure	47550	DOGAMI/DAS
Critical facility	Communication Structure	40200	DOGAMI/DAS
Critical facility	Monument Municipal Airport	38250	DOGAMI/DAS

Wildfire Risk Rank 4– Jefferson County

This rural census tract lays north of Bend and Redmond, Oregon. The NRI reports a relatively high risk of wildfire, with a score of 98.5. According to the NRI, an estimated 70% of the population in this area is at risk of wildfire. Exposures of critical facilities, historic buildings, and other buildings primarily drive risk in this census tract, despite normal overall wildfire burn probabilities. CRE scores indicate high social vulnerability in the area, although social cohesion appears to align with statewide averages. A higher than statewide average number of people live in rental housing.

Figure 9.3.8-5: Fourth ranked census tract for wildfire hazard

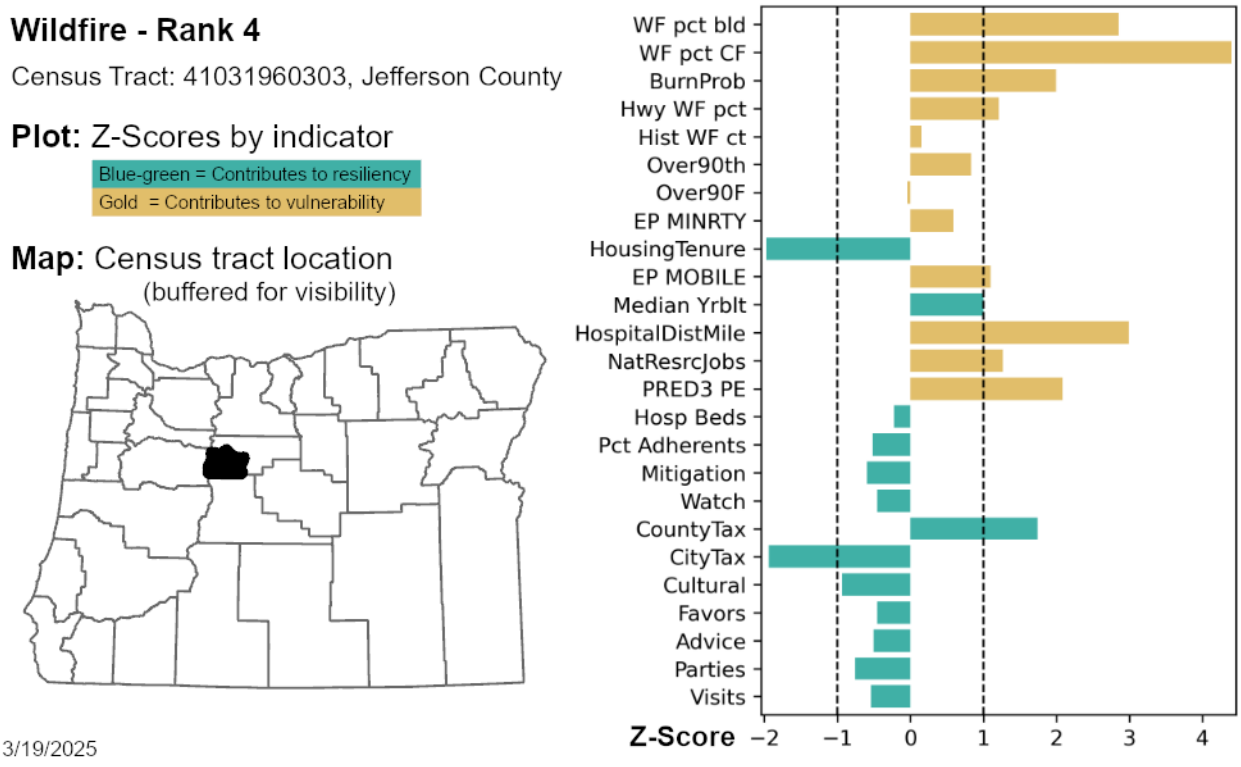


Table 9.3.8-6: State-owned buildings and critical facilities 41031960303

	Name	Total Building Value	Source
State-owned	Lake Billy Chinook State Airport	237450	DOGAMI/DAS
Critical facility	Communication Structure	6251550	DOGAMI/DAS
Critical facility	Black Butte Elementary	810900	DOGAMI/DAS
Critical facility	3 Rivers Recreation Area Airport	750000	DOGAMI/DAS
Critical facility	Bombay Farms Airport	750000	DOGAMI/DAS
Critical facility	Six Springs Ranch Airport	750000	DOGAMI/DAS
Critical facility	Warm Springs K-8 Academy	750000	DOGAMI/DAS
Critical facility	Communication Structure	609000	DOGAMI/DAS
Critical facility	ASHWOOD ELEMENTARY SCHOOL	600300	DOGAMI/DAS

	Name	Total Building Value	Source
Critical facility	Three Rivers VFD	288600	DOGAMI/DAS
Critical facility	Communication Structure	199950	DOGAMI/DAS
Critical facility	Communication Structure	173250	DOGAMI/DAS
Critical facility	Communication Structure	147150	DOGAMI/DAS
Critical facility	Communication Structure	83100	DOGAMI/DAS
Critical facility	Communication Structure	76950	DOGAMI/DAS
Critical facility	Communication Structure	54000	DOGAMI/DAS

Wildfire Risk Rank 5 – Jackson County 41029002800

This census tract is located north of Central Point and Medford, Oregon. The NRI reports a relatively high risk of wildfire, with a score of 96.5. According to the NRI, an estimated 7% of the population is at risk of wildfire. Higher than average exposures of critical facilities and buildings, coupled with higher-than-average burn probabilities drive wildfire risk in this area. Relatively lower levels of social cohesion also contribute.

Figure 9.3.8-6: Fifth ranked census tract for wildfire hazard

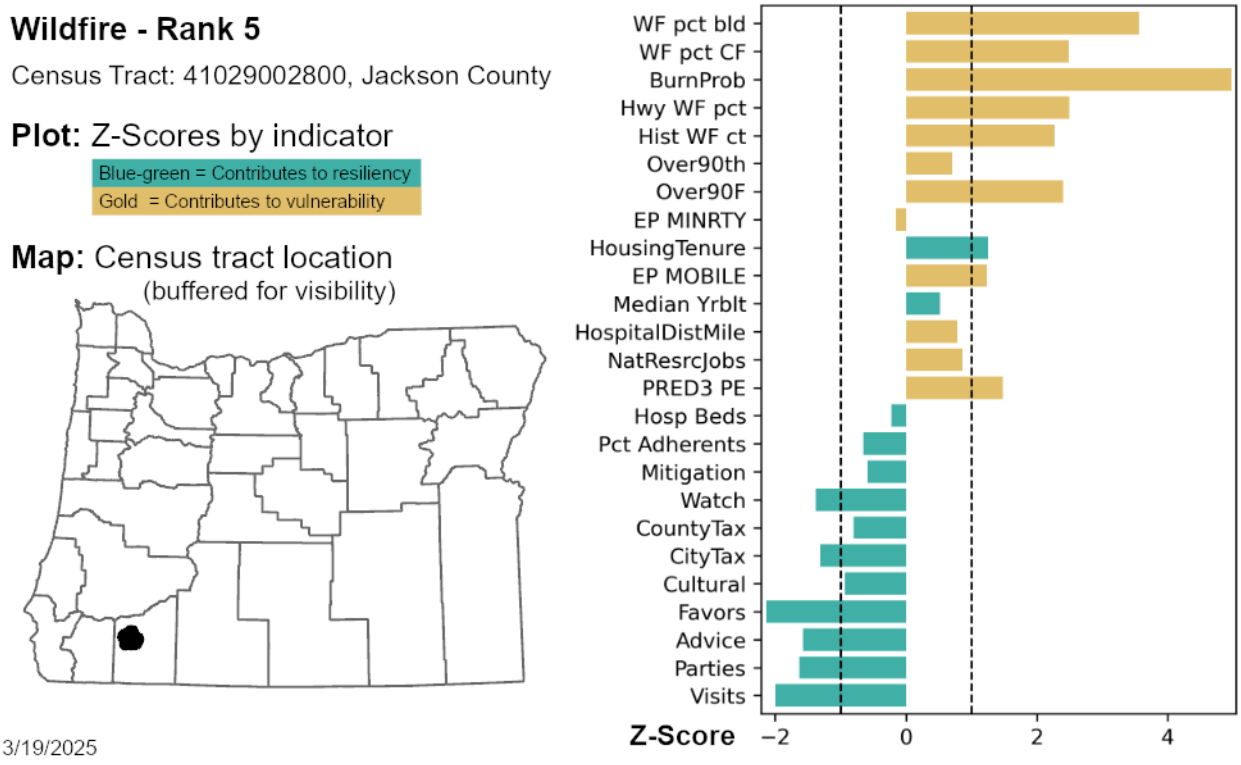


Table 9.3.8-7: State-owned buildings 41029002800

	Building Name	Value	Source
State-owned	Restroom	93457	DOGAMI/DAS

No critical facilities identified.

Wildfire Risk Rank 6 – Malheur County:

This rural census tract encompasses most of Malheur County. The NRI reports a relatively high risk of wildfire, with a score of 99. According to the NRI, 12% of the population in this area is at risk. Large distances to hospitals dominates risk drivers.

Figure 9.3.8-7: Sixth ranked census tract for wildfire hazard

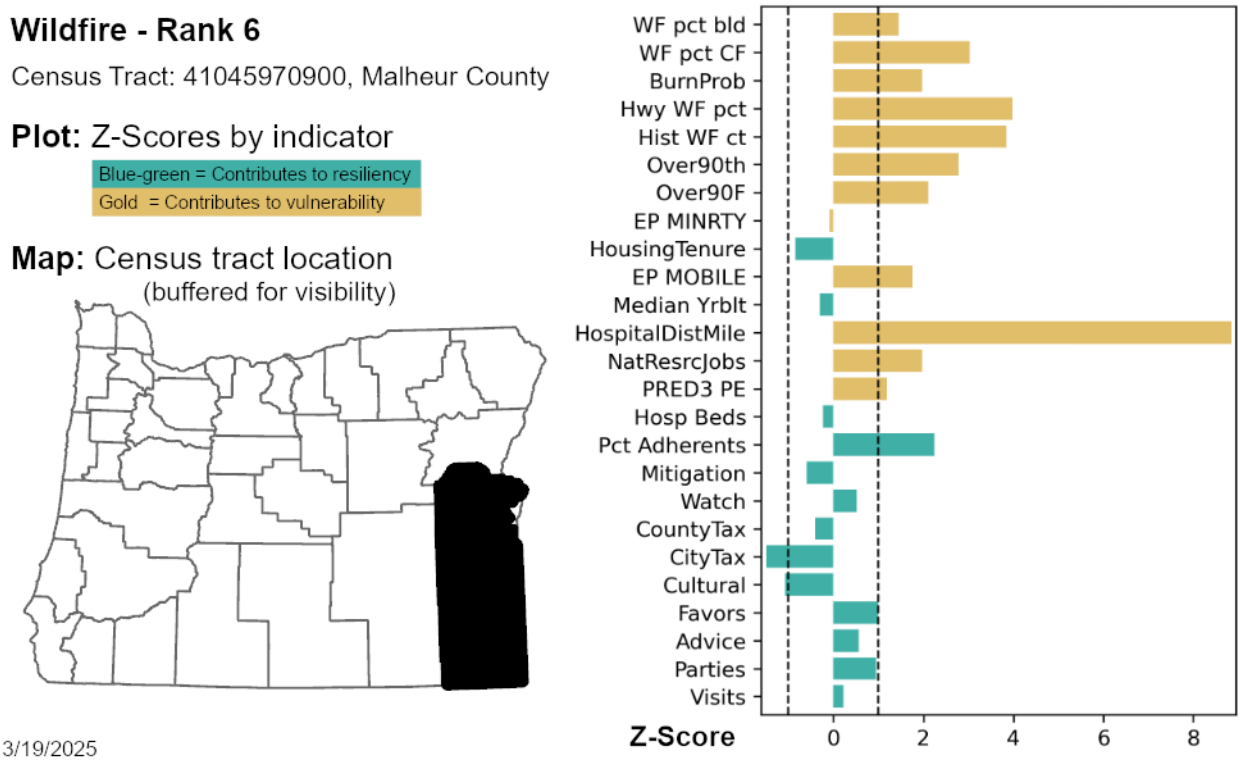


Table 9.3.8-8: State-owned buildings 41045970900

	Building Name	Value	Source
State-owned	Ontario Maintenance Station	18,655,543	DOGAMI/DAS
State-owned	Snake River Correctional Institution	504,885,082	DOGAMI/DAS

No critical facilities identified.

Wildfire Risk Rank 7: Wasco County 41065970800

This census tract in Wasco County, located just east of The Dalles, is characterized by high probability of wildfire along with high potential for harm to buildings and critical facilities. The area also has high social vulnerabilities relative the other places in the state. The FEMA National Risk Index shows this area at very high risk for wildfire, with almost 2,000 people exposed. The area is primarily agricultural. Part of the Warm Springs Reservation is located at the southern edge of the census tract.

Figure 9.3.8-8: Seventh ranked census tract for wildfire hazard

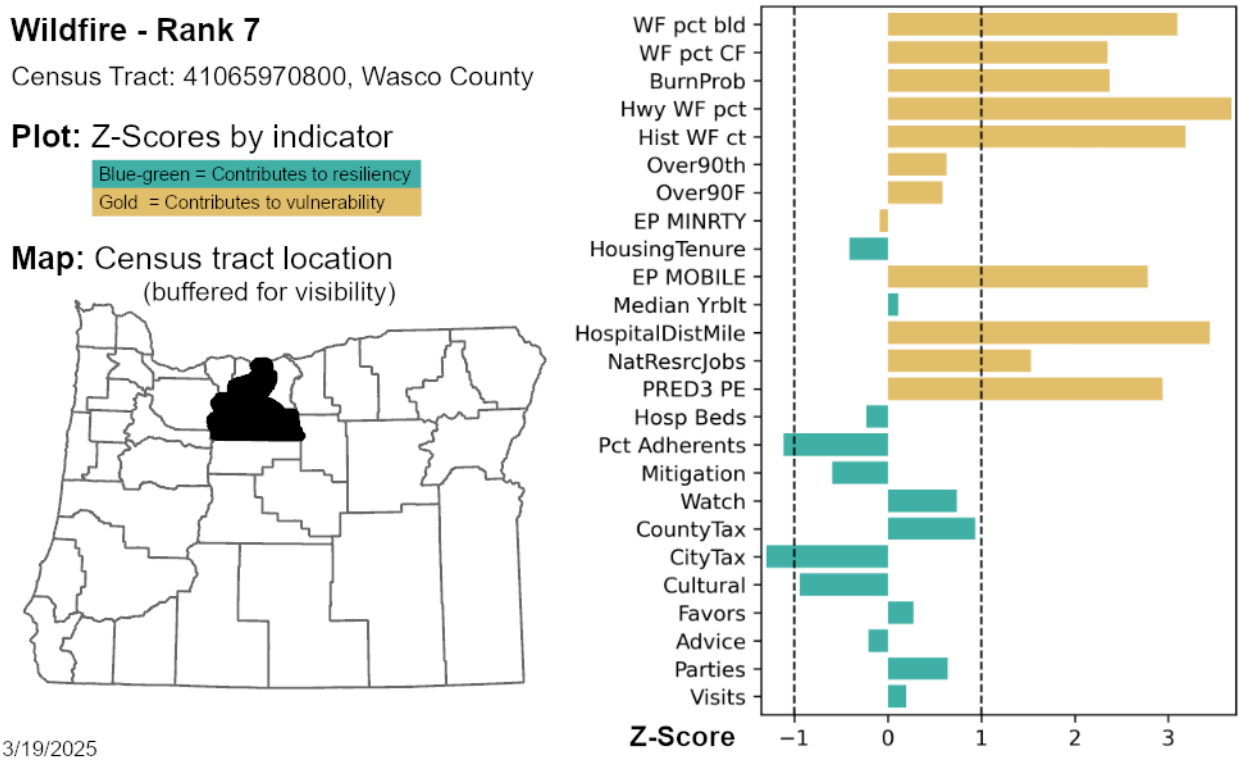


Table 9.3.8-9: Critical facilities 41065970800

	Name	Total Building Value	Source
Critical facility	Communication Structure	2269500	DOGAMI/DAS
Critical facility	Wamic RFD	1361147	DOGAMI/DAS
Critical facility	Big Muddy School	863881	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS
Critical facility	Communication Structure	750000	DOGAMI/DAS

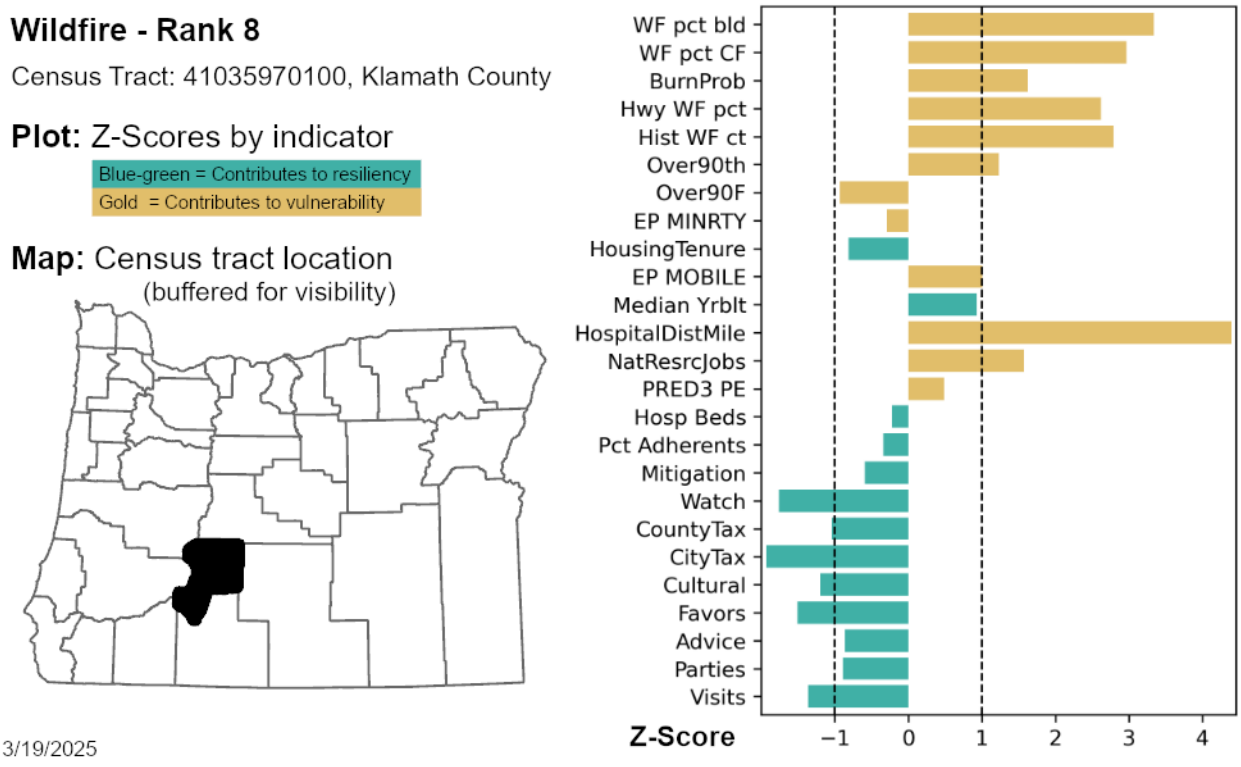
	Name	Total Building Value	Source
Critical facility	Nelson Ranch Airport	750000	DOGAMI/DAS
Critical facility	Shaniko Cattle Airport	750000	DOGAMI/DAS
Critical facility	Shaniko Ranch Airport	750000	DOGAMI/DAS
Critical facility	Wapinitia Airport	750000	DOGAMI/DAS
Critical facility	Communication Structure	727950	DOGAMI/DAS
Critical facility	Big Muddy Ranch	368110	DOGAMI/DAS
Critical facility	Communication Structure	340350	DOGAMI/DAS
Critical facility	Chenoweth Airpark	325050	DOGAMI/DAS
Critical facility	Juniper Flat Rural Fire	283650	DOGAMI/DAS
Critical facility	Communication Structure	235650	DOGAMI/DAS
Critical facility	Communication Structure	199950	DOGAMI/DAS
Critical facility	OREGON STRUT CENTER	179550	DOGAMI/DAS
Critical facility	Communication Structure	103800	DOGAMI/DAS
Critical facility	Communication Structure	87300	DOGAMI/DAS
Critical facility	Communication Structure	84450	DOGAMI/DAS
Critical facility	Communication Structure	77700	DOGAMI/DAS
Critical facility	Pointers Airport	66300	DOGAMI/DAS
Critical facility	Communication Structure	66000	DOGAMI/DAS
Critical facility	Communication Structure	43050	DOGAMI/DAS
Critical facility	Communication Structure	16957	DOGAMI/DAS

No state-owned buildings identified.

Wildfire Risk Rank 8: Klamath County 41035970100

This isolated and rural census tract in Klamath County is home to Crater Lake National Park. The FEMA National Risk Index ranks the tract as having a relatively moderate risk of wildfire. The area appears to have lower than average social resiliency.

Figure 9.3.8-9: Eighth ranked census tract for wildfire hazard

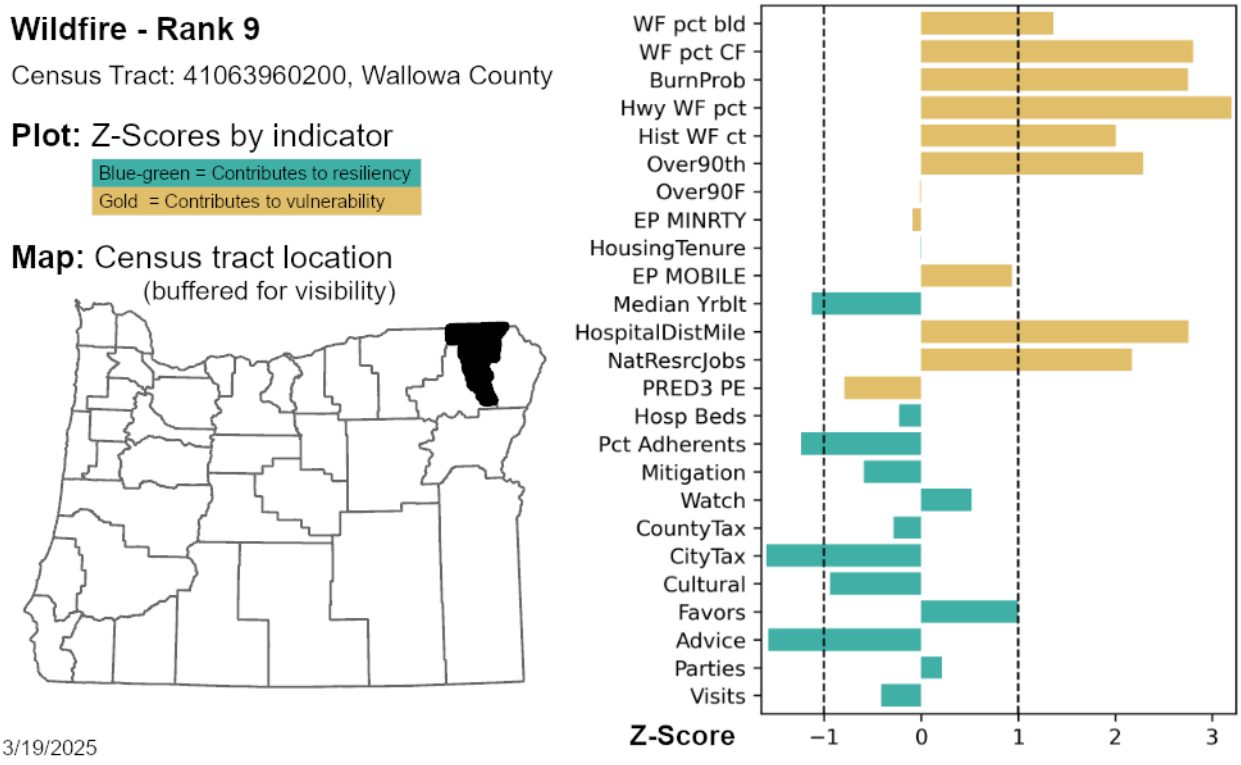


No state-owned buildings or critical facilities identified.

Wildfire Risk Rank 9 – Wallowa County 41063960200

This census tract, located east of the city of Enterprise, largely consists of publicly owned land. The largest settlement, with a population of 218, Is the unincorporated town of Imnaha. The FEMA National Risk Index ranks the area at relatively high risk for wildfire, with a score of 93.3, and an exposed population of just over 300. The area relies on natural resources, with farming, timber, ranching, and tourism driving the economy.

Figure 9.3.8-10: Ninth ranked census tract for wildfire hazard



No state-owned buildings or critical facilities identified.

Wildfire Risk Rank 10 – Douglas County 41019100000

This census tract is located east of Roseburg in southern Oregon. The NRI reports a relatively moderate risk of wildfire, with a score of 91.7. According to the NRI, an estimated 15% of the population is at risk of this hazard. “Transportation systems exposed to wildfire risk” is the primary driver of risk in this area. The area shows a higher-than-statewide average percentage of exposed structures and state-owned facilities.

Figure 9.3.8-11: Tenth ranked census tract for wildfire hazard

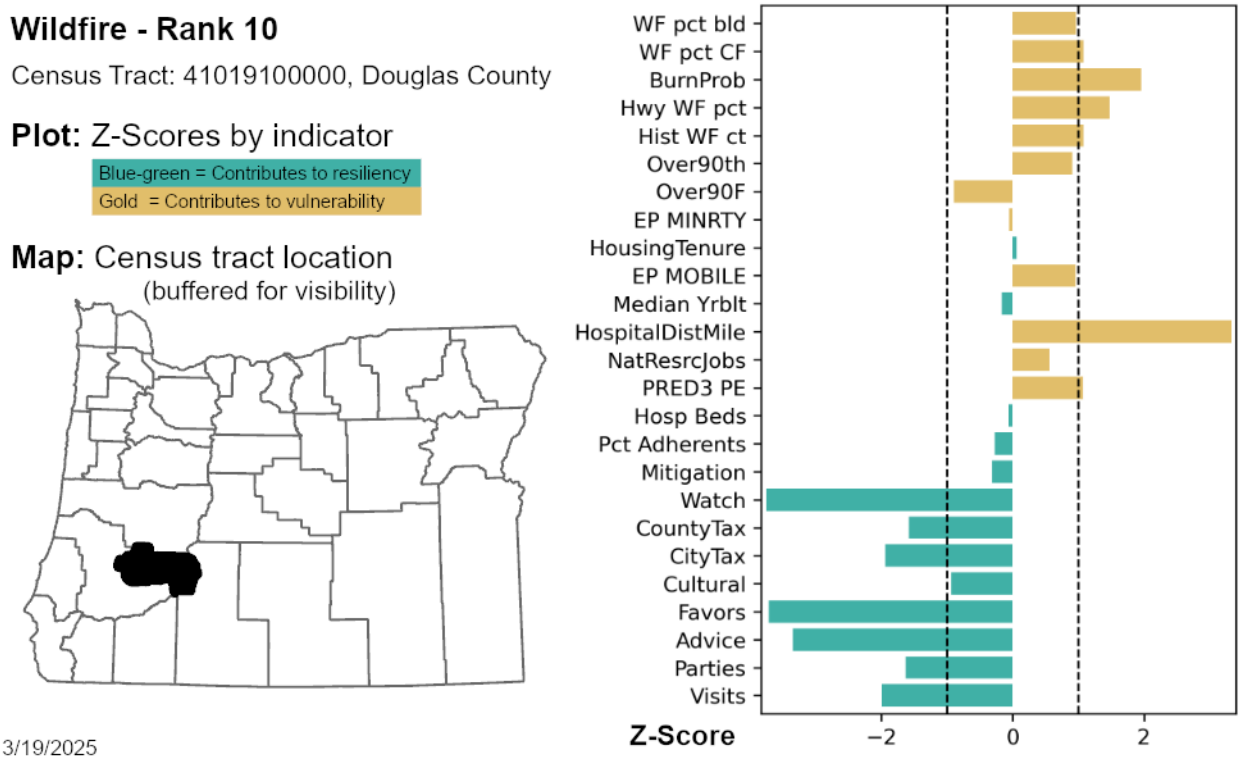


Table 9.3.8-5: State-owned buildings 41019100000

	Building Name	Value	Source
State-owned	Rock Creek Hatchery	1354306	DOGAMI/DAS
State-owned	Steamboat Maintenance Station Grounds	127168	DOGAMI/DAS
State-owned	Lemolo Sand Sheds	1018770	DOGAMI/DAS
State-owned	Storage Building	252905	DOGAMI/DAS
State-owned	kiosk	121075	DOGAMI/DAS
State-owned	Diamond Lake Bunkhouse Building	34345	DOGAMI/DAS

	Building Name	Value	Source
State-owned	Diamond Lake Residence #1 (Cabin)	34345	DOGAMI/DAS
State-owned	Site Systems - Chilcoot M/W Site	34345	DOGAMI/DAS
State-owned	Chilcoot Mountain M/W Building	118346	DOGAMI/DAS
State-owned	Canyonville Maintenance Station Grounds	1488691	DOGAMI/DAS
State-owned	Lookout Silver Butte	291239	DOGAMI/DAS

No critical facilities identified.

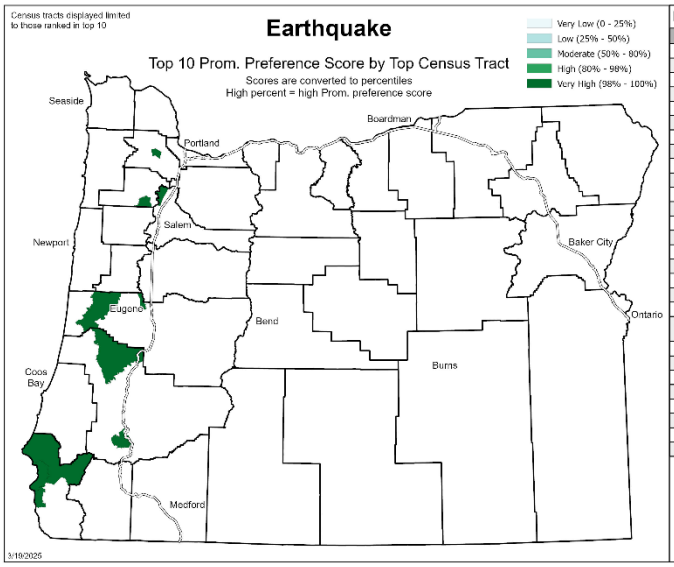
9.3.9 Earthquake

9.3.9.1 Hazard Scenario

Liquefaction	Oregon Seismic Hazard Database (OSHD) – DOGAMI (Madin and others, 2021)
CSZ Hazus Analysis (Co-seismic landslide and liquefaction, and NEHRP)	OSHD – DOGAMI (Madin and others, 2021)
2475-year Hazus Analysis (4 ground motions)	OSHD – DOGAMI (Madin and others, 2021)

9.3.9.2 Top Ranked Earthquake Risk Areas

Figure 9.3.9-1: Top Ranked Risk Areas in Earthquake Risk Areas



Indicators used for the hazard Hazard indicators are worth 35% of the total weight.

Hazard	Indicator Name	Direction	Weight	Short Description
Earthquake	LQ_pct_bld	1	0.035	Pct. SBFO buildings exposed to Moderate to Very High liq.
Earthquake	LQ_pct_CF	1	0.035	Pct. critical facilities exposed to Moderate to Very High liq.
Earthquake	EQCSZ_pct_CF	1	0.035	Pct. of red or yellow-tagged critical facilities (CSZ Deterministic).
Earthquake	EQ25_pct_CF	1	0.035	Pct. of yellow-tagged critical facilities (2500 Probabilistic).
Earthquake	Hist_LQ_ct	1	0.035	Pct. historic buildings exposed to Moderate to Very High liq.
Earthquake	Hwy_LQ_pct	1	0.035	Major roadway miles exposed to Moderate to Very High liq.
Earthquake	Eqk_NRI_rate	1	0.035	Earthquake risk from NRI.
Earthquake	LQ_Haz_Area	1	0.035	Area of tract in high or very high liquefaction hazard.
Earthquake	Bridges_LIQ	1	0.035	Number of bridges within high or very high liquefaction hazard.
Earthquake	PGA_2500	1	0.035	Average shaking in tract from 2500-year probabilistic earthquake.
General	EP_MINRTY	1	0.046	Percentage of Black, Indigenous, and People of Color (2020 Census).
General	HousingTenure	-1	0.046	Housing tenure from the US Census.
General	EP_MOBILE	1	0.046	Percentage of people that live in mobile homes
General	Median_Yrblt	-1	0.046	Median year built of general building stock based on HAZUS default.
General	HospitalDistMile	1	0.046	Distance from tract centroid to nearest hospital.
General	NatResrcJobs	1	0.046	Rate of natural resource jobs.
General	PRED3_PE	1	0.046	Community Resilience Estimate
General	Hosp_Beds	-1	0.046	Estimated number of hospital beds based on square footage .
General	Pct_Adherents	-1	0.046	Percentage of members to a religious group
General	Mitigation	-1	0.046	Number of migitation projects (grouped by zip code and evenly distributed to overlaying tracts)
General	Watch	-1	0.046	Neighborliness: Will watch neighbor's house
General	CountyTax	-1	0.046	County tax rate
General	CityTax	-1	0.046	City tax rate
General	Cultural	-1	0.009	Number of cultural-related buildings
General	Favors	-1	0.009	Neighborliness: Willing to do favors for neighbor
General	Advice	-1	0.009	Neighborliness: Seeks advice from neighbor
General	Parties	-1	0.009	Neighborliness: Attended parties that occur in neighborhood
General	Visits	-1	0.009	Neighborliness: Has visited neighbor's house

Table 9.3.9-1: Oregon Natural Hazard Risk Assessment Rank Compared to the National Risk Index

Census Tract Number	County in which census tract is located	Rank	National Risk Index Classification*	People Exposed
41015950201	Curry	1	Very high	3,513
41015950100	Curry	2	Very high	3,296
41039000404	Lane	3	Very high	4,010

Census Tract Number	County in which census tract is located	Rank	National Risk Index Classification*	People Exposed
41019200000	Douglas	4	Relatively moderate	1309
41039000500	Lane	5	High	2,244
41071031000	Yamhill	6	High	4,321
41047010100	Marion	7	Very high	1,506
41015950202	Curry	8	High	1,923
41019030000	Douglas	9	Relatively high	4047
41067032800	Washington	10	Relatively moderate	1309

*Compared to census tracts nationwide

Table 9.3.9-2: Top 10 Census Tract Demographics

Census Tract	Earthquake Risk Rank	2020 Population[1]	2023 Population[2]	% Change in Population	2016 SVI[3]	2022 SVI[4]	Change in SVI
41015950201	1	3513	3730	6%	#N/A	0.80	#N/A
41015950100	2	3296	3226	-2%	0.66	0.56	-0.10
41039000404	3	4010	4409	10%	0.83	0.74	-0.08
41019200000	4	4902	4912	0%	0.87	0.91	0.04
41039000500	5	2244	2148	-4%	0.53	0.56	0.02
41071031000	6	4321	4264	-1%	0.63	0.59	-0.04
41047010100	7	1506	1503	0%	0.42	0.40	-0.03
41015950202	8	1923	2074	8%	#N/A	0.34	#N/A
41019030000	9	4047	4107	1%	0.39	0.35	-0.04
41067032800	10	1309	1290	-1%	0.22	0.17	-0.04

[1] 2020 Decennial Census Census Tract Level Population Data HC2020.P1 - 2020 data was used rather than 2018 due to changes in census tract boundaries in 2020

[2] 2023 ACS 5-Year Estimates Census Tract Level Age and Sex Data S0101

[3] 2016 US CDC Social Vulnerability Index - "#N/A" cells represent census tracts that did not exist before changes to census tract boundaries in 2020

[4] 2022 US CDC Social Vulnerability Index

Earthquake Risk Rank 1 Curry County 41015950201

This census tract is located on the southern coast of Oregon. The NRI reports a very high risk of earthquakes, with a score of 99.6. According to the NRI, 100% of the population (3,513 people) are at risk of this hazard. High earthquake risk combined with a higher prevalence of mobile homes drives risk in this area.

Figure 9.3.9-2: First ranked census tract for earthquake hazard

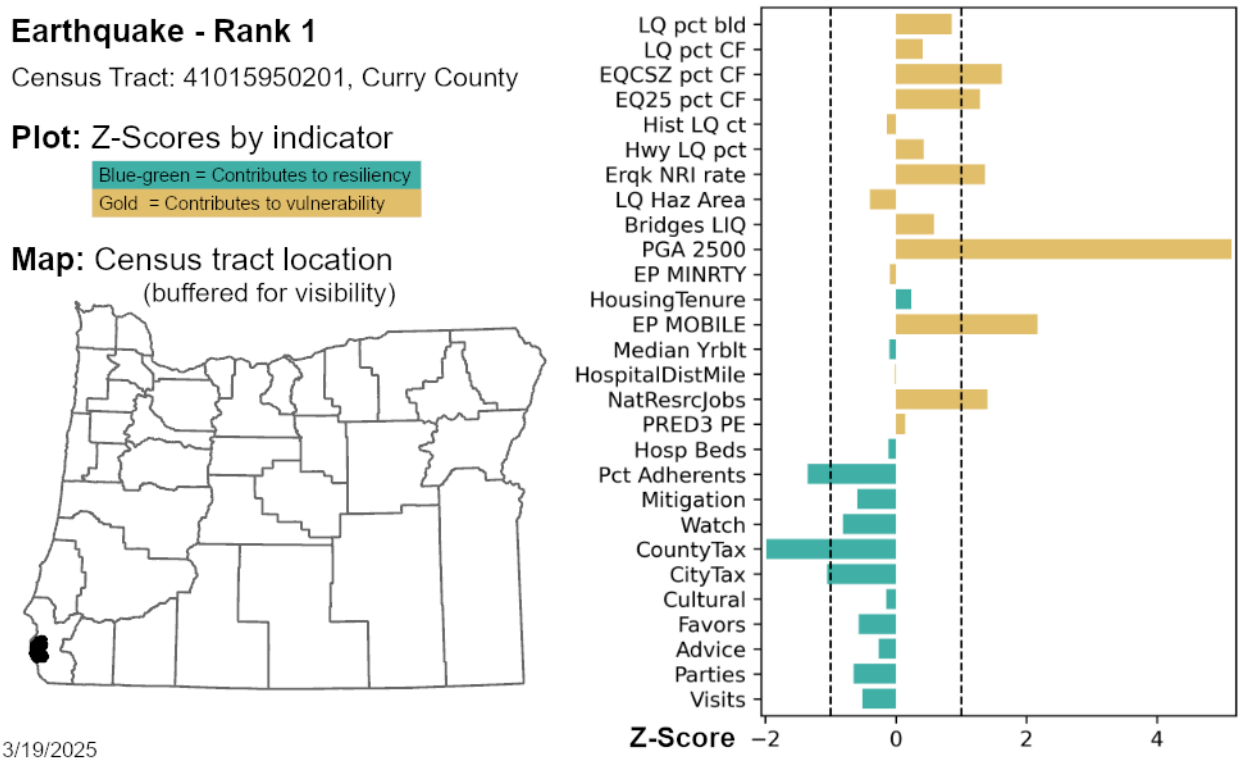


Table 9.3.9-3: State-owned buildings or critical facilities 41015950201

	State-owned Building Name 41015950201	Value	Source
State-owned	Hunter Creek Maintenance Station Grounds	682532	DOGAMI/DAS
State-owned	Hunter Creek Maintenance Station Grounds	840392	DOGAMI/DAS
Critical Facility	unknown	929953	DOGAMI/DAS
Critical Facility	unknown	971810	DOGAMI/DAS
Critical Facility	unknown	1005735	DOGAMI/DAS
Critical Facility	Curry County Circuit Court	60668	DOGAMI/DAS

Earthquake Risk Rank 2 Curry County 41015950100

This rural census tract is located on the southern Oregon coast. The NRI reports a very high risk of earthquakes, with a score of 98.2. According to the NRI, 100% (3,296 people) are exposed to this hazard. Low social cohesion along with high earthquake risk primarily drives risk in this area.

Figure 9.3.9-3: Second ranked census tract for earthquake hazard

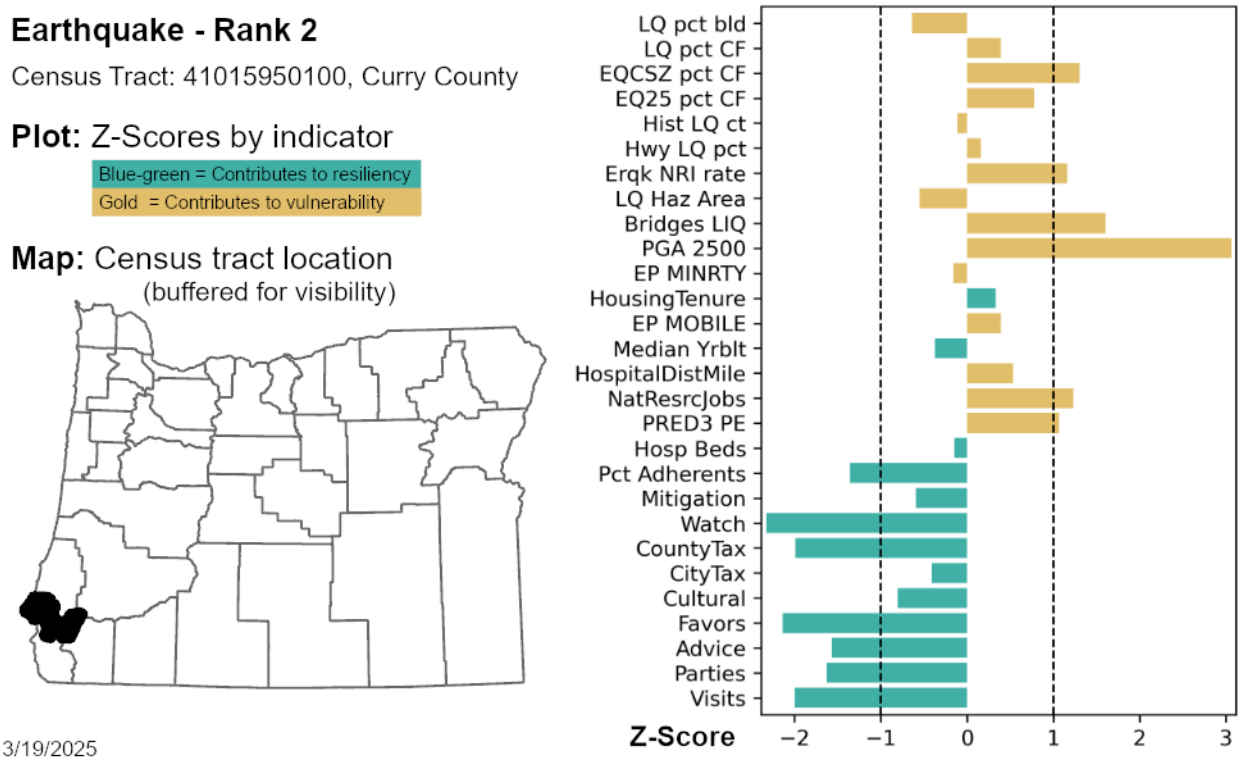


Table 9.3.9-4: State-owned buildings 41015950100

	Building Name 41015950100	Value	Source
State-owned	unknown	106834	DOGAMI/DAS
State-owned	unknown	462666	DOGAMI/DAS
State-owned	unknown	530857	DOGAMI/DAS
State-owned	unknown	98227	DOGAMI/DAS
State-owned	Port Orford Maintenance Station Grounds	243383	DOGAMI/DAS
State-owned	unknown	142009	DOGAMI/DAS
State-owned	Port Orford Maintenance Station Grounds	211401	DOGAMI/DAS
State-owned	Port Orford Maintenance Station Grounds	458532	DOGAMI/DAS

	Building Name 41015950100	Value	Source
State-owned	Port Orford Maintenance Station Grounds	122628	DOGAMI/DAS
State-owned	unknown	290531	DOGAMI/DAS
State-owned	unknown	132656	DOGAMI/DAS
State-owned	unknown	392923	DOGAMI/DAS
State-owned	unknown	489339	DOGAMI/DAS
State-owned	unknown	281356	DOGAMI/DAS
State-owned	unknown	323969	DOGAMI/DAS
State-owned	unknown	313538	DOGAMI/DAS
State-owned	unknown	226922	DOGAMI/DAS
State-owned	unknown	420940	DOGAMI/DAS
State-owned	Port Orford Maintenance Station Grounds	325501	DOGAMI/DAS
State-owned	unknown	281007	DOGAMI/DAS
State-owned	unknown	370004	DOGAMI/DAS
State-owned	Edson Butte M/W Building	86687	DOGAMI/DAS
State-owned	Site Systems - Edson Butte M/W Grounds	60668	DOGAMI/DAS
State-owned	Elk River Hatchery Storage Building	60668	DOGAMI/DAS
State-owned	Elk River Hatchery Residences	60668	DOGAMI/DAS
State-owned	Elk River Hatchery Generator Building	60668	DOGAMI/DAS
State-owned	Elk River Hatchery Building Shop Storage	60668	DOGAMI/DAS
State-owned	Elk River Hatchery STW building	60668	DOGAMI/DAS
State-owned	Elk River Hatchery Electrical Building	60668	DOGAMI/DAS
State-owned	Elk River Hatchery Service Building	60668	DOGAMI/DAS
State-owned	Cape Blanco State Airport (5S6)	60668	DOGAMI/DAS
State-owned	Port Orford MS Storage Building	450953	DOGAMI/DAS

No critical facilities identified.

Earthquake Risk Rank 3 Lane County 41039000404

This census tract is located just off the central Oregon coast, northwest of Eugene, Oregon. The NRI reports a very high risk of earthquakes, with a score of 98.5. According to the NRI, 100% (4,010 people) are exposed to this hazard. Low social cohesion and higher than average exposures of buildings and critical facilities to liquefaction due to earthquakes primarily drive this risk ranking. Additionally, higher than average liquefaction area increases risk.

Figure 9.3.9-4: Third ranked census tract for earthquake hazard

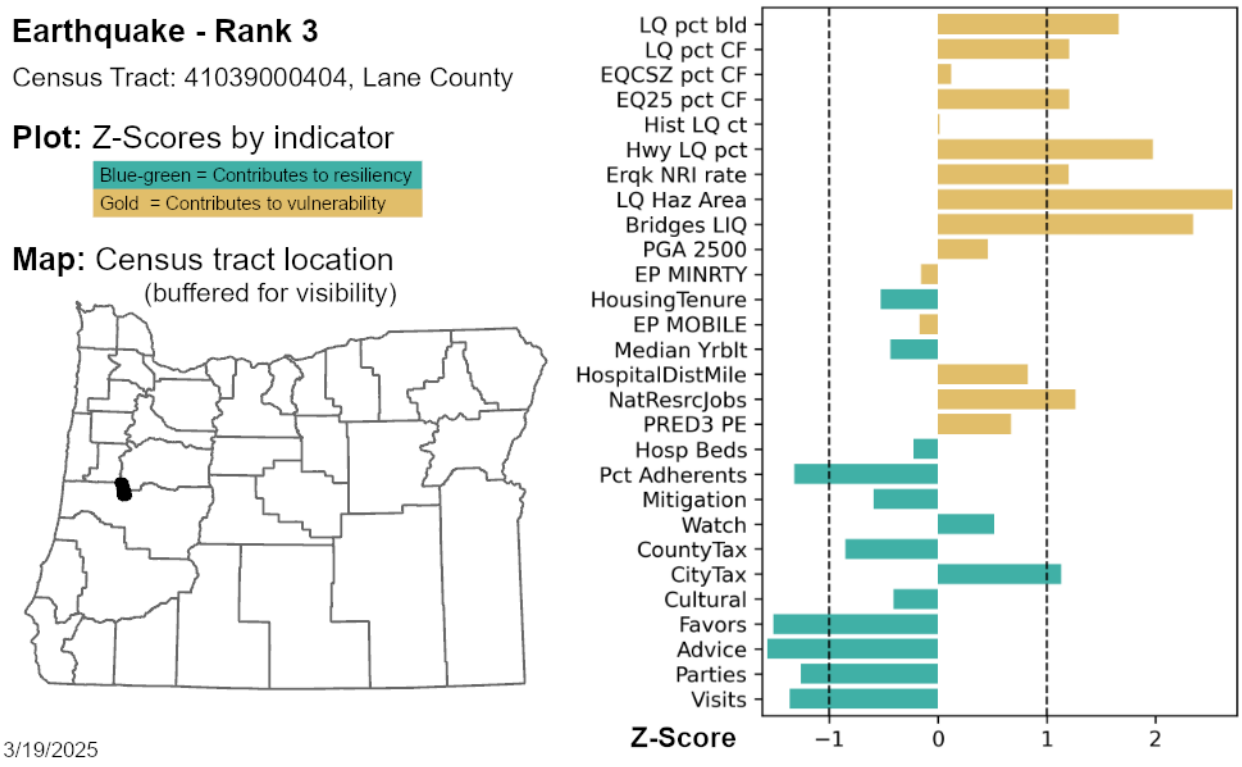


Table 9.3.9-5: State-owned buildings 41039000404

	State-owned Building Name	Value	Source
State-owned	unknown	699239	DOGAMI/DAS
State-owned	JC Main Building, State owned psychiatric hospital	117098414	DOGAMI/DAS
State-owned	JC Cottage 2	1977802	DOGAMI/DAS
State-owned	JC Cottage 1	1852553	DOGAMI/DAS
State-owned	unknown	699239	DOGAMI/DAS
State-owned	JC Main Building	117098414	DOGAMI/DAS

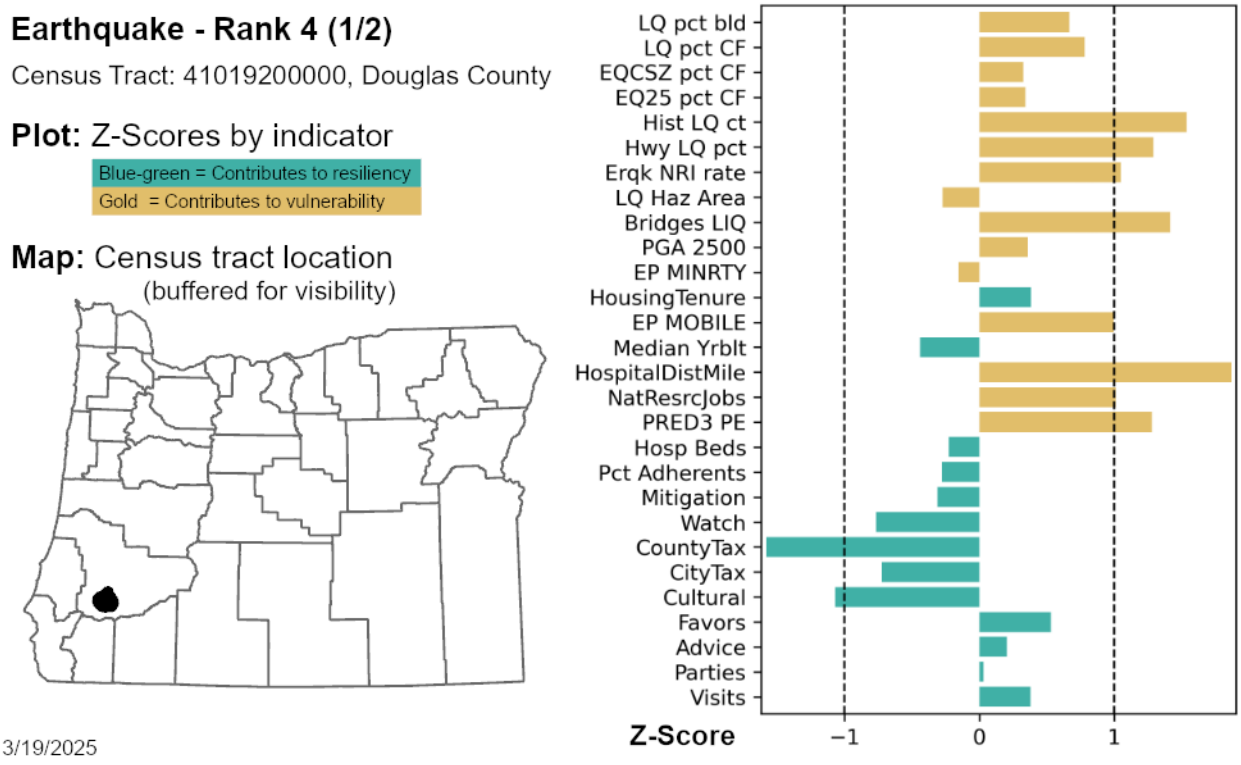
	State-owned Building Name	Value	Source
State-owned	JC Cottage 2	1977802	DOGAMI/DAS
State-owned	JC Cottage 1	1852553	DOGAMI/DAS
State-owned	JC Cottage 3	1719870	DOGAMI/DAS

No critical facilities identified.

Earthquake Risk Rank 4 Douglas County 41019200000

This Douglas County census tract is sparsely populated with most of its almost 5,000 people living in the small cities of Riddle and Canyonville. The FEMA National Risk Index ranks the area as being at relatively high risk of harm from earthquakes, with a score of 97.4. The area has a lower-than-average county tax base, and a higher-than-average social vulnerability score (PRED3). But residents appear to be within the mean for many of the social connectedness indicators.

Figure 9.3.9-5: Fourth ranked census tract for earthquake hazard

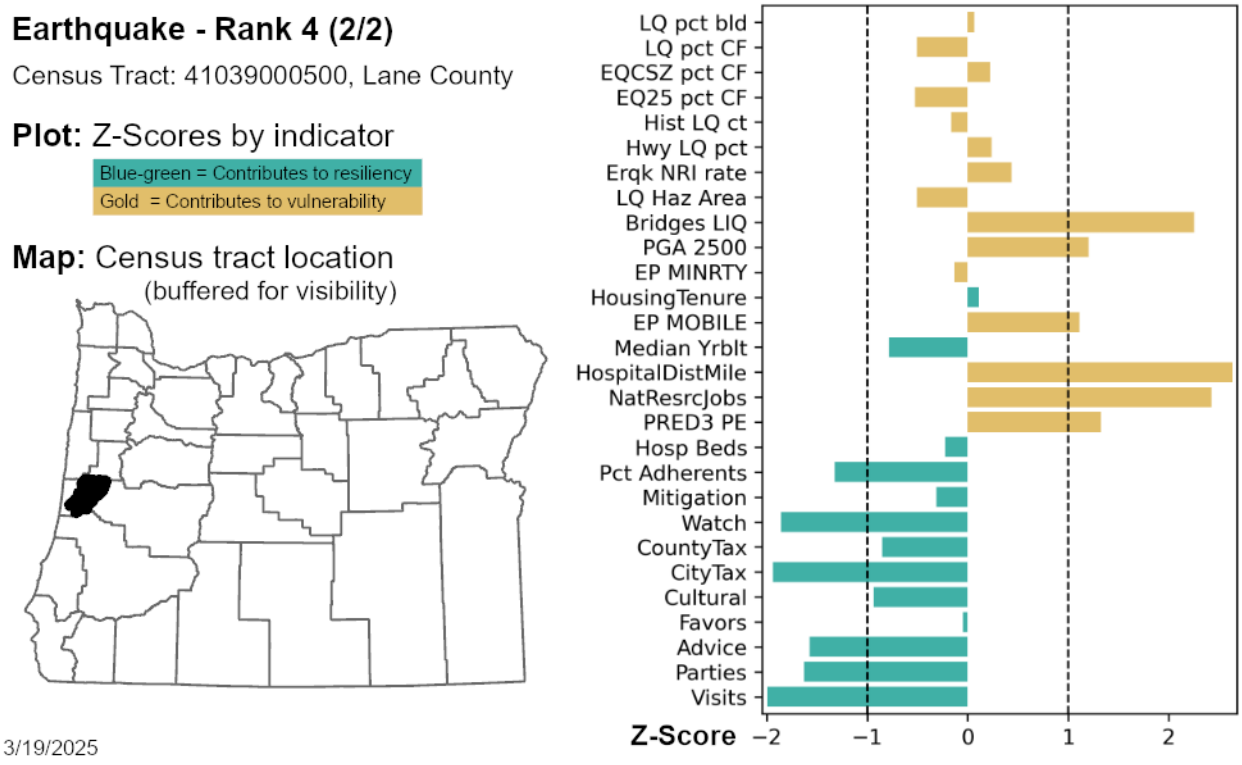


No state-owned buildings or critical facilities identified.

Earthquake Risk Rank 5 Lane County 41039000500

This rural census tract is located west of Eugene, Oregon, in proximity to the central Oregon coast. The NRI reports a relatively high risk of earthquakes, with a score of 93. According to the NRI, 100% (2,244 people) are exposed to this hazard. Large distances to hospitals, low social cohesion, and low community resilience are the primary indicators driving risk in this area. Additionally, reliance on natural resource jobs and exposure of bridges to liquefaction contributes to risk.

Figure 9.3.9-6: Fourth ranked census tract for earthquake hazard

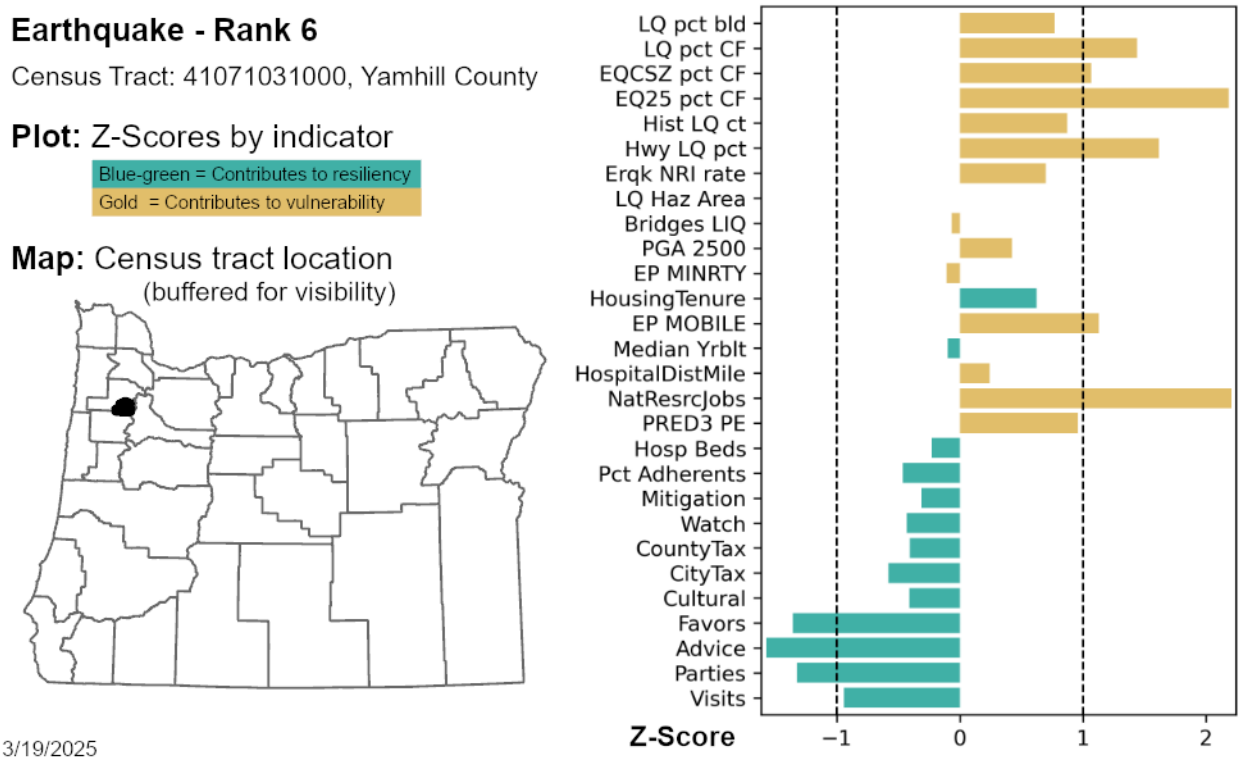


No state-owned buildings or critical facilities identified.

Earthquake Risk Rank 6 Yamhill County 41071031000

This census tract is located in northwest Oregon. The NRI reports a relatively high earthquake risk for this area, with a score of 94.9. According to the NRI, 100% (4,321 people) are exposed to earthquake hazards in this census tract. The area is characterized by social connectedness indicators well above the statewide mean.

Figure 9.3.9-7: Sixth ranked census tract for earthquake hazard

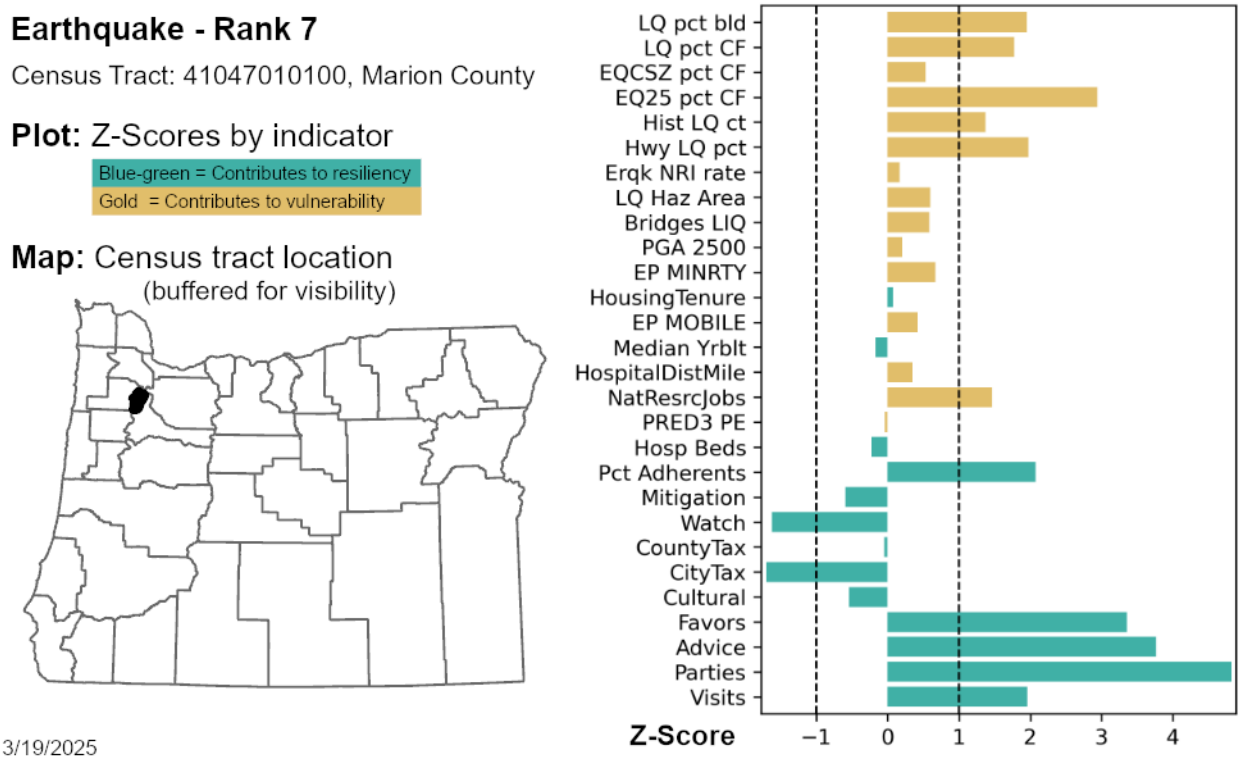


No state-owned buildings or critical facilities identified.

Earthquake Risk Rank 7 Marion County 41047010100

This census tract is located in northwest Oregon. The NRI reports a very high earthquake risk, with a score of 99.6. According to the NRI, 100% (4,808 people) are at risk of earthquake hazards in this census tract. High exposure of critical facilities drives risk in this area. Low homeownership rates also contribute. While social cohesion is moderate, exposure of highways and high potential losses from an earthquake event drive risk.

Figure 9.3.9-8: Seventh ranked census tract for earthquake hazard

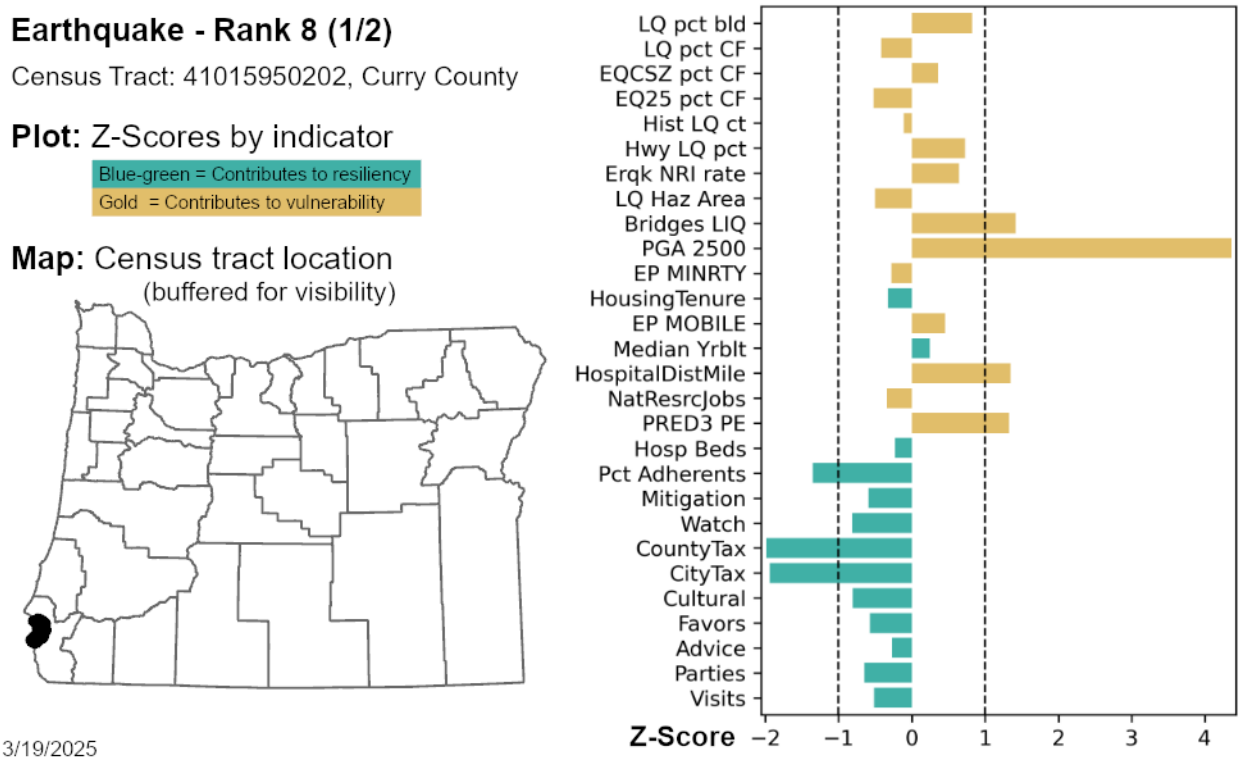


No state-owned buildings or critical facilities identified.

Earthquake Risk Rank 8 Curry County 41041015950202

This census tract is located on the southern coast, north of Gold Beach, Oregon. The NRI reports a relatively high risk of earthquakes, with a score of 94.5. According to the NRI, 100% (1,923 people) are at risk of this hazard. Exceptionally high earthquake risk drives this ranking.

Figure 9.3.9-9: Eighth ranked census tract for earthquake hazard



No state-owned buildings or critical facilities identified.

Earthquake Risk Rank 9 Douglas County, including the City of Drain 41019030000

This census tract is located in southwest Oregon, in proximity to Oregon's southern coast. The NRI reports a relatively high earthquake risk for this area, with a score of 97.4. The NRI reports 100% (4,902 people) are at risk of this hazard. Low city and county taxing ability, and low social cohesion primarily drive risk. Large distances to hospitals, and exposure of historic buildings to liquefaction also contribute to risk ranking in this area.

Figure 9.3.9-10: Eighth ranked census tract for earthquake hazard

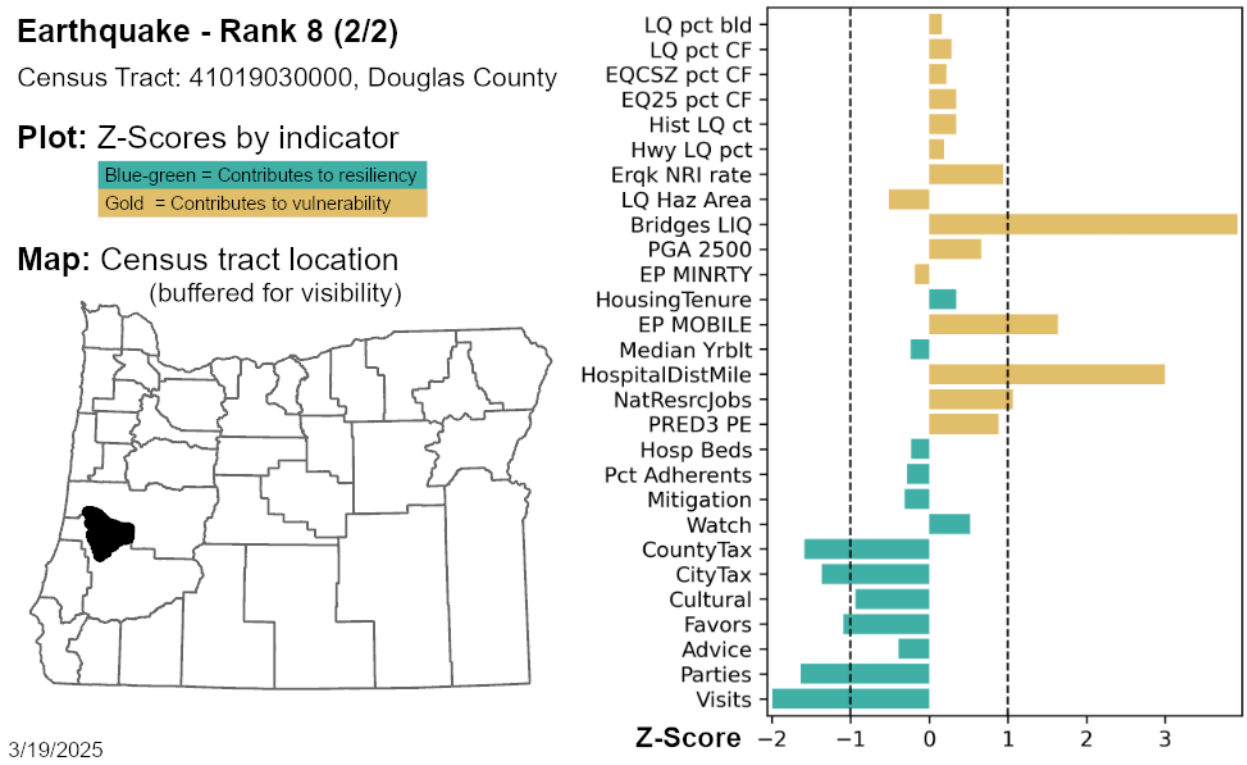


Table 9.3.9-6: State-owned buildings or critical facilities

	Building Name 41019030000	Value ($)
State-owned	Unknown	95,675
State-owned	Unknown	136,002
Critical facility	Douglas County Sheriff's Office, Drain Substation	786,450
Critical facility	Drain STP	125,100
Critical facility	Drain City Shop	1,342,950
Critical facility	Douglas County Public works	854,850

	Building Name 41019030000	Value ($)
Critical facility	Douglas County Fire & EMS, annex	190,950
Critical facility	Douglas County Fire & EMS	1,102,200
Critical facility	Elkton High School	4,927,950

.

Earthquake Risk Rank 10 Washington County 41067032800

This census tract is located in northwest Oregon. The NRI reports a very high earthquake risk in this area, with a score of 99.4. According to the NRI, 100% (6,288 people) are at risk of this hazard. High prevalence of those living in mobile homes, and exposure of critical facilities to earthquake hazards, primarily drive risk. While there is strong religious institutions and average social cohesion, exposure of buildings and roadways to liquefaction greatly contributes to this risk ranking.

Figure 9.3.9-11: Tenth ranked census tract for earthquake hazard

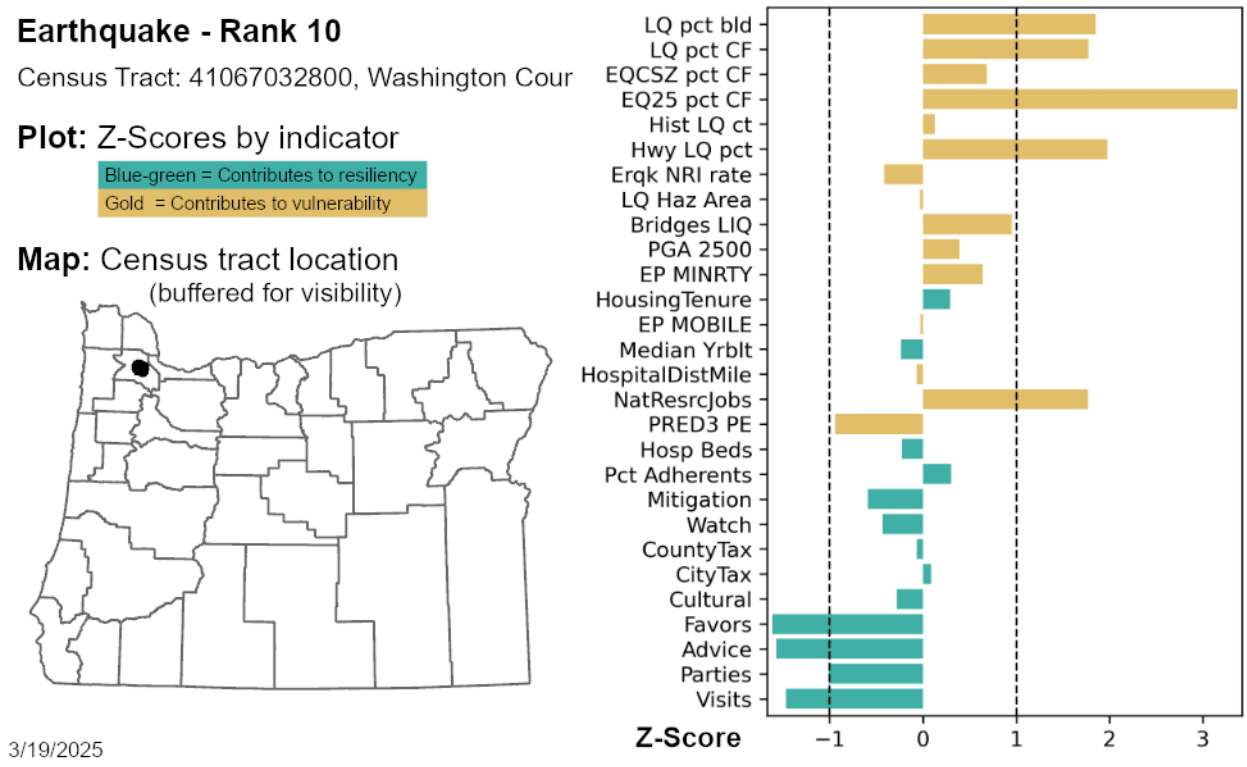


Table 9.3.9-6: State-owned building 41067032800

	State-owned Building Name	Value	Source
State-owned	unknown	232721	DOGAMI/DAS
State-owned	unknown	110969	DOGAMI/DAS
State-owned	unknown	213244	DOGAMI/DAS
State-owned	unknown	312972	DOGAMI/DAS
State-owned	unknown	216591	DOGAMI/DAS

	State-owned Building Name	Value	Source
State-owned	unknown	173738	DOGAMI/DAS
State-owned	unknown	205311	DOGAMI/DAS
State-owned	unknown	182451	DOGAMI/DAS
State-owned	unknown	108814	DOGAMI/DAS
State-owned	unknown	161278	DOGAMI/DAS
State-owned	unknown	193038	DOGAMI/DAS

No critical facilities identified.

9.3.10 Risk Assessment References

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9.4 Comments Received

Comment #1

Commenter and Affiliation: Fran Recht

Hazard: Tsunami

Geography: Coast

Comment: I believe that development of a post tsunami rebuilding plan should be a part of the plan and an eligible priority activity for funds. The time to plan to build back better and away from hazards is before a disaster strikes when there is a rush to recover which means making quick and not the best long term decisions. Looking into transfer of development rights to other non hazard areas ...earmarking areas and applying for exceptions now that could be veted and only triggered after such an event would be valuable.

Response: Pre-disaster recovery planning is very important; however, recovery planning is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #2

Commenter and Affiliation: Fran Recht

Hazard: Sea Level Rise

Geography: Coast

Comment: DLCD has maps of projected sea level rise. It's important to assure that coastal shorelands along estuaries and tidally influenced streams are not developed so that these "floodplains are available to adapt to these rising seas and retain higher water levels instead of causing flooding to structures or damage downstream. These areas within the sea level rise maps (I'd suggest using a moderate to high scenario for 2100 for planning purposes) and within these areas ..any areas zoned for development should be prioritized as eligible for funds to allow land trusts and municipalities, tribes etc. to purchase and hold them for parks, open space and habitat.

Response: The list of mitigation actions in Chapter 5 includes:

> 29. Conduct a pilot project on two coastal estuaries … sea level rise modeling …use the results to minimize future damage or loss of property
>
> 38. Undertake inner bay total water level modeling to assess flooding impacts from sea level rise…

Comment #3

Commenter and Affiliation: Matt Straite, Community Development Director, Millersburg, OR

Hazard: GOALS

Geography: All

Comment: We recommend adding a Goal similar to the following:

"To have a third party review to evaluate impacts of state and federal regulations on impacts to Natural Hazard events which have occurred in Oregon over the last 50 years, such as the Forest Practices Act, Wildfire Management Practices, and Environment regulations and the impacts on Natural Hazard incidents in Oregon".

Response: This would be a mitigation action, not a goal. No change to 2025 Oregon Natural Hazards Mitigation Plan. Could be added in a future update.

Comment #4

Commenter and Affiliation: Treena Jensen, Warning Coordination Meteorologist, National Weather Service Portland, OR

Hazard: Extreme Heat

Geography: All

Comment: The NWS Extreme Heat information in section 3.3.4.1 of the Oregon NHMP February 20, 2025 draft is not correct (Page 92). The NWS Weather Forecast Offices that serve Oregon use NWS HeatRisk to determine Extreme Heat Warnings, not heat index. NWS issues Excessive Heat Warnings when Major or Extreme HeatRisk is expected. FYI - The naming of NWS heat warnings is changing from 'Excessive Heat Warning' to 'Extreme Heat Warning' on March 4, 2025.

Feel free to reach out to me if you have any questions regarding NWS HeatRisk or would like me to review any updates to the extreme heat or other weather sections of the plan.

Response: This section is now correct.

Comment #5

Commenter and Affiliation: Treena Jensen, Warning Coordination Meteorologist, National Weather Service Portland, OR

Hazard: Extreme Cold

Geography: All

Comment: I noticed that there is not a lot of information regarding extreme cold as a hazard. Oregon does not experience extreme cold like other parts of the country and is likely categorized as a low risk in the FEMA maps. Multnomah County Environmental Health Services have been publishing some interesting reports the past few winters showing a possible rise of health hazards due to exposure to extreme cold. I am not sure if other regions of the state are showing an increasing vulnerability to cold. I do not think an extreme cold section needs to be added to this update of the NHMP, but wanted to mention this for your situation awareness. Here are some of the local cold related reports in case you are interested in exploring

this further; 2012-2022 Regional Climate and Health Monitoring Report, Multnomah County Winter 2023-24 Seasonal Health Hazards Brief.

Response: No change to the 2025 Oregon Natural Hazards Mitigation Plan. Extreme cold could be considered in in the next update.

Comment #6

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 1: Could be more user friendly for the public. While the methodology and evidence provided is necessary to support the science-based study, I think summarizations of the findings will be important for the public to follow.

Response: We plan to produce a use-friendly summary when we have a final plan approved by FEMA.

Comment #7

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Strength - Identification of Vulnerable Populations

The ONHMP appropriately integrates social vulnerability factors such as:

Houseless populations, people living alone, and rent-burdened households – These groups have limited access to shelter, emergency information, and recovery resources.

People with disabilities and chronic illnesses – The document acknowledges how these populations are disproportionately affected by hazards and the need for inclusive planning.

Institutionalized populations (nursing homes, juvenile facilities, etc.) – These facilities require tailored preparedness and response plans, particularly during evacuations.

Response: Thank you for the positive comment. The Oregon Natural Hazards Risk Assessment did not use houseless population because data is not available at a census tract level.

Comment #8

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Strength - Public Health Considerations

The Oregon Health Authority (OHA) Resilience Goals for 2030 are well-aligned with ESF 6 objectives. Goals include:

50% reduction in heat-related illnesses.

60% reduction in hospitalizations.

70% reduction in heat-related deaths.

Funding is allocated for Healthy Homes Grants and Community-Based Organizations (CBOs), focusing on environmental justice communities.

Response: Thank you for the positive comment.

Comment #9

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Strength - Risk Analysis and Critical Infrastructure

The ONHMP provides a GIS-based analysis of mass care vulnerabilities, including census tracts that rank high in exposure to hazards.

It assesses state-owned critical facilities, including emergency shelters and mass care locations, identifying those in high-risk hazard zones.

The ONHMP utilizes PROMETHEE for Multi-Criteria Decision Analysis (MCDA) to assess vulnerabilities beyond FEMA's monetary-loss focus.

GIS-Based Future Integration will improve local usability for sheltering and evacuation mapping

Response: Thank you for the positive comment.

Comment #10

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Gap/Area for Improvement – Mass Care and Emergency Assistance Planning

Shelter Accessibility & Functional Needs Support

The document does not adequately discuss how shelters will be adapted for people with disabilities, medical conditions, and non-English speakers.

Recommendation: Incorporate functional needs support services (FNSS) explicitly into the mitigation plan.

A need for greater detail on functional needs support in emergency shelters, including ADA compliance, power for medical devices, and non-English language support should be emphasized.

Recommendation: Integrate functional needs support services (FNSS) into mass care planning.

Response: Functional needs support services (FNSS) are very important when planning for mass care emergency shelters; however, emergency response is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #11

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Gap/Area for Improvement – Mass Care and Emergency Assistance Planning

Temporary and Long-Term Housing Solutions

The ONHMP does not provide a detailed post-disaster housing strategy, particularly for houseless populations or those with pre-existing housing instability.

Recommendation: Develop adaptive housing solutions, including partnerships with NGOs, state, and federal housing programs.

Response: Post disaster housing is very important; however, post disaster recovery is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #12

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Gap/Area for Improvement – Mass Care and Emergency Assistance Planning

Preparedness Planning for Residential Care Facilities

The document does not sufficiently address emergency preparedness planning for residential care facilities, particularly regarding evacuation and climate control measures.

Recommendation: Establish facility-specific evacuation plans that account for mobility limitations, medical dependencies, and continuity of care during disasters.

A need for detailed climate control strategies in emergencies, ensuring backup power systems for air conditioning and heating, along with contingency plans for extreme weather events.

Recommendation: Integrate climate control resilience planning and redundancy systems into preparedness plans for residential care facilities.

Response: Preparedness at residential care facilities is very important; however, preparedness is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #13

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Gap/Area for Improvement – Mass Care and Emergency Assistance Planning

Evacuation and Shelter-in-Place Coordination

The ONHMP lacks clear evacuation strategies for ESF 6 priority groups (e.g., institutionalized residents, low-income populations).

There is a lack of planning to manage evacuation route failures and single-point failures in critical facilities like hospitals.

There is a lack of detailed evacuation support plans as part of evacuation and sheltering strategies.

Recommendation: Conduct multi-agency tabletop exercises focusing on ESF 6 evacuation coordination and sheltering strategies and to integrate infrastructure resilience mapping.

Response: Coordinating evacuation and sheltering in place is very important; however, emergency response is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #14

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Gap/Area for Improvement – Community-Based Support & Behavioral Health Services

Behavioral Health & Disaster Trauma Support

While acknowledging climate-related health impacts, the ONHMP does not sufficiently address behavioral health services during and after disasters.

Recommendation: Enhance mental health programs within mass care operations.

Response: Mental health services are very important; however, support services during and after disasters are outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #15

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Gap/Area for Improvement – Community-Based Support & Behavioral Health Services

Coordination with Resilience Hubs

The ONHMP references cooling/warming shelters but does not define resilience hubs in its mitigation strategy.

It must be emphasized that community resilience hubs should integrate sheltering, behavioral health services, and community education.

Recommendation: Include the development of resilience hubs statewide and standardize resilience hub integration in mass care and housing plans.

Response: Resilience hubs are very important; however, sheltering and mass care during a disaster are outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #16

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Gap/Area for Improvement – Equity & Inclusion Considerations

Tribal & Rural Community Coordination

The plan mentions vulnerable rural communities, but more detailed planning for tribal nations and culturally competent response strategies is needed.

There is limited solicitation of tribal input in the risk assessment process.

Recommendation: Establish formal partnerships with tribal nations for culturally responsive mass care strategies.

Response: Partnerships with tribal nations are very important; however, mass care is outside the scope of the Oregon Natural Hazards Mitigation Plan. We invited tribes to participate in the planning process for the Oregon Natural Hazard Mitigation Plan, and each tribe chose their level of engagement.

Comment #17

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Gap/Area for Improvement – Equity & Inclusion Considerations

Multilingual Communication in Shelters

There is limited discussion on how emergency notifications and mass care services will be linguistically and culturally accessible.

Recommendation: Expand language access policies within shelter operations.

Response: Multilingual communication is very important; however, emergency notifications and shelter operations are outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #18

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Recommendations for OREM ESF 6

Short-Term Priorities (Next 12 Months)

Revise the ONHMP to include functional needs sheltering and behavioral health support.

Develop partnerships with CBOs and tribal nations for mass care equity.

Pilot evacuation and shelter exercises that test ESF 6 coordination, particularly for rural and urban houseless populations.

Long-Term Priorities (2-5 Years)

Integrate resilience hubs as a cornerstone of the mass care strategy.

Expand post-disaster housing solutions to include transitional and permanent housing options.

Increase investment in multilingual disaster communications for mass care settings.

Enhance GIS-Based Risk Visualization, ensuring local governments can customize risk assessments and shelter planning.

Response: Emergency Support Function 6 – Mass Care is very important; however, emergency response is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #19

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 1: The introduction could include how stakeholders are to be included in this plan. It should include how property owners are notified about new research.

Response: Stakeholder engagement is now covered in Chapter 7 – Planning Process. Notifying property owners about new research is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #20

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 1: The introduction addressed the relationship with other disaster preparedness agencies.

Response: Thank you for the positive comment.

Comment #21

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 3: Each assessment for the different hazard could preface the impacts to the following: fiscal risk, social impact, and environmental impacts. While these will likely be addressed in later chapters, I think this could be briefly discussed.

Response: No change to the 2025 Oregon Natural Hazards Mitigation Plan. These impacts (fiscal, social, and environmental) could be covered in a summary after FEMA approves the plan or analyzed in the next update.

Comment #22

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 3: I thought the risk assessment was extremely thorough. I especially like how almost each specific natural hazard that has ever occurred in the state was considered. There were specific examples of hazards large and small, showing how diligently the history of Oregon's natural hazards were combed through when compiling the data

Response: Thank you for the positive comment.

Comment #23

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 3: The document could be more user-friendly. The public will have a hard time trying to access quick information. It would be helpful to have different sections linked on the website so people can access the information they need more quickly.

Response: We plan to produce a use-friendly summary and webpages when we have a final plan approved by FEMA.

Comment #24

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 3: While thorough descriptions are good, I thought some sections were too wordy. For example, the "Defining Resiliency" seemed too long. It should focus more on the quick reasons as to why the public should care about resiliency.

Response: We plan to produce a summary when we have a final plan approved by FEMA. That summary will focus on quick explanations useful to the public.

Comment #25

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 3: It was addressed how the two risk assessments complement each other; shows that data was collected through multiple methods with a holistic approach.

Response: Thank you for the positive comment.

Comment #26

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 3: The assessment should include how property owners should be given the opportunity to participate in the decision to develop new data. Public involvement in decision making could indicate the need for new programs, incentives, funding toward research, or the lack of desire for new data. It is crucial that the plan addresses the needs from stakeholders that will be directly affected by natural hazards.

Response: Public involvement is now covered in Chapter 7 – Planning Process.

Comment #27

Commenter and Affiliation: Gillian Peden, Assistant Planner, Building & Planning Division, Marion County, OR

Hazard: All

Geography: All

Comment: CH 3: I am looking forward to reading how the plan addresses the importance of investing in hazard mitigation. Addressing the social, economic and environmental benefits of planning for hazards is very important and having tangible evidence to support planning would be a benefit for the public.

Response: Chapter 5 – Mitigation Strategy covers the benefits of hazards mitigation.

Comment #28

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: Does the risk assessment achieve the goal of providing actionable information? Yes

Response: Thank you for the positive comment.

Comment #29

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: What would make the risk assessment easier to understand? The primary challenge is complexity and data presentation. The weighting of risk factors (65% socio-economic, 35% hazard-specific) is not intuitive for all stakeholders. Additionally, the maps lack color-coded differentiation that clearly distinguishes high-risk areas.

Suggested Improvements:

Color-coded differentiation for risk categories: Use blue for positive indicators (resilience factors) and red for negative indicators (hazard risks).

Break down vulnerability weighting visually: Use Z-score plots or simple bar graphs to explain how census tracts are ranked.

Provide local risk summaries: A one-page summary for each county or city would improve usability for decision-makers.

Response: The plan now has an indicator key using color coding to distinguish vulnerability indicators from resilience indicators. The appendix includes z-score plots and summaries for the highest risk census tracts.

Comment #30

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: What is missing from the risk assessment? Key missing elements include:

Infrastructure resilience analysis – The assessment does not fully account for single-point failures in critical infrastructure (e.g., hospitals, evacuation routes, water treatment plants).

Mass care and functional needs sheltering – There is limited information on how emergency shelters will accommodate people with disabilities, medical needs, and non-English speakers.

Integration with local zoning and development policies – Stakeholders expressed concerns that the risk rankings could conflict with housing development policies (e.g., middle housing policies in wildfire-prone areas).

Behavioral health services in disaster response – The assessment acknowledges climate-related health risks but lacks a detailed strategy for post-disaster mental health support.

Suggested Improvements:

Expand infrastructure risk assessment to highlight at-risk hospitals, emergency service hubs, and transportation corridors.

Develop clear sheltering strategies that align with FEMA Functional Needs Support Services (FNSS) guidelines.

Include policy integration recommendations to resolve conflicts between hazard mitigation and housing development plans.

Incorporate behavioral health as a mitigation priority, ensuring counseling, peer support, and culturally competent crisis care are available post-disaster.

Response: Future upgrades to the Oregon Natural Hazards Risk assessment could consider cascading effects from failures of hospitals, emergency service hubs, or transportation corridors.

Post-disaster sheltering strategies are outside the scope of the Oregon Natural Hazards Mitigation Plan.

The Oregon Natural Hazards Mitigation Plan is not a policy or regulatory document and therefore cannot resolve potential conflicts between increasing housing and hazard mitigation. Any actual conflicts would be resolved by the legislature, rulemaking commissions, tribal governments, or local governments.

Post-disaster crisis care is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #31

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: What do you like about the risk assessment and why?

PROMETHEE MCDA provides a data-driven, reproducible ranking – This method avoids subjective expert bias and ensures quantifiable hazard and vulnerability assessments.

Inclusion of socio-economic vulnerability factors – The assessment goes beyond traditional monetary-loss models, considering poverty, age, access to medical care, and community resilience.

Statewide consistency – The model applies uniform risk criteria across all Oregon census tracts, making it easier to compare risk levels across regions.

Future GIS-based improvements – The plan to integrate GIS customization tools will make the assessment more interactive and useful for local planners.

Response: Thank you for the positive comments.

Comment #32

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: All

Geography: All

Comment: What concerns do you have and why?

Limited applicability at the local level – Without city- and county-specific data inputs, local governments may struggle to apply the results to zoning, emergency planning, and infrastructure investment.

Potential conflicts with land use policies – Wildfire mitigation measures (e.g., defensible space requirements) could conflict with urban housing policies, particularly in areas promoting denser housing.

Incomplete infrastructure risk analysis – The risk assessment does not fully account for transportation failures, hospital service disruptions, or cascading effects from infrastructure damage.

Lack of integration with FEMA and insurance industry risk maps – Different methodologies between state and federal assessments may cause inconsistencies in mitigation funding and insurance rates.

Suggested Solutions:

Ensure Phase Two GIS tools allow local agencies to refine risk scores based on their specific infrastructure and land-use policies.

Improve infrastructure assessment by incorporating transportation, healthcare, and water system vulnerabilities.

Collaborate with FEMA and insurance providers to standardize risk classification for funding and policy alignment.

Response: The next phase of the Oregon Natural Hazards Risk Assessment will create an online tool that cities and counties can use to add local data to refine the analysis of high-risk areas.

Future upgrades to the risk assessment could consider cascading effects on transportation, healthcare, and water systems.

The Oregon Natural Hazards Mitigation Plan identifies general areas that may need mitigation projects. It does not set insurance rates on specific properties and does not determine whether specific projects qualify for grant funding. Different risk classifications are appropriate at different scales for different purposes.

Comment #33

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Coastal

Geography: Coast

Comment: Strength: Identifies erosion, storm surge, and tsunami risks.

Gap: Lacks resilience hub integration.

Recommendation: Improve local response coordination for isolated communities.

Response: Thank you for the positive comment. Emergency response coordination is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #34

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: High Hazard Potential Dams

Geography: All

Comment: Strength: Acknowledges lack of quantifiable failure risk data.

Gap: Downstream vulnerability analysis is incomplete.

Recommendation: Enhance risk assessments and emergency planning.

Response: Thank you for the positive comment. The Oregon Natural Hazards Risk Assessment did not analyze downstream vulnerability because of a lack of statewide data. Downstream vulnerability analysis could be considered in a future update to the Oregon Natural Hazards Risk Assessment. Emergency response planning is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #35

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Droughts

Geography: All

Comment: Strength: Links drought to economic and agricultural impacts.

Gap: Lacks focus on rural water system resilience.

Recommendation: Expand climate adaptation for groundwater and drought-tolerant infrastructure.

Response: Thank you for the positive comment. The Oregon Natural Hazards Risk Assessment does not analyze rural water systems because of a lack of statewide data. The list of mitigation actions in Chapter 5 includes:

> 50. Develop an improved methodology for gathering data on drought and related impacts in the areas most vulnerable to drought…
>
> 81. Document the economic, social, cultural, and environmental impacts of drought, especially in the most vulnerable jurisdictions…

Comment #36

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Earthquakes

Geography: All

Comment: Strength: Recognizes Cascadia risk with seismic maps.

Gap: Lacks liquefaction risk analysis for infrastructure.

Recommendation: Prioritize retrofitting for transportation and hospitals.

Response: Thank you for the positive comment. The Oregon Natural Hazard Mitigation Plan does not prioritize projects for specific transportation facilities or specific hospitals. Projects to retrofit transportation systems and hospitals are in tribal and local natural hazards mitigation plans. Thus, no change to the Oregon Natural Hazards Mitigation Plan.

Comment #37

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Extreme Heat

Geography: All

Comment: Strength: Strong focus on public health and OHA resilience goals.

Gap: Cooling centers and resilience hubs lack funding.

Recommendation: Secure seed and long-term funding, expand public awareness.

Response: Thank you for the positive comment. The list of mitigation actions in Chapter 5 includes:

83. Provide ongoing funding for the expansion of the Oregon Resilience Hubs …

Comment #38

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Floods

Geography: Urban Areas

Comment: Strength: Uses FEMA floodplain mapping.

Gap: Lacks urban stormwater planning.

Recommendation: Develop strategies for flash flooding in urban areas.

Response: Thank you for the positive comment. Urban flooding is included in the hazard characterization in section 3.3.5.1. Urban flooding is not included in the Oregon Natural Hazards Risk Assessment because statewide data is not available. Tribes, cities and counties address areas of local urban flooding in their natural hazard mitigation plans.

Comment #39

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Landslides

Geography: All

Comment: Strength: Integrates hazard mapping.

Gap: Lacks post-wildfire landslide risk analysis.

Recommendation: Add wildfire-driven landslide projections and mitigation plans.

Response: Thank you for the positive comment. Post-wildfire landslides are included in the hazard characterization in section 3.3.7.1. Post-wildfire landslides are not included in the Oregon Natural Hazards Risk Assessment because statewide data is not available, and the area at risk will change significantly from year to year. The Oregon Department of Geology and Mineral Industries often studies landslide risk in areas burned by major wildfires. Tribes, counties, and cities can then address specific areas at risk.

Comment #40

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Tsunamis

Geography: Coast

Comment: Strength: Maps multiple tsunami scenarios.

Gap: Evacuation route viability needs assessment.

Recommendation: Increase drill funding and expand vertical evacuation planning.

Response: Thank you for the positive comment. Drills are outside the scope of the Oregon Natural Hazards Mitigation Plan. The list of mitigation actions in Chapter 5 includes:

> 87. Implement improved tsunami way-finding signage solutions to assist with tsunami evacuation under all conditions (day or night). Hardened and improved evacuation routes may include the use of elevated safe areas (vertical evacuation structures)…

Comment #41

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Volcanoes

Geography: All

Comment: Strength: Identifies risks from ashfall.

Gap: Lacks air quality and infrastructure disruption planning.

Recommendation: Develop regional response plans for ashfall impacts.

Response: Thank you for the positive comment. Emergency response plans are outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #42

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Wildfires

Geography: All

Comment: Strength: Aligns with wildfire risk mapping.

Gap: Lacks clarity on housing policy conflicts.

Recommendation: Integrate mitigation with zoning and housing policies.

Response: Thank you for the positive comment. Integrating hazards mitigation with land use zoning is an important mitigation action for cities and counties; however, local zoning decisions are outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #43

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Windstorms

Geography: All

Comment: Strength: Identifies risks but lacks historical data.

Gap: Does not account for power grid vulnerabilities.

Recommendation: Strengthen utility coordination to reduce outages.

Response: Section 3.3.11.2 list historic windstorm events. The Oregon Natural Hazards Risk Assessment does not analyze windstorms and power grid vulnerabilities because of a lack of suitable statewide data. The list of mitigation actions in Chapter 5 includes:

> 88. Strengthen wildfire and winter storm resilience of electrical transmission and distribution systems…

Comment #44

Commenter and Affiliation: Philip Nel, Lead Researcher and Senior Planner, ODHS-OREM

Hazard: Winter Storms

Geography: All

Comment: Strength: Recognizes transportation and power risks.

Gap: Lacks sheltering plans for vulnerable populations.

Recommendation: Expand warming shelters and improve transportation resilience.

Response: Post-disaster sheltering is outside the scope of the Oregon Natural Hazards Mitigation Plan.

Comment #45

Commenter and Affiliation: Marshall Curry

Hazard: All

Geography: All

Comment: I was just doing a brief skim. This section on page 58 has a broken link at the end.

Ham Radio Amateur radio, or ham radio, is a service provided by licensed amateur radio operators. Ham radio is an alternate means of communicating when normal systems are down or at capacity. Emergency communication is a priority for the Amateur Radio Relay League (ARRL), the national association for amateur radio operators. Each region is served by Amateur Radio Emergency Service (ARES) districts. Radio Amateur Civil Emergency Services (RACES) is a special phase of amateur radio recognized by FEMA that provides radio communications for civil preparedness purposes including natural disasters. Official ham emergency station calls for each region can be found with the American Relay Radio League Oregon Chapter, www.arrloregon.org. "

Response: Corrected link to https://oregonarrl.org/ares/.

Comment #46

Commenter and Affiliation: Chantal Wikstrom, Water Quality Specialist & Emergency Coordinator, OHA - Drinking Water Services

Hazard: None

Geography: All

Comment: Feedback on Chapter 2 – Oregon Profile

"Pg 58: Drinking water supplies in Oregon are primarily groundwater (GW) sources. There are 686 Community Water Systems (CWSs) with GW as their primary source of water supply. There are 234 CWSs with surface water as their primary source of water supply. Some systems do have multiple types of sources

(SW, GW or GWUDI). You can search public drinking water inventories here: https://yourwater.oregon.gov/inventorylist.php. We also have a map showing the different public water systems: https://geo.maps.arcgis.com/apps/webappviewer/index.html?id=86938c6844be48b0b75a9326f500a748.

Pg 59: Region 2 - might be good to add that Portland sells a lot of water to surrounding communities such as Tualatin Valley Water District, etc. "

Response: Used the website suggested to update wording to be more specific and give counts of surface and groundwater sources and filtered by systems over 10,000 people to give an understanding of larger municipal systems. Added information about Portland Water Bureau's water wholesale relationship with surrounding cities.

Comment #47

Commenter and Affiliation: Chantal Wikstrom, Water Quality Specialist & Emergency Coordinator, OHA - Drinking Water Services

Hazard: None

Geography: All

Comment: Feedback on Chapter 4 – Statewide Mitigation Capability Assessment

"Pg 22: OHA contracts source water protection activities for public water systems to DEQ.

Pg 23: OHA - Public Health Division - Drinking Water Services implements the Safe Drinking Water Act for Oregon's public water systems."

Response: Both comments incorporated into the IHMT table.

Comment #48

Commenter and Affiliation: Chantal Wikstrom, Water Quality Specialist & Emergency Coordinator, OHA - Drinking Water Services

Hazard: All

Geography: All

Comment: Feedback on Chapter 5 –Mitigation Strategy

"Priority 47: public water systems are susceptible to all hazards depending on their geography, infrastructure, and operations - not just landslides. All natural hazards can all impact drinking water quality, source water availability, operations, and infrastructure."

Response: This action (renumbered to 72) remains focused on erosion and landslides so that it is specific enough to meet the criteria for a mitigation action. The next update to the Oregon Natural Hazard Mitigation Plan could include additional specific actions to address other hazards that threaten drinking water supplies.

Comment #49

Commenter and Affiliation: Lisa Dawson, Executive Director, Northeast Oregon Economic Development District

Hazard: Wildfire

Geography: All

Comment: Feedback on Chapter 5 –Mitigation Strategy

"42 Continue to analyze interdependencies between lifelines and energy:

assess and plan for backup power needs for critical facilities, such as

water/wastewater, fire stations, and hospitals). Provide support for

energy resilience at certain facilities. See the Oregon Energy Security

Plan for further background. - this should also apply to wildfires"

Response: Wildfire added to this action (renumbered to 64).

Comment #50

Commenter and Affiliation: Brandy Bishop, Emergency Preparedness Coordinator, The Confederated Tribes of Grand Ronde

Hazard: None

Geography: Grande Ronde Reservation

Comment: Feedback on Chapter 2 – Oregon Profile

"In the section 2.3 Human Geography in the subsection for the information on The Confederated Tribes of Grand Ronde I would like to make a couple corrections as follows:

While there are over 30 tribes and bands within the confederated tribes of grand ronde there are five main bands and those are, Molalla, Rouge River, Kalapuya, Chasta, and Umpqua. The CTGR reservation is located in western Oregon in Yamhill county but also in Polk County. In section 2.3.5 under the Confederated Tribes of Grand Ronde subsection ceded and ancestral homelands are mentioned but in the previous sections it states there are only two types of Tribal lands reservations and trust lands. I feel that a quick definition of what ceded lands are might be helpful here. "

Response: Description corrected to refer to the five main bands of the Confederated Tribes of Grand Ronde and to add Polk County. A definition for ceded lands added to section 2.3.2 land ownership.

Comment #51

Commenter and Affiliation: Jason McClaughry, RG, Geological Survey and Services Program Manager, DOGAMI

Hazard: Many

Geography: All

Comment: For at least many of the hazards, there is a disconnect between the extensive background information in the Risk Assessment chapter and the specific indicators that were used to score the hazard and risk preference rankings. It is unclear why the specific indicators were chosen among many possibilities. The subjective choices of which indicators are used ultimately drive how the hazard is perceived through this analysis. Perhaps the indicators are generally a reasonable set for most hazards, but eliciting opinion from a group of interested experts and describing the reasoning for this set of indicators would greatly strengthen the assessment.

Response: Explanations and justifications of the indicators added to Chapter 9 – Appendix.

Comment #52

Commenter and Affiliation: Jason McClaughry, RG, Geological Survey and Services Program Manager, DOGAMI

Hazard: Many

Geography: All

Comment: For many of the indicators, much of the available information about the likelihood of a hazard is being discarded through simplification into binary options, i.e., is a structure in a moderate to very high hazard zone or not. If these indicators were recast such that high hazard/ higher probability factors were scored higher than lower hazard areas, it would better represent our current understanding of these hazards. As currently implemented, communities with exposed structures in predominantly very high hazard zones are scored equivalently to communities with a similar fraction of structures in moderate hazard zones for many of the indicators.

Response: The next phase of the Oregon Natural Hazards Risk Assessment will give users more flexibility to use different hazard scenarios or add additional hazard indicators to better represent hazards.

Comment #53

Commenter and Affiliation: Jason McClaughry, RG, Geological Survey and Services Program Manager, DOGAMI

Hazard: Many

Geography: All

Comment: Many of the hazards include exposure of historic buildings as one of the indicators, and for at least some of the high priority tracts, hazard to historic buildings is a key indicator on the z score plots in the appendix. The numbers and statewide distribution of these buildings was not clear from the report, but based on a discussion with Matt Williams, some census tracts have small numbers of historic structures so that the % exposure could produce a wide range of values depending on the details of a few buildings. This

(potentially) non-robust indicator is weighted equally to more impactful parts of the hazard. In general the use of percentages involving small sample numbers per tract should be evaluated critically.

Response: Risk analysis was changed to use number of historic buildings in a census tract rather than percentage.

Comment #54

Commenter and Affiliation: Jason McClaughry, RG, Geological Survey and Services Program Manager, DOGAMI

Hazard: Volcanic

Geography: Volcanic Hazard Areas

Comment: As raised in a previous email to Trisha Patterson, the volcanic hazard analysis is particularly problematic, as most of the factors discussed in the hazard description are excluded from the indicators used in the risk scoring.

Response: Thank you for your comment. Further discussion is warranted concerning data availability and map symbology.

Comment #55

Commenter and Affiliation: Jason McClaughry, RG, Geological Survey and Services Program Manager, DOGAMI

Hazard: All

Geography: All

Comment: DOGAMI staff are interested in improving the maps and making improvements. What is the timeline to make these changes? If there is no time and capacity to improve the maps, would DLCD be open to revising the language describing the nature of these maps? For example, since many of the maps are primarily a demonstration of social vulnerability and not hazard or risk, they could be reframed to inform the readers understanding and interpretation of the maps.

Response: Thank you for your comment. DLCD anticipates further work to improve the risk assessment by creating a public facing tool for use in local jurisdictions' natural hazard mitigation planning.

Comment #56

Commenter and Affiliation: Jason McClaughry, RG, Geological Survey and Services Program Manager, DOGAMI

Hazard: All

Geography: All

Comment: Given the complexity of the analysis and the choice to make the hazard exposure subordinate to socioeconomic factors, it is unclear if improvements to the hazard scoring system would change the risk prioritization in a significant way. In an extreme case, some of the top 20% census tracts for volcano hazard preference are tracts with 0% hazard. Perhaps this relative insensitivity of the overall ranking to the hazard does not motivate any revision to the scoring in this round (except for the volcanic hazard?). However, justification of how and why the indicators were used should be added to the assessment document.

Response: Thank you for your comment. We have included additional explanation and justification of how and why indicators were used in this particular hazard to *Chapter 9, Appendix*.

Comment #57

Commenter and Affiliation: Erica Fleishman, Director, Oregon Climate Change Research Institute, Professor, College of Earth, Ocean, and Atmospheric Sciences, Oregon State University

Hazard: Drought

Geography: All

Comment: On page 37 of chapter 3, there is a reference to snow drought that is incomplete. There are two types of snow drought. Dry snow drought: precipitation falls as snow, but little precipitation falls. Warm snow drought: ample precipitation, but falls as rain. See https://www.drought.gov/topics/snow-drought#definitions

Response: Thank you for your comment. This change has been made.

Comment #58

Commenter and Affiliation: Erica Fleishman, Director, Oregon Climate Change Research Institute, Professor, College of Earth, Ocean, and Atmospheric Sciences, Oregon State University

Hazard: All

Geography: All

Comment: Table 2.2.4-1. - Habitat is a species-specific construct. It's not clear to me how changes in species' habitats lead to coastal hazards. I suggest deleting this row. Also consider deleting the windstorms column. And spell out CMZ.

Response: Thank you for your comment. We will remove the windstorms column and remove CMZ from the Floods column. Habitat changes can affect coastal hazards; for example, loss of kelp near the shoreline can influence coastal erosion.

Comment #59

Commenter and Affiliation: Erica Fleishman, Director, Oregon Climate Change Research Institute, Professor, College of Earth, Ocean, and Atmospheric Sciences, Oregon State University

Hazard: Coastal Hazards

Geography: Oregon Coast

Comment: Coastal Hazards Section, next-to-last paragraph, "…surfing resources." I don't understand this. Waves?

Response: Thank you for your comment. We have reviewed and deleted "surfing resources".

Comment #60

Commenter and Affiliation: Erica Fleishman, Director, Oregon Climate Change Research Institute, Professor, College of Earth, Ocean, and Atmospheric Sciences, Oregon State University

Hazard: All

Geography: All

Comment: "%" - Symbol or written out? Not consistent across document.

Response: Thank you for your comment. We have updated the text for consistency.

Comment #61

Commenter and Affiliation: Amie Hyatt, Producer, Thelittlethings503

Hazard: Earthquake, High Hazard Potential Dam

Geography: Salem

Comment: Feedback on Chapter 6:

Oregon has done the very minimum when it comes to informing the public. I live in Salem Oregon and we are one the top cities with the highest probability for disaster yet I havent noticed any true form of community education or preparedness. The city should be doing things for instance my grandson's School is located in one of the main areas that would be affected if the Detroit dam were to break our entire neighborhood would be fully submerged underwater. High School doesn't have earthquake drills or flood drills. Should have something happen tomorrow no one would be prepared and nobody would know what to do and that's a serious problem. Educating its citizen is one of the top things that they should be prioritizing under the circumstances because when the cascadia quake does take place we're going to have to rely on ourselves for survival oregon is in no way shape or form prepared for such a catastrophe. They should be doing something to compensate for that for instance providing each community with free EMS courses and search and rescue training so people are prepared to take action as they're going to be forced to do. Two weeks is a long time without help and that's what they're predicting. It should be training its communities to be able to help themselves. It should be providing swim classes for low-income children and families it should be requiring schools churches and community watch organizations to establish an emergency plan and providing them with the things they might need such a storage to begin gathering the necessities they will need to have ready in order for its community members to survive. Water, food, medical supplies, shelters, emergency blankets etc. if every single neighborhood was prepared to take care

of its own people this is what's going to save lives. It should be encouraging people to get to know their neighbors and create a buddy system and not just mentioning it on the internet but repeatedly reminding people that this is a serious disaster that we need to be preparing for on a regular basis that way when it does come we're actually prepared. The other thing is the Detroit dam. The state of Oregon's been informed that that damn is it's not up to par to withstand an earthquake of such magnitude the aftermath if that should break would be horrific and the death toll would be astronomical. Reinforcement of our dams should be a top priority. They've been aware of this for several years and and have no excuse for not addressing the issue.

Response: Local capabilities are very important; however, most of the specific suggestions in this comment are outside the scope of the Oregon Natural Hazards Mitigation Plan. Text added to Section 6.2.2.6 - Educational Outreach, Groups, & Organizations to incorporate the general comments about the level of local capability.

Comment #62

Commenter and Affiliation: Camille Collett, Geotechnical Specialist, ODF

Hazard: Landslides

Geography: All

Comment: I'm wondering if in chapter 3.3.7 you would want to include a sentence or two about how logging and clearcutting can increase the likelihood of there being landslides. You mention the ODF 1996 study but don't really mention that aspect. There are rules that try to prevent this from happening but they still do occur in forestry operations – also frequently along forest roads.

Response: Logging and forest roads added to section 3.3.7.1 – Analysis and Characterization.

Comment #63

Commenter and Affiliation: Hilary Olivos-Rood, UCF Grant Program Administrator, ODF

Hazard: All

Geography: All

Comment: Hello,

The DLCD Community Green Infrastructure Grant Program (CGI) works with the Oregon Department of Forestry's Urban & Community Forestry Subaward Program to collaborate and provide technical assistance for the DLCD CGI program, codified through Oregon Legislation (2023) House Bill 3409. As agency partners, there is much intersectionality between the two programs. ODF requests to add the following paragraph to Chapter 4 - Statewide Mitigation Capability Assessment under section "4.2.3 New Natural Hazard Mitigation and Resilience Programs, Plans, and Funding."

ODF Request to add the following section:

4.2.3.7 Urban and Community Forestry

In 2023, the Oregon Department of Forestry's Urban and Community Forestry (UCF) Program was awarded two domestic grants ($26.6 million, in total) from the U.S. Forest Service to develop and implement two subaward programs. These programs fund urban, rural community, and Tribal forestry projects across the state for social, environmental, and resiliency benefits. The Urban and Community Forestry Program has six priority areas: 1) supporting forestry assessment and planning; 2) supporting culturally responsive forestry education and community-building initiatives; 3) enhancing the urban and community forestry network; 4) expanding urban forestry workforce and career development; 5) expanding tree production, planting, and maintenance; and 6) supporting monitoring, adaptive management, and lesson sharing. These priorities promote resilience in urban and wildland-urban interface areas where communities stand to gain significant benefits from trees and forests.

Response: Added as section 4.2.3.4, immediately following the section on DLCD Community Green Infrastructure program.

Comment #64

Commenter and Affiliation: Mandy Watson, Coastal Conservation Manager, Oregon Shores Conservation Coalition

Hazard: All

Geography: All

Comment: March 19, 2025

To: Oregon Department of Land Conservation and Development and Oregon Department of Emergency Management

RE: Oregon's Natural Hazard Mitigation Plan Update

I want to express my gratitude for allowing public comments on the Oregon Natural Hazard Mitigation Plan Update (NHMP), as well as, my admiration for the work that has gone into this document. Thank you for your efforts to make Oregon communities, people, and places more resilient to natural hazards.

Oregon Shores Conservation Coalition is a non-profit organization that is dedicated to protecting the natural shoreline and equal access to it. We are committed to progressing diversity, equity, and inclusion in coastal and ocean spaces in the face of planning, management, and adapting to climate change. We want to applaud all you've done to recognize and mitigate the disproportionate impact of natural hazards on historically marginalized groups and underserved communities and the incorporation of current and future effects of climate change into this plan.

As organizations strive to meaningfully engage, listen, and amplify the voices of marginalized peoples, we must also acknowledge the additional burden this can place and the risk of unintentionally imposing extractive practices through this work. In light of this, we suggest the agencies think about, and discuss with impacted Tribes, how indigenous Traditional Ecological Knowledge could be incorporated into this or future NHMPs. Currently, the plan seems to lack this important perspective, which would enhance its effectiveness and inclusivity.

We also would like to see the conservation and restoration of estuaries and wetlands distinguished as a mitigation strategy for global climate change due to their ability to sequester carbon as well as localized protection from storms and flooding. Updating Estuary Management Plans should be prioritized as Oregon's estuaries require strong, updated management policies to continue providing their ecosystem benefits. In addition, we would like to see stronger language that discourages the use of hard armoring such as rip rap as it prioritizes short-term private property protection over long-term public beach access.

See specific comments organized by chapter and section below.

Thank you for taking my comments into consideration. Feel free to reach out if you would like to discuss any points further. Again, I appreciate the Department of Land Conservation and Development and Office of Emergency Management efforts in making Oregon more resilient to natural hazards.

Sincerely,

Mandy Watson, Coastal Conservation Manager

Oregon Shores Conservation Coalition

Response: Thank you for the positive comments.

Comment #65

Commenter and Affiliation: Mandy Watson, Coastal Conservation Manager, Oregon Shores Conservation Coalition

Hazard: All

Geography: All

Comment: Specific comments by chapter and section.

1.1

❖ "All three perspectives – local practitioners, state hazard experts, and objective data – are necessary for reaching the best assessment of vulnerability. However, they can complement one another and lead to more robust mitigation." p. 18 ➢ Traditional ecological knowledge from indigenous populations are also perspectives required for reaching the best assessment of vulnerability.

❖ "Local risk assessments therefore can add depth and granularity to the state risk assessment. As the state strives to incorporate local risk assessments into the state risk assessment (Section X.X), this deeper local understanding of local vulnerability and risk, based in part on state data and analysis and in part on local knowledge and experience, will help the state focus its limited resources in communities that need them most and in the ways those communities need them most. This partnership or linkage between state and local mitigation planning promises to be beneficial to both local and state government and most importantly, to the citizens of Oregon." p. 18 ➢ Thank you for acknowledging the importance of local knowledge. The NHMP would benefit from describing how the state incorporates local risk assessment into state risk assessment or what the current status between them is. "As the state strives" is vague and noncommittal.

Response: Added traditional ecological knowledge to the list of perspectives for understanding risk in section 1.1.4.

The 2025 update to the Oregon Natural Hazard Mitigation Plan uses the National Risk Index and a new Oregon Natural Hazards Risk Assessment. The new statewide risk assessment uses a different method than local risk assessments. The new risk assessment method will be available to tribes, counties, and cities as they update their local risk assessments, which will better integrate state and local risk assessments.

Comment #66

Commenter and Affiliation: Mandy Watson, Coastal Conservation Manager, Oregon Shores Conservation Coalition

Hazard: Coastal Hazards

Geography: Coast

Comment: Specific comments by chapter and section.

2.2.4

❖ "Public access is one of the coastal resources most at risk from accelerating sea level rise. Rising seas may dramatically impact beaches, accessways, recreational amenities (e.g., parking lots, bathrooms, signage), and even surfing resources. Public access to the coast is important to the economic viability, quality of life, and health and well-being of members of the community, including low-income and underserved populations. By providing low-cost outdoor recreational opportunities through public access to Oregon's beaches and estuaries, communities can improve their overall economic and health outcomes. Where development already exists, and particularly where there is substantial shoreline armoring to protect this development, Oregon may lose significant recreational beach areas. Additional shoreline armoring can decrease access to sandy recreational beaches, remove or impact public access locations to the water, diminish the ability to include accessibility features at public access sites, require increased costs and maintenance of public access amenities, and contribute to a general loss of public access locations." p.18-19

➢ We appreciate this paragraph. It could be improved by specifically calling out rip rap as a threat to public beach access, as the most common shoreline armoring

method in Oregon. Having a picture to illustrate how it hinders lateral beach access would help demonstrate.

Response: Thank you for your comment. We have added wording about how riprap hinders lateral beach access to the sentence that describes the ways that shoreline armoring hinders beach access. We were not able to include an image to illustrate it at this time.

Comment #67

Commenter and Affiliation: Mandy Watson, Coastal Conservation Manager, Oregon Shores Conservation Coalition

Hazard: All

Geography: All

Comment: Specific comments by chapter and section.

2.3.5

❖ "Tribal Natural and Cultural Resources Indigenous people often do not draw a hard line between natural resources and cultural resources because they are so intertwined. (NOAA, 2025)" p. 41 ➢ Citing a tribal literature, group, or member rather than a federal agency would be the best practice here.

Response: Updated the text and source with a resource from Cultural Survival, an indigenous led NGO and registered non-profit that advocates for indigenous rights.

Comment #68

Commenter and Affiliation: Mandy Watson, Coastal Conservation Manager, Oregon Shores Conservation Coalition

Hazard: All

Geography: All

Comment: Specific comments by chapter and section.

3.2.1.1

❖ Regarding the whole section ➢ It's great to see the acknowledgement of the intricacies to measuring vulnerability and equitable mitigation. Thank you for your work.

Response: Thank you for your positive comment.

Comment #69

Commenter and Affiliation: Mandy Watson, Coastal Conservation Manager, Oregon Shores Conservation Coalition

Hazard: Coastal Hazards

Geography: Coast

Comment: Specific comments by chapter and section.

3.3.1

❖ "All of these sites are highly susceptible to increased impacts as erosion processes and flood hazards intensify, driven by rising sea level and increased storminess." p. 17 ➢ Add, "especially when combined with shoreline armoring such as rip rap."

❖ “Human influences associated with jetty construction, dredging practices, coastal engineering, and the introduction of non-native dune grasses have all affected the shape and configuration of the beach, including the volume of sand on a number of Oregon’s beaches, ultimately influencing the stability or instability of these beaches.” p. 18 ➢ Add stronger language that highlights that most settler human influences have had long-term negative consequences on the beaches, dunes, estuaries.

➢ Such as, “Human activities such as jetty construction, dredging, coastal engineering, shoreline armoring, and the planting of non-native dune grasses have led to long-term negative impacts on Oregon's beaches and dunes. These developments restrict the natural movement of sand and the ability of estuaries to migrate inland, causing the phenomenon known as 'coastal squeeze.' Coastal squeeze occurs when coastal habitats, like beaches and wetlands, are confined between human-made structures and rising sea levels, preventing them from naturally shifting or adapting to environmental changes. This not only undermines the natural resilience of coastal ecosystems but also increases the vulnerability of coastal communities to flooding, erosion, and storm surges.”

❖ “The estuaries are all ecologically important to many fish and wildlife species and in many cases are the sites of important recreational and commercial enterprise.” p. 20 ➢ Recognize estuaries as a mitigation measure. Add, “Additionally, estuaries play a crucial role in carbon sequestration, acting as natural carbon sinks that help mitigate climate change. When unaltered, undeveloped estuary also provide valuable localized protection against storms and flooding, buffering coastal communities from extreme weather events and rising sea levels.”

❖ “In some areas, the erosion has become acute, requiring various forms of coastal engineering (commonly riprap) to mitigate the problem (Figure 3.3.1-4B), and in a few cases the landward relocation of the homes.” p. 20 ➢ Change to “as an attempt to mitigate the problem”

Response: Complete. Thank you for your comment.

Comment #70

Commenter and Affiliation: Mandy Watson, Coastal Conservation Manager, Oregon Shores Conservation Coalition

Hazard: All

Geography: All

Comment: Specific comments by chapter and section.

3.3.3

❖ “Since the mid-1980s, an increasing body of geologic and seismologic research has changed the scientific understanding of earthquake hazards in Oregon, and in recent years several large and destructive earthquakes around the world have heightened public awareness. Recognized hazards range from moderate sized crustal earthquakes in eastern Oregon to massive subduction zone megathrust events off the Oregon coast. ” p. 49 ➢ Add, “Indigenous peoples in the Pacific Northwest, who experienced the 1700 earthquake

and tsunami, passed down their knowledge through oral histories and storytelling long before Western science fully recognized these hazards."

❖ 3.3.3-2 Table. Historic Earthquake Events ➢ Add acknowledgement sentences such as, “This is a settler account of historic earthquakes and does not include earthquakes experienced and documented by indigenous peoples before 1873.”

➢ Or better yet, include examples of earthquakes documented by indigenous histories

➢ Same for 3.3.5-2. Table Historic Damaging Floods in Oregon, Table 3.3.8-1. Historic distant tsunamis that have been observed on the Oregon Coast, and all similar tables.

Response: Thank you for your comment. We considered this comment and added clarifying language.

Comment #71

Commenter and Affiliation: Mandy Watson, Coastal Conservation Manager, Oregon Shores Conservation Coalition

Hazard: All

Geography: All

Comment: Specific comments by chapter and section.

5.2

❖ “2. Prioritize and direct state mitigation resources and investments to build resilience in the populations and communities indicated by the risk assessment to be the most vulnerable. 3. Align natural hazards mitigation and climate adaptation efforts based on the evolving understanding of the relationships between climate change and climate-related natural hazard events.” p. 1

➢ In other sections, the pros and cons of the risk assessment are discussed. Consider who is left out by the risk assessment, who doesn’t get captured based on the framework of the decided risk assessment.

Prioritized Mitigation Action

❖ “21 Conduct a pilot project on two coastal estuaries to develop a framework for modeling sea level rise and to assess the overall impact of sea level rise on the estuaries. Implement sea level rise modeling for the pilot study areas. Use study results to guide a future, more comprehensive and coast-wide assessment of sea level rise impacts. Once completed, use the results to minimize future damage or loss of property and the environment. In 2024, DLCD completed an updated version of the Sea Level Rise Guide for local governments based on this work. Integration through the Climate Change Adaptation Framework.” p. 10 ➢ I would love to be kept in the loop about this if possible.

Response: It is important to be aware of who and what is left out of the National Risk Index and the Oregon Natural Hazards Risk Assessment. This is covered in *Chapter 3* but not repeated in *Chapter 5*.

Request to be kept in the loop forwarded to the Oregon Coastal Management program.

9.5 Ongoing Mitigation Actions

Ongoing mitigation actions showcase the work that state agencies engage in on a daily basis to advance natural hazards mitigation, separate from the mitigation actions the state agencies aspire to accomplish during the next five years. State IHMT members updated the status of these mitigation actions in July 2024, but did not review or prioritize them further for this plan update.

Table 9.5.1 2025 Oregon NHMP Ongoing Mitigation Actions

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
108	Continue to refine statewide natural hazard identification and characterization. The Oregon NHMP identifies the types of natural hazards affecting Oregon, their geographic extent, history, and probability of occurrence, and as they may be affected by climate change. Throughout the life of the Plan, new and continuing research studies and projects provide new data and analysis, improving our ability to identify and understand Oregon's natural hazards and their probability of occurrence. To advance hazard mitigation in Oregon, it is important for the State to plan, budget, and take advantage of opportunities that arise for continued research and new studies to enhance our knowledge of Oregon's natural hazards.	DOGAMI ODF OEM ODOT OHA
109	Continue to refine the State's risk assessment methodology and statewide assessments of natural hazard exposure, vulnerability, and potential losses. At the core of the Oregon NHMP is a statewide risk assessment of exposure and vulnerability, and an estimate of potential dollar losses to state-owned/leased buildings, infrastructure, and critical or essential facilities from natural hazard events. Schools, emergency facilities, water and wastewater, dams and levees, transportation, telecommunications, and energy facilities are examples of structures, infrastructure, and facilities that could be exposed and vulnerable to natural hazards. Other examples include populations, businesses, and industries. At this time, the state does not have a standardized risk assessment methodology across all hazards at the state and local levels. To advance hazard mitigation in Oregon, it is important for the State to plan, budget, and take advantage of opportunities that arise for continued enhancement of the risk assessment, better enabling limited mitigation resources to be directed to the areas that most need them.	DLCD
110	Continue to refine statewide identification and prioritization of the greatest risks from and communities most vulnerable to Oregon's natural hazards. Identifying and prioritizing the greatest risks from and communities most vulnerable to natural hazard events will enable the state to leverage its limited mitigation resources in ways that efficiently protect life, property, and the environment from natural hazard events and facilitate recovery.	DLCD
111	Continue to develop and implement resilience initiatives statewide. Natural hazard mitigation is a fundamental element of resilience. It is important for the state to plan, budget, and partner with other public and private entities to alleviate potential damage from natural hazard events before they occur by (a) improving the reliability of critical/essential facilities, services, and infrastructure during and after a natural hazard event; (b) developing evacuation routes and facilities; (c) informing the public; (d) planning for long-term recovery; and (e) taking other necessary actions.	DOGAMI, ODF, OWRD, OEM, ODOT, OHA, OSFM
112	Provide support for development and update of local and state hazard mitigation plans. The State of Oregon provides support for development of local NHMPs and the Oregon NHMP by managing federal grant funding in ways that assist the state and local governments with NHMP development and update tasks and processes.	OEM

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
113	Improve and sustain public information and education programs aimed at mitigating the damage caused by natural hazards. While ongoing efforts are being made in this area, a strong message conveyed by several State IHMT Reports notes the need to strengthen and sustain public information, education, and training efforts by providing additional resources. Although commonly recognized that interest in reducing losses increases during and after events, there is an ongoing need to provide residents and key stakeholder groups (such as infrastructure operators) with hazard mitigation information. These reports cite the need to have timely seasonal information available, better methods to inform residents of sources of hazard mitigation information, use improved electronic methods (e.g., web sites), and materials oriented toward the intended users. This helps keep awareness levels higher, will stimulate actions by some, and reminds users to consider and include hazard mitigation measures in the contexts of regular activities, such as building a new home, relocating an office, or repairing a business.	OEM DOGAMI
114	Continue to improve inventory of state-owned/leased buildings in all hazard areas. Using DAS's data, DOGAMI developed an inventory of state-owned/leased buildings and identified those in hazard areas for the 2012 Plan and updated the inventory for the 2015 Plan. The data should be continuously updated by DAS-CFO to facilitate DOGAMI's inventory updates in future plan cycles.	DAS-CFO
115	Encourage citizens to prepare and maintain at least two weeks' worth of emergency supplies. State agencies should work with the American Red Cross and local emergency managers to encourage citizens to be prepared to survive on their own for at least two weeks.	OEM
116	Use lidar for statewide analysis of all natural hazards. Lidar is currently the best source of regional topographic data and allows for highly precise and accurate natural hazard mapping (landslide, flooding, volcanic hazards, channel migration zones, tsunami, geologic faults, wildfire, etc.) and infrastructure inventories (buildings, utilities, lifelines, etc.). Many Oregon state agencies currently use lidar for natural hazard analyses and will continue to do so where lidar is available.	DOGAMI
117	Support research proposals by PSU, OSU, and UO to improve Oregon's disaster resilience. Support research proposals by PSU, OSU, and UO to improve Oregon's disaster resilience, in particular to federal agencies including the National Science Foundation	DOGAMI
118	Evaluate and update mitigation priorities regularly and as otherwise necessary. The current pandemic has created a less-than-optimal situation for full vetting and prioritization of mitigation actions. With the changing revenue, budget, and social landscapes, continuing to review the actions and assess priorities on a regular basis and as otherwise necessary is the most prudent and practical course of action for continuing to advance mitigation in the State of Oregon.	DLCD
119	Integrate Climate Change Adaptation throughout agency operations. Require that state agencies address climate change adaptation at every budget cycle in their strategic plans. Regularly assess progress towards adaptation objectives.	DLCD
120	Embrace diversity, equity, and inclusion (DEI) in climate change adaptation planning and investment. Produce and implement a DEI Blueprint that will outline guiding principles and include one or more Equity Lens tools that will assist state agencies in taking the first steps toward integrating DEI best practices into their climate-related work. The DEI Blueprint will draw from the Environmental Justice Task Force (EJTF) Best Practices Handbook and other existing resources.	DLCD
121	Support the Interagency Workgroup on Climate Impacts and Impacted Communities. Many of the agencies involved in the Climate Adaptation Framework (CAF) are also beginning to engage in a new workgroup on climate impacts and impacted communities as directed through Governor Kate	DLCD

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
	Brown's Executive Order 20-04 on Climate Change. This workgroup will intersect with the work of the CAF Climate Equity Workgroup. This work, along with future interagency vulnerability analysis, will further define and identify populations most vulnerable to climate change in Oregon.	
122	Continue to act upon opportunities to advance the State's lifeline mitigation investment practice. Expand upon the State's mitigation investment practice by (a) supporting efforts by jurisdictions and transportation districts to develop mitigation policy and retrofit plans for lifeline assets and service facilities; (b) continuing to advance design and maintenance standards and requirements for bridges and unstable slopes, transit, rail, ports, and priority lifeline airfields; (c) developing a temporary bridge installation policy and standards; (d) supporting research on retrofit methods and strategies for Cascadia subduction zone earthquake loads and tsunamis.	ODOT
123	Improve reliability and resiliency of critical infrastructure statewide by adopting industry-specific best practices, guidelines, and standards. Lifeline Service Delivery Systems (critical infrastructure), including electric supply, natural gas, telecommunications, water/wastewater, hydraulic structures (e.g., dikes, levees, dams), transportation corridors, pipelines and petroleum fuels storage facilities, are all vital resources for a community's life-safety and economic viability. However, much of Oregon's existing critical infrastructure has not been designed or constructed to withstand the impact of severe natural disasters such as extreme wind & winter storms, major earthquakes, or large landslides. Lifeline Service Delivery Systems (critical infrastructure) should be evaluated statewide, and reliable and measurable performance objectives which insure the region's critical infrastructure can withstand future damage without crippling consequences should be instituted.	OPUC, OWRD, ODOT, DOGAMI
124	Acquire statewide lidar coverage for the purpose of improving natural hazard mapping and infrastructure inventories. Lidar is currently the best source of regional topographic data and allows for highly precise and accurate natural hazard mapping (landslide, flooding, volcanic hazards, channel migration zones, tsunami, geologic faults, wildfire, etc.) and infrastructure inventories (buildings, utilities, lifelines, etc.). The state should continue to invest in lidar acquisition for the purpose of understanding risk to natural hazards at a local scale.	DOGAMI
125	Provide technical assistance and funding to local governments to evaluate the need and opportunities for inter-tie projects in Local Natural Hazards Mitigation Plans. The capital expense associated with this action needs to be carried mostly by local governments, perhaps with some grant or low-interest loan funding provided by the state or federal governments. The role of the state in this action is to encourage local governments located proximate to one another, yet with separate water systems, to develop the physical capability to send water from one system to the other. Often during drought situations, one local government will have a bit of water to spare while a nearby government is struggling to meet its needs. Transferring water by truck is expensive and inefficient when compared to transferring water via pipeline. Water interties are also effective mitigation for the flood and earthquake hazards where one system can serve as backup for another.	OWRD
126	Continue the Oregon Safety Assessment Program. The Oregon Safety Assessment Program (OrSAP) provides professional resources to local governments to help with post-disaster building safety evaluations. When disaster strikes a community, numerous facility and infrastructure inspections may be necessary. At the request of local government, OrSAP makes volunteers available to conduct rapid post-disaster building safety evaluations related to structural safety and habitability. OrSAP evaluators also provide recommended posting of placards that denote the condition of each structure evaluated. OrSAP seeks qualified volunteers to provide these services. Volunteers are engineers, architects, building inspectors, general contractors, or people with ICC certifications who want to be certified as a post-disaster safety evaluator and have completed an approved ATC-20 or OrSAP training course.	BCD

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
127	Expand the state's stream gaging network. Seek stable funding for the operation, and maintenance of stream gages. The availability of timely and accurate telemetered data from stream gages is essential for flood forecasting, for prediction of imminent flood hazards, and for response to flood emergencies. Streamflow data also provides basic hydrologic information for floodplain mapping and watershed management by communities throughout the state and is critical for understanding and forecasting drought conditions. Numerous local, state and federal water management agencies rely on data from stream gages for effective management of projects and resources. The installation and maintenance of stream gages have traditionally been a responsibility of state and federal agencies. State agencies plan to work with their partners, including the United States Geological Survey and Bureau of Reclamation, to ensure adequate funding and support for existing gages and for the installation of new gaging sites where needed. It is recommended that state agencies endeavor to leverage federal funding with state resources and local matching commitments to achieve a reliable network of stream gages around the state. The data from these gages is used to support the RAFT and Raptor tools highlighted in Action #10, Priority.	OWRD
128	Educate homeowners about choosing ice and windstorm-resistant trees and landscaping practices to reduce tree-related hazards in future ice storms. Trees that don't stand up well to ice and wind, especially when planted near power lines, can cause power outages and other damage. Certain species of trees hold up better to winter's fury than others. Other factors, such as where a tree is planted and use of proper pruning techniques, can also help trees be more resistant to ice storm damage.	ODF
129	Each year, ask the Governor to designate October to be Earthquake and Tsunami Awareness Month. Practicing to "Drop, cover, and hold" is critical in reducing injury and loss of life in the workplace and home during an earthquake. The more people practice the drill, the better they will respond to a real event. A gubernatorial declaration will promote increased participation in the Great Oregon ShakeOut, or other annual earthquake Drop, Cover, and Hold On drill.	OEM
130	Continue to facilitate accessibility and use of the Coastal Atlas GIS resources. Make the Coastal Atlas geographic information system (GIS) more useful for a wider audience, from local and state staff to interested citizens, by continuing to improve its data and tools, and providing training on how to access and use them.	DLCD OPRD
131	Research the effects of changing ocean water levels and wave dynamics along the central and southern Oregon coast and use that data to augment the coastal geomorphic database. As recent research has shown, ocean water levels and wave dynamics along the Oregon coast are changing. These will, in turn, affect beach sand budgets and rates of erosion. More research must be done on alternative shore protection methods, effects of hard shore protection structures, near-shore circulation processes and sediment budgets, sea cliff erosion processes, and other hazard processes.	DOGAMI, OSU
132	Survey coastline to monitor erosion. Continue to periodically measure and monitor the Oregon coastline in order to document the response of Oregon's beach and bluffs to changes in ocean water levels (sea level rise and storm surges), storms (frequency and intensity), precipitation patterns that may threaten lives and property. Maintain a long-term, permanent Oregon Beach and Shoreline Mapping and Analysis Program (OBSMAP). The program will be a partnership with local, state, and federal agencies that have responsibility over coastal and ocean activities.	DOGAMI
133	Maintain the updated inventory of shoreline protection structures. Maintain the inventory of existing and new coastal engineering (shore protection) structures on the Oregon Coast in order to provide local governments and applicable agencies with an important coastal management tool to address anticipated increasing coastal erosion. It is anticipated that this inventory and information will assist in potential future policy changes to address a changing climate and associated coastal erosion impacts.	OPRD
134	Provide information and technical assistance to implement mitigation of non-structural hazards in K-12 schools. Provide training to school officials and teachers in reducing non-structural hazards in schools such as unsecured bookcases, filing cabinets, and light fixtures, which can cause injuries and block exits. The program should include a procedure for periodic life safety inspections of non-structural seismic hazards in schools that can be	OEM

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
	implemented by local fire department inspectors. BCD will have an important role in providing technical assistance in the development of educational materials.	
135	Each year, ask the Governor to designate the third Thursday of the month of October as the Great Oregon ShakeOut Day by proclamation. Practicing to "drop, cover, and hold" is critical in reducing injury and loss of life in the workplace and home during an earthquake. The more people practice the drill, the better they will respond to a real event. A gubernatorial declaration will promote increased participation in the Great Oregon ShakeOut, or other annual earthquake Drop, Cover, and Hold On drill.	OEM
136	Include information about the benefits of purchasing earthquake insurance in public outreach materials and disseminate those materials through appropriate public outreach programs and venues. Unlike flood insurance, which is underwritten by the U.S. Government (through the National Flood Insurance Program), earthquake insurance is offered by private sector agents, generally as a rider to a standard homeowner or business property insurance policy. Because earthquake insurance is a type of catastrophic coverage, most policies carry a high deductible. Oregon's Department of Consumer and Business Services Insurance Division offers information about earthquake insurance on its website and provides personal assistance through its insurance hotline. In addition, the Division is active in outreach activities, partnering with other agencies and organizations to bring insurance information to the public.	DCBS-DFR
137	Continue seismic rehabilitation of hospital, fire, and police facilities under the Seismic Rehabilitation Grant Program administered by Business Oregon's Infrastructure Finance Division. Continue to rehabilitate to operational readiness in the event of an earthquake essential hospital buildings, fire, and police stations that pose a threat to occupant safety. Senate Bill 15 of the 2001 Legislative Session requires that rehabilitation or other actions to be completed by January 1, 2022. Senate Bills 2 to 5 (2005) provided the mechanism to accomplish some of these legislatively mandated tasks. Under SB 2, Oregon Department of Geology and Mineral Industries developed a seismic needs assessment database of emergency response facilities buildings. These data are being used by the Seismic Rehabilitation Grant Program to provide funding for seismic rehabilitation of eligible buildings (SB 3). Senate Bill 5 allows the State Treasury to sell Government Obligation Bonds to fund the program.	BusOR-IFA
138	Continue seismic rehabilitation of public school buildings under the Seismic Rehabilitation Grant Program administered by Business Oregon's Infrastructure Finance Division. Continue to rehabilitate to occupant life safety standards certain public school and community college buildings. Senate Bill 14 from the 2001 Session of the Oregon Legislature requires that the State Board of Education examine buildings used for both instructional and non-instructional activities, including libraries, auditoriums, and dining facilities in order to determine which buildings are in most need of additional analysis. Following the identification of high-risk buildings and additional analysis, high-risk buildings must be rehabilitated by January 1, 2032, subject to available funding. SJR 21 and 22 are bond measures (November 2002 election) which would provide funding to implement this proposed action. SB 2 to 5 (2005) provided the mechanism to accomplish some of these legislatively mandated tasks. Under SB 2, Oregon Department of Geology and Mineral Industries developed a seismic needs assessment database of K-12 and Community College public school buildings. These data are being used by the SRGP to administer a grant program for seismic rehabilitation of eligible buildings (SB 3). SB 4 allows the State Treasury to sell Government Obligation Bonds to fund the program.	BusOR-IFA
139	Track progress on the 2013 Oregon Resilience Plan. In 2013, OSSPAC released the Oregon Resilience Plan with over 100 recommendations. A tracking method is needed to better understand where resilience progress is being made and where more attention is needed. This is in the area of responsibility of the State Resilience Officer in the Governor's Office.	OSSPAC

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
140	Monitor the effectiveness of the statewide strategy to encourage the purchase of flood insurance by demonstrating that the number of flood insurance policies held throughout the state continues to increase. Despite the statewide availability of flood insurance, coverage in place in most communities in Oregon varies from 10% to 20% of the homes and businesses located in the Special Flood Hazard Area (100-year floodplain). Not only does flood insurance reduce the financial vulnerability of individuals, families, businesses, government agencies, other organizations, and the community to the costs posed by flooding, but through the "increased cost of compliance" provision of flood insurance, it also provides funding for the elevation, flood-proofing, demolition, or relocation of homes and businesses when required due to "substantial damage" to the structure.	DLCD
141	Maintain the Riparian Lands Tax Incentive Program. This program is administered by the ODFW. This program involves the preparation of a plan and agreement between the landowner and the ODFW. The plan details measures the landowner will implement to preserve, enhance, or restore the riparian areas. Landowners receive a complete property tax exemption for the riparian property (up to 100 feet from the top of stream bank or the edge of non-aquatic vegetation). This program helps reduce sediment and protect stream banks which helps reduce the filling of river and stream channels.	ODFW
142	Provide information and potentially resources to local governments for developing "flood fight" plans and protocols. Several post-disaster mitigation strategy reports call for the development of flood fight plans and protocols in advance of flood emergencies. In addition to the state agencies potentially involved in flood fighting such as OEM and OWRD, environmental protection and habitat conservation agencies such as DEQ and ODFW should be involved in flood fight planning. At the federal level, the U.S. Army Corps of Engineers is a key partner. These plans and protocols might include improving emergency warnings, strengthening communications systems, stockpiling needed materials, preparing procedures for emergency vehicle access to flooded areas, and other related subjects, including ongoing public education efforts.	OEM DLCD
143	Continue the State's active Floodplain Management Outreach Program. DLCD has an active floodplain and natural hazards outreach program. The department publishes and distributes newsletters and other outreach information to local governments and other interested parties. DLCD also maintains a website which includes a link to this NHMP. The natural hazards website (https://www.oregon.gov/lcd/NH/Pages/Mitigation-Planning.aspx) contains information and links to floodplain management information including many of the documents and booklets prepared by FEMA. DLCD uses an email distribution service for its Natural Hazard Newsletter and other correspondence. The email distribution service affords interested subscribers a greater opportunity to obtain flood management and natural hazards information from DLCD in a timely manner and for DLCD to more readily share information from a variety of sources.	DLCD
144	Continue the State's active Floodplain Management Training Program. DLCD and other State IHMT participants conduct or sponsor training sessions and meetings throughout the year focused on up-to-date floodplain management practices and projects. DLCD will continue to deliver focused training to surveyors, building officials, real estate agents and planners as well as local floodplain managers. The interdependent relationships among these key players in providing comprehensive floodplain management will also be highlighted during trainings.	DLCD
145	Prepare text for local broadcast of one Public Service Announcement (PSA) each year on a seasonal topic. PSAs are an effective method for disseminating pertinent seasonal information about hazard preparedness and mitigation.	DLCD
146	Assist local communities in securing funding to mitigate damage to repetitive flood loss properties or those substantially damaged by flooding. The state maintains an inventory of high priority repetitively damaged buildings located in floodplains. DLCD and OEM have worked closely with communities to secure funding to mitigate buildings located in the flood hazard zone and to buyout properties located in the floodway. These agencies will continue to provide such expertise statewide where needed.	OEM DLCD

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
147	Continue developing Emergency Action Plans for all remaining high hazard dams in Oregon. In Oregon, money from FEMA grants and state funds is used to help dam owners create Emergency Action Plans (EAP). An EAP helps identify situations where a dam failure might occur, actions to take that could save the dam, if possible, and evacuation routes for a dam failure situation. There is an Oregon-specific EAP template available, designed for owners of remote dams that have limited personnel. Approximately 75% of state-regulated high hazard dams have or are currently developing EAPs. There are 67 state-regulated high hazard dams, and another 65 federal high hazard dams in which OWRD plays a coordinating role.	OWRD
148	Assist local governments in implementing the tsunami land use guidance. The risk of tsunami hazard for Oregon's coastal communities is well-documented with the completion of comprehensive tsunami inundation maps developed by DOGAMI. The State of Oregon can assist affected communities with its implementation, leading to better protection of life and property from tsunamis.	DLCD
149	Monitor implementation of the tsunami land use guidance by tracking the number of jurisdictions that have used it. The risk of tsunami hazard for Oregon's coastal communities is well-documented with the completion of comprehensive tsunami inundation maps developed by DOGAMI. Monitoring success of the guidance will allow the State to adjust its approach and update the guidance as necessary, leading to better protection of life and property.	DLCD
150	Continue to renew coastal communities' enrollments in the Tsunami Ready Program. The Tsunami Ready Program is a program sponsored by the National Weather Service that is designed to provide communities with incentives to reduce their tsunami risk. Cannon Beach was the first community for Oregon. Under a proposed plan through the NTHMP, additional communities will be added until there is full participation. This program is currently evolving through a review process being carried out by the NTHMP National Coordinating Committee. OEM is the primary point of contact for more information about the Tsunami Ready Program.	OEM
151	Continue supporting school participation in annual tsunami evacuation drills. Increase the ability of Oregonians to prepare for and recover from earthquakes and tsunamis on the Oregon Coast.	OEM DOGAMI
152	Continue supporting local agencies and local non-profits, such as CERT, in participating in educational efforts such as door-to-door campaigns to educate those living or working in the inundation zone on how to respond to an earthquake and tsunami. Increase the ability of Oregonians to prepare for and recover from earthquakes and tsunamis on the Oregon Coast.	OEM DOGAMI
153	Continue innovative outreach activities, such as tsunami evacuation route fun runs. Increase the ability of Oregonians to prepare for and recover from earthquakes and tsunamis on the Oregon Coast.	OEM DOGAMI

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
154	Continue to develop training and information packets and articles for local building officials informing them of their responsibilities and authority under ORS 455.446 and 455.447 and the State Building Code. Statutes and the State Building Code limit construction of new essential facilities and special occupancy structures in the mapped tsunami inundation zone. Definitions of essential and special occupancy structures are in the Oregon State Structural Specialty Code. As personnel change and time passes, additional training and information for officials will be provided.	BCD DLCD
155	Each year, ask the Governor to designate May to be Volcano Awareness Month by proclamation. Working with federal partners, such as the USGS Cascades Volcano Observatory, the state of Oregon will increase the ability for citizens to respond to volcanic eruptions by increasing the level of awareness and preparedness in the public and governmental agencies.	OEM
156	Support development, enhancement and implementation of local education programs designed to mitigate the wildfire hazard and to reduce wildfire losses, such as the Firewise Communities/NFPA Program and the annual Wildfire Awareness Week Campaign. As part of its statewide fire prevention program, the Oregon Department of Forestry actively encourages and promotes local education and awareness programs that are designed to mitigate or reduce the impacts of wildfires. This action reflects ODF's ongoing intentions to: (a) collaborate with agencies and organizations to promote consistency in the development and application of fire prevention standards, (b) work to make individuals aware of their personal accountability and responsibility for wildfire safety, (c) determine local resources and capacity, and (d) define needs and solutions required to increase capacity.	ODF
157	Continue to increase the number of local governments using the Wildfire Hazard Zone process to mitigate wildfire risk and losses. The Wildfire Hazard Zone (WHZ) process allows local governments to require the use of fire-resistant roofing materials in jurisdictions assessed to be at a high risk of wildland fire. Currently, only a few eligible entities have used the WHZ process. To promote additional use, an assessment will be made of the portions of the state where it appears the WHZ process will have the greatest benefit. Following this assessment, local governments in the areas identified will be educated on the desirability of implementing the process. Those governments that express an interest in applying the process will be assisted in completing the required analysis work.	ODF BCD
158	Continue to develop and increase the number of updated Community Wildfire Protection Plans (CWPPs) with the goal of aligning CWPP updates with 5-year NHMP updates, where possible. The federal Healthy Forests Restoration Act (HFRA) includes statutory incentives for federal agencies to give consideration to the priorities of local communities as they develop and implement wildfire hazard mitigation projects. To become eligible for priority consideration under HFRA, a community must first prepare a Community Wildfire Protection Plan (CWPP). Most Oregon counties and many Oregon communities have completed CWPPs. To encourage the completion of additional CWPPs, as well as future updates of CWPP's counties and communities will be informed of the benefits to be gained from maintaining a CWPP and assistance will be offered to help facilitate the development and/or update of the plans. Because the majority of Counties refer to CWPP's as their Wildfire Chapters, aligning CWPP updates with NHMP updates will ensure consistency and promote efficiencies in planning processes.	ODF

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
159	Continue to provide technical assistance in accessing funding for fire prevention or wildfire mitigation projects through Title III, the National Fire Plan, or other funding mechanisms. Under the federal Secure Rural Schools and Community Self-Determination Act of 2000 (Title III, Section 301(5) of PL 106-393, commonly known as Title III), counties have the ability to receive and spend federal funds for projects that educate homeowners about wildfire mitigation efforts they can apply on their property and for planning projects that increase the protection of people and property from wildfires. National Fire Plan and other funding mechanisms may also be available for assisting communities in preventing wildfires and implementing wildfire mitigation projects.	ODF
160	Analyze wildfire ignition probability statistics to better target prevention efforts at the leading causes of fires. There is currently no single database or common method of collecting fire cause information for wildfires occurring in Oregon. This results in different entities focusing their prevention and mitigation efforts on those causes which may not be the state's leading causes of fires. This likelihood can be lessened by developing a process to compare fire cause data collected by the Oregon Department of Forestry, the Office of the Oregon State Fire Marshal, and federal wildfire agencies. It is also important to understand the ignition probability from homes within and adjacent to the wildland interface because of the ignition risk to nearby wildlands. While there is no centralized database, wildland and structural fire agencies will continue to work collaboratively to determine leading fire causes and focus efforts statewide and locally to prevent future ignitions.	ODF
161	Collaborate through work groups within the Pacific Northwest Coordination Group (PNWCG) to continue collecting and analyzing wildfire occurrence data using the standardized statewide method and report to the state legislature as required. Previously, data concerning the causes of wildfire incidents was collected and analyzed by at least two state agencies, five federal agencies, and numerous local fire departments. These agencies had no database standardization or common reporting requirements. A standardized data collection system has been developed, and data collection and reporting continue collaboratively through work groups within the Pacific Northwest Coordination Group (PNWCG). The new system allows rapid identification of fire ignition trends and permits timely design and delivery of targeted prevention programs and activities.	ODF
162	Develop a single, comprehensive statewide method or process to collect and analyze wildfire occurrence data in a timely manner. Currently, data concerning the causes of wildfire incidents is collected and analyzed by at least two state agencies, five federal agencies, and numerous local fire departments. These agencies have no database standardization or common reporting requirements. This results in great difficulty, when attempting to determine the number of wildfires that occur in Oregon, when identifying fire cause trends, and generally in obtaining information concerning wildfire trends in a timely manner. Under this action item, all agencies responsible for suppressing wildfires will be requested to report incident occurrence information to a central data repository, in a standard format, and within prescribed reporting time limits. Such a system would allow for the rapid identification of fire ignition trends and would permit the timely design and delivery of targeted prevention programs and activities. The State Fire Marshal's Oregon All Incident Reporting System (OAIRS) may be a key component in the solution.	OSFM ODF

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
163	Upload the newest available data into the Oregon Wildfire Explorer portal as available. In 2019 the Oregon Wildfire Risk Explorer (OWRE) Tool was completed through federal grant funding to make available the most up to date information available on wildfire risk. This tool was created to develop an online portal available to the public to look at current and potential risk and assist in planning and development. Data utilized as a base for this wildfire risk portal was taken from the Quantitative Wildfire Risk assessment developed by the USFS. The purpose of this online tool is to deliver the best wildfire risk information to homeowners, communities, local managers, and planners. It has been utilized in updating CWPP's and provides guidance and educational resources for the public. Beyond the wildfire risk information, this tool is used as an avenue to show current large fire perimeters and where historical fire starts have happened. ODF has goals to improve and add to this mapping tool in collaboration with OSU into the future by adding in a new Wildland Urban Interface layer and a new Communities at Risk layer. Other updates will be implemented as data becomes available to help planners and the public assess wildfire risk.	ODF
164	Continue to educate communities, workers, and the public about the role of proper tree pruning and care in preventing damage during windstorms. Arboricultural groups, public agencies, and utilities should cooperate in promoting proper tree pruning and care practices that can reduce the risk of tree failure and property damage. Common messages refined by state level entities such as the Oregon Department of Forestry (ODF) and OSU Extension can help provide continuity and efficiency across the state. While implementation of this action largely takes place at the local government level, the state has a role in encouraging and providing incentives for best management practices. ODF maintains and implements a communication plan that includes educational initiatives aimed at improving tree health in cities. This includes a variety of products, including a bimonthly newsletter, a website, and brochures that help convey these messages. OSHA requires utilities to: • Provide training to crews working on power lines in worker safety and the identification of trees to prune or remove; and • Review regulations and standards for easement and right of way maintenance, and provide training to foresters and logging crews. Utilities should instruct homeowners in pruning of vegetation, tree care safety, and proper tree care for trees bordering utility corridors and public rights of way.	ODF
165	Use industry best practices to minimize impact and outages to service delivery system of overhead line operators, during windstorm events. Implement outreach efforts through existing safety-related programs managed by the PUC in coordination with private and public utilities. Compliance with PUC administrative rules includes safety codes and vegetation management. The PUC provides administrative support to the Oregon Utility Safety Committee where all utility operators (electric, natural gas, telecommunication & water) discuss safety issues and best practices.	PUC

2025 Oregon NHMP Ongoing Mitigation Actions		
Priority	**2025 Oregon NHMP Ongoing Mitigation Action**	**Lead or Collaborating Agencies**
166	Educate citizens about safe emergency heating equipment. Improper use of alternate heat sources during winter storms can cause fires. Ongoing efforts of the Office of Oregon State Fire Marshal and its work with local fire departments through the Oregon Life Safety Team (Oregon State Fire Marshal : Oregon Life Safety Team : Education : State of Oregon). In addition, people can be killed by carbon monoxide emitted by fuels such as charcoal briquettes when used for heating homes. To reduce the threat of carbon monoxide poisoning, known as the silent killer, the 2009 Legislature passed HB 3450a requiring landlords to install carbon monoxide alarms in rentals with a carbon monoxide source and homeowners must ensure they are installed in homes at the time of sale, if the home has a source. Sources include gas heating or fireplaces, wood-burning fireplaces or stoves and attached garages. Partnerships for consistent public education messages and outreach are underway and will include information on the dangers of introducing a carbon monoxide risk.	OSFM
167	Continue educating motorists on safe winter driving, including how to be prepared for traveling over snowy and icy mountain passes. Actions such as sanding, applying de-icing chemicals, and snowplowing do not make the road safe. Motorists must drive at speeds appropriate for the weather and road conditions and be prepared to handle adverse conditions. Many drivers do not carry chains and do not know how or simply do not install them when conditions warrant. Also, many drivers are not prepared for a long wait in their car. Education programs would help save lives on snowy and icy roads.	ODOT

9.6 Status of 2020 Oregon NHMP Priority and Ongoing Mitigation Actions

9.6.1 Status of 2020 Oregon NHMP Priority Mitigation Actions

The following table reports the status of the 2020 Oregon NHMP priority mitigation actions. DLCD gathered this data in July 2024 in preparation for evaluating the 2024 Oregon NHMP.

Table 9.6.1 2020 Oregon NHMP Priority Mitigation Actions

STATUS: 2020 Oregon NHMP Priority Mitigation Actions							
Priority #	**2020 Oregon NHMP Priority Mitigation Action**	**Lead Agency**	**Not Started**	**Progressing**	**Completed**	**Not Pursuing**	**Explanation**
1	Update hazard probabilities in NHMP for all hazards. The method to develop probabilities in the 2025 NHMP should incorporate best scientific methods.	DOGAMI		X			Doing this through the Risk Assessment Upgrade. DOGAMI is involved in that project.
2	Develop guidance for local Gov'ts on how to use Goal 7 together with other pertinent Statewide Land Use Planning Goals to classify lands subject to natural hazards in the buildable lands inventory and adjust urban growth boundaries in a manner that minimizes or eliminates potential damage to life, property, and the environment while continuing to provide for efficient development patterns. Goal 7 discourages new development in areas subject to natural hazards. Goal 14 and other Statewide Land Use Planning Goals encourage development within urban growth boundaries. Local Gov'ts need guidance on how to classify lands subject to natural hazards in their buildable lands inventories and adjust urban growth boundaries to protect life, property, and the environment from natural hazards while providing for efficient development patterns within urban growth boundaries. This guidance will assist local Gov'ts in integrating local natural hazards mitigation plans with comprehensive plans.	DLCD		X			We have had several conversations about this within the agency, specifically related to the Governor's and Legislature's focus on housing. Work has begun and will continue. The guidance may take the form of a guidebook as envisioned here, or another form.
3	Provide funding and technical assistance to local Gov'ts to use the new guidance on classifying lands subject to natural hazards in their buildable lands inventories and adjusting urban growth boundaries. Local Gov'ts need funding and technical assistance to be able to use the new guidance on how to classify lands subject to natural hazards and adjust urban growth boundaries to protect life, property, and the environment from natural hazards while providing for efficient development patterns within urban growth boundaries. Comprehensive Plan	DLCD	X				This has not been started because it is dependent on action #2. We will strive to obtain funding for this action.

STATUS: 2020 Oregon NHMP Priority Mitigation Actions							
Priority #	2020 Oregon NHMP Priority Mitigation Action	Lead Agency	Not Started	Progressing	Completed	Not Pursuing	Explanation
	amendments are likely to result. This funding and technical assistance will promote integration of local natural hazards mitigation plans with comprehensive plans.						
4	Update Risk Scores in NHMP based on updated hazard probabilities and vulnerabilities for all hazards. The method to develop the 2025 Risk Scores should incorporate best scientific methods.	DLCD		X			Through the Risk Assessment Upgrade project, DLCD is leading development of a risk assessment tool in a geospatial environment. The tool uses a multiple-criteria decision analysis technique called, "Preference Ranking Organization Method for Enrichment Evaluations (PROMETHEE)." PROMETHEE is a sound scientific outranking method that has been used in Europe, but not to date in the US.
5	Provide technical assistance to local Gov'ts to help integrate hazard mitigation plans with local comprehensive plans. Local NHMPs are often adopted as an appendix to the comprehensive plan or separately and are therefore in practice not used to their full potential. By assisting local Gov'ts in integrating the two plans, hazard mitigation will be more easily and meaningfully implemented in local land use planning practice.	DLCD, OPDR		X			This is funded and being done with coastal communities. It is being done on an ad hoc basis with inland communities because there is no funding specifically allocated for this task.
6	Use the lessons learned from the 2020 Risk Assessment to develop a more robust and scientific standardized risk assessment methodology across all hazards, at the state and local levels. Oregon does not have a clear and common methodology to identify the most vulnerable populations across all hazards at the state and local levels. In 2013, the State IHMT Risk Assessment Subcommittee in partnership with the OPDR and the U of O InfoGraphics Lab developed a model concept, work plan, and budget. Pending funding, this model could be fully developed between 2014 and 2019 and then be used to inform the 2020 Oregon NHMP. Upon full development, the model will allow state and local Gov'ts to strategically target mitigation resources. In the intervening years the state has not been able to fund development of the model, so in 2020, we implemented a simple risk assessment pilot on seven hazards. The lessons learned from this pilot will help the state support the need for funding a more robust and scientific methodology.	DLCD		X			Through the Risk Assessment Upgrade project, DLCD is leading development of a risk assessment tool in a geospatial environment. The tool uses a multiple-criteria decision analysis technique called, "Preference Ranking Organization Method for Enrichment Evaluations (PROMETHEE)." PROMETHEE is a sound scientific outranking method that has been used in Europe, but not to date in the US.
7	Develop and fund a legislative package for general funds or lottery funds to match federal funding for local hazard mitigation planning, including additional funds for DLCD Technical Assistance Grants. Continue — and enhance where possible — state technical and planning grant assistance to cities and counties for addressing issues associated with local hazards.	DLCD		X	X		State funding for local governments to cover the non-federal cost share for FEMA grants: This has been suggested but not taken up as a DLCD POP. The legislature did, however, on its own and on a one-time basis provide funding of $20,000,000 to cover the non-federal cost share for HMGP grants. (HB 5006, 2021 Regular Session) Lack of cost-share dollars remains an obstacle for local governments, especially smaller ones, to

STATUS: 2020 Oregon NHMP Priority Mitigation Actions							
Priority #	**2020 Oregon NHMP Priority Mitigation Action**	**Lead Agency**	**Not Started**	**Progressing**	**Completed**	**Not Pursuing**	**Explanation**
							access FEMA grant funding for mitigation. It would be appropriate for OEM to take the lead on this in the future. Technical Assistance Grants: The legislature has continued to provide general funds for DLCD to award Technical Assistance Grants to local governments on a biennial basis, following each of the state budget cycles. The amount of general fund appropriated varies from one biennium to another. For a number of years, Technical Assistance Grants for natural hazards mitigation and climate change adaptation have been available, but not requested often, primarily because local governments have needed funding to address legislative mandates for initiatives such as greenhouse gas mitigation and middle housing, and additional housing. Natural hazards mitigation and climate change adaptation have been elevated in priority for awarding Technical Assistance Grants from #3 to #2.
8	Pursue Enhanced Plan status. Oregon is losing enhanced plan status in September 2020 due in large measure to budget and capacity issues. It has been definitively demonstrated that investing in mitigation generates a significant return and reduces the need for costly response and recovery activities. OEM and IHMT agencies need non-federal financial support for additional staff to match federal mitigation dollars and to engage in non-federally supported yet necessary mitigation activities. These activities include but are not limited to implementation of related state programs; integration among related state programs; integration with local government and tribal programs; and technical assistance, both financial and non-financial, for local governments and tribes.	OEM		X			While OEM has been working to correct the issues that have caused Oregon to lose enhanced status, given the very brief Oregon NHMP update planning window, OEM has determined that we will work on obtaining enhanced plan status once again in January 2026. Marian OEM has staffed up and restructured to include one SHMO, two Deputy SHMOs, and a special projects coordinator who lead three units within the Mitigation Section. OEM has hired staff to provide grants management and compliance while providing free technical assistance. OEM is working toward meeting the grants management piece using data from previous FEMA monitoring visits and Oregon Secretary of State audits to inform its decisions.
9	Establish an online platform and procedure for collecting and sharing mitigation actions from state, local, and tribal NHMPs. Currently there is no easy way for governments to research and share mitigation actions. Having an online "mitigation action tracker" would	DLCD	X				While this has been contemplated and desired for a number of years, there has not been capacity or funding to accomplish it. It is a priority now for OEM's new Director, so we anticipate

STATUS: 2020 Oregon NHMP Priority Mitigation Actions							
Priority #	2020 Oregon NHMP Priority Mitigation Action	Lead Agency	Not Started	Progressing	Completed	Not Pursuing	Explanation
	facilitate communication, cooperation, collaboration among state, local, and tribal governments, enhancing mitigation planning statewide.						that it will be funded and completed before the next Oregon NHMP Update.
10	Establish an online repository and procedure for storing finalized, FEMA-approved local and tribal NHMPs as well as the Oregon NHMP. Currently there is no single repository for local and tribal NHMPs and very few that can be found online are in their final format. Assisting local governments and tribes with finalizing their NHMPs after FEMA's final approval and uploading them to a single, online repository in a timely manner will provide opportunities for collaboration and improving state and local coordination in mitigation planning.	DLCD	X				While this has been contemplated and desired for a number of years, there has not been capacity or funding to accomplish it. It is a priority now for OEM's new Director, so we anticipate that it will be funded and completed before the next Oregon NHMP Update.
11	Create a statewide georeferenced digital database of critical infrastructure including Emergency Transportation Routes (ETR). Develop a critical infrastructure database that is suitable for sharing with the public for the purposes of hazard vulnerability assessments. This should include emergency transportation routes (ETR).	DOGAMI		X			Through the Risk Assessment Upgrade, we are developing a critical infrastructure GIS layer that will be suitable for sharing with the public. It will include transportation lifelines. Emergency Transportation Routes are a subset of transportation lifelines.
12	Establish the Oregon NHMP as a living document. Establish a platform for housing the Oregon NHMP and a procedure for continually updating and enhancing it.	DLCD	X				This was not possible to do with the 2020 Oregon NHMP due to funding and capacity issues. We look forward to doing this with the 2025 Oregon NHMP.
13	Request the Oregon Legislature to fund the State Disaster Loan and Grant Account" immediately following a presidentially declared disaster or other disaster. The State Disaster Loan and Grant Account includes an account that can be used to fund local government and school district mitigation projects after a Presidentially declared disaster. The Oregon Legislature may authorize deposits to the account when requested.	OEM		X			The state has made progress with this via HB 5006 (2022) and HB2854 (2023). With the passing of HB5006, OEM received $20M in cost share assistance for jurisdictions devastated by the 2020 wildfires. This allowed OEM and the state to cover all the cost share for DR4562 and HMGP-PF 5327. The funds left over are intended to continue helping jurisdictions with cost share issues, but OEM will need to draft administrative rules. This is on pause with the recent change of OEM from being an office to an agency, along with a shift in priorities. OEM will continue to advocate for legislative funds to assist in cost share barriers. OEM will work with our federal partners to identify federal funds that could be utilized as cost share, examples are the HUD Community Development Block Grant (CDBG) and FEMA's STORM Act.

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14	Improve state agency procedures for tracking data on state-owned/leased buildings and critical or essential facilities. Create a policy standard for facilities data collection required from state agencies on an annual basis. Develop a facilities data framework standard that best enables hazard mitigation analysis; incorporate data into DAS-CFO DataMart and make available to partner agencies at will.	~~DAS-CFO,~~ DAS-CIO, DOGAMI/DAS-GEO		X			This is being pursued through the Risk Assessment Upgrade and other initiatives.
15	Create a "Clearinghouse" for natural hazards data. Emergency responders and community planners alike need access to the best and most current natural hazards data that is available. This project would be a cooperative effort between authoritative data sources — DLCD, DOGAMI, OEM, OWRD, and federal partners (FEMA, USACE, NWS, USGS) — and would include: • Establishing a single point of online access to reliable data, maps, and information about natural hazards; • Developing, in conjunction with DAS-GEO, a "portal" to distribute this data; • Developing a multi-agency State of Oregon flood hazard website; • Providing an ongoing inventory and assessment of existing natural hazards data; and • Creating a central library for natural hazard risk assessments.	DLCD, DOGAMI		X			The Oregon Explorer was a type of natural hazards data clearinghouse but is no longer being updated due to lack of funding for agency support. The new risk assessment tool will provide this function to a certain extent, but also will need funding for continued support and maintenance. Data supplied to the risk assessment tool by state agencies should be standardized and made authoritative data layers by the Oregon Geospatial Enterprise Office's FIT program.
16	Develop a database of non-state-owned critical/essential facilities and their property values. FEMA requires the state's plan to: (a) identify critical facilities located in the identified hazard areas, and (b) estimate the potential dollar losses to those structures. Data for non-state-owned critical facilities are incomplete and lack standardization, therefore creating a wide margin of error. Identifying local non-state-owned critical facilities and gathering descriptive data for these structures will help increase the quality of the data, resulting in a more precise understanding of state and regional vulnerabilities and mitigation priorities.	OEM, DAS-GEO		X			This data was developed for previous versions of the Oregon NHMP and is currently being updated not as a database, but as a data layer to be used in the tool being developed through the Risk Assessment Upgrade project.
17	Coordinate development of a post-disaster scientific and technical clearinghouse with other state and federal agencies, higher education, and associations. When an earthquake, flood, tsunami, or other disaster strikes the state, there will be an influx of scientists and engineers from inside and outside the state to study the event and offer help. There needs to be a coordination of their efforts to put them to use in the most efficient and effective way possible. This clearinghouse will work with the emergency coordination center established immediately after the earthquake, flood, tsunami, or other disaster.	DOGAMI, DLCD	X				Nothing has been done. No agency has taken the lead.

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18	Complete a hazard mitigation policy legislative needs assessment. The Oregon NHMP contains a number of specific policy recommendations. In addition, the state of Oregon maintains a number of policies related to natural hazards and the mitigation thereof. It is unclear at this time what legislative action may be needed in order to fully implement existing and proposed mitigation actions. The State IHMT recommends completing an assessment of the potential legislation needed to implement hazard mitigation policies.	OEM, IHMT	X				The IHMT is in the process of obtaining formal recognition by the legislature. That process has been tabled temporarily until the staffing and structural changes taking place at OEM are settled. Once the IHMT has formal recognition, it will be appropriate to begin this action.
19	DCBS-DFR will teach classes for the business community about financial resiliency against natural disasters in 2020-21. Fire, flood, winter storms, and earthquakes impact Oregon's businesses as much as they do individual Oregonians. DFR is committed to leading Oregon's business community towards financial resiliency. DCBS hosts information for businesses about insurance against natural disasters. They also have published an insurance guide for small businesses. DFR will also lead disaster preparedness classes with Oregon's business community.	DCBS-DFR		X			DFR works especially with the Construction Contractors' Board; it has begun to work with the Small Business Development Centers as well, work it intends to increase.
20	Establish formal and official authority for the State IHMT. Since its formation, the State IHMT has continued to play a major role in hazard mitigation activities, including the development of this hazard mitigation plan. There is strong agreement that the State IHMT is important, should be continued, and ought to be made permanent because it is the only state body focused on coordination of natural hazard mitigation. It is recommended that the State IHMT be formally and officially established.	OEM		X			OEM and the State IHMT members crafted a draft charter for the State IHMT. OEM is continuing to work with Oregon DOJ and the Governor's Office to determine the most effective way to formally recognize the State IHMT. OEM leadership believes in the value of the State IHMT and that it should be a permanent group to provide recommendations on overall mitigation strategies, collaborate on mitigation-focused programs, and provide OEM with guidance on HMA grant reviews.
21	Review and adjust State IHMT membership. As state and agency priorities and personnel change, agency membership should be reviewed and adjusted, and member agencies should be encouraged to budget for participation in State IHMT activities. In late 2014, Emergency Support Functions were reassigned, and the new structure should be considered when reviewing State IHMT membership. When membership is aligned with its goals and mitigation actions, the State IHMT will provide better oversight and leadership of the state's mitigation strategy and programs.	OEM		X			OEM adjusts IHMT membership continuously. OEM does not have authority to require other agencies to budget for State IHMT work, especially without formal recognition and any authority that recognition may confer. The Governor's Office has authority to require agencies to budget for State IHMT work.
22	Provide technical assistance to "most vulnerable communities" to undertake resilience activities for the hazards to which they are most vulnerable. Most vulnerable communities require technical support to understand how to best improve their resilience. A priority region is the coast, and should include critical facilities, specifically hospitals, healthcare facilities and vulnerable populations, and lifeline infrastructure, specifically water and power.	DOGAMI		X			DLCD has contracted with DOGAMI to assess and identify communities vulnerable to natural hazards. Just getting started identifying indicators, test runs with model, becoming familiar with assessment tool (PROMETHEE).

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23	Complete comprehensive multi-hazard and climate change vulnerability assessments Vulnerability assessments are necessary for assessing risk and developing mitigation actions and adaptation strategies. There is a significant amount of overlap between them, providing opportunities to coordinate, integrate, streamline, and leverage resources.	DLCD		X			The Risk Assessment Upgrade will produce ranked list of vulnerable areas statewide. A climate change social vulnerability assessment has been completed by DLCD. Many other agencies are involved in producing vulnerability assessments to serve the scopes of their work.
24	Develop plans to create a lifelines backbone for the 11 coastal communities with hospitals. Coastal hospitals will require fuel, electricity and water to operate after a Cascadia event. Currently, power and water infrastructure is extremely vulnerable. Cost effective methods to ensure a reliable power and water are urgently needed.	OHA		X			In 2019, OHA and DOGAMI worked together on a Coastal Hospital Resilience Project to improve disaster resilience to a Cascadia Subduction Zone earthquake. These plans include guidance to be locally self-sufficient for three weeks, evaluate seismic vulnerabilities of hospitals and identify alternate care sites, and develop a hospital resilience plan. Additionally, the Project engaged the Oregon Coastal Hospital Resilience Network, local emergency managers, and power and water service providers.
25	Set climate change adaptation policies and priorities. The state is working on developing a leadership structure for leading, directing, and resourcing coordinated statewide climate change adaptation strategies. In the near term (2021-23), the Governor's Carbon Policy Office, Natural Resources Cabinet, Global Warming Commission, and Environmental Justice Task Force intend to work together to set climate change adaptation policies and priorities.	The Governor's ~~Carbon Policy~~ Office Natural Resources and Climate Policy Advisor, DLCD		X			With the change in Governor in 2022, there is no longer a Carbon Policy Office. The Global Warming Commission is now the Oregon Climate Action Commission, and although it could address climate adaptation, it has focused on reducing carbon emissions and increasing sequestration.
26	Request and compile seismic and flood information for personnel-occupied buildings from other agencies. Determine flood and earthquake damage and losses expected to occur to the state-owned building inventory and provide advice on higher education buildings. Produce information to enable development of statewide priorities and strategies to guide mitigation of earthquake risk, to protect lives during an earthquake, and to preserve ongoing operations after an earthquake. Use accepted methods to determine building type, construction and occupancy, to estimate damage and losses due to various earthquake scenarios and probabilities relating to building codes.	DAS-CFO, DOGAMI		X			DOGAMI has requested the state-owned buildings data from Oregon Department of Administrative Services. Next steps include characterizing and identifying vulnerabilities within state owned buildings. After these vulnerabilities are developed, we will run HAZUS on this dataset to estimate damage and loss.

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27	Prioritize resilience activities in "most vulnerable communities" for the hazards to which they are most vulnerable. Most vulnerable communities require analyses and technical support to improve their resilience. A priority region is the coast, and should include critical facilities, specifically hospitals, healthcare facilities and vulnerable populations, and lifeline infrastructure, specifically water and power.	DOGAMI		X			DLCD has contracted with DOGAMI to assess and identify communities vulnerable to natural hazards. Just getting started identifying indicators, test runs with model, becoming familiar with assessment tool (PROMETHEE). Results of this study will be used by DLCD to prioritize communities.
28	Provide outreach to "most vulnerable communities" and tribal governments to help citizens understand hazards and how to better prepare for the hazard events to which they are most vulnerable. Most vulnerable communities and tribal governments require educational and learning opportunities to understand how to best improve their resilience. A priority region is the coast, and should include critical facilities, specifically hospitals, healthcare facilities and vulnerable populations, and lifeline infrastructure, specifically water and power.	DOGAMI		X			DLCD has contracted with DOGAMI to assess and identify communities vulnerable to natural hazards. Just getting started identifying indicators, test runs with model, becoming familiar with assessment tool (PROMETHEE). Results of this study will be used by DLCD to prioritize communities and develop dedicated outreach strategies.
29	Identify funding to support various public transportation providers and local jurisdictions to conduct comprehensive vulnerability assessments of their transportation facilities and services. OSSPAC, in the Oregon Resilience Plan has identified an immediate near-term need to inventory and assess vulnerability and mitigation opportunities for local street networks, transit assets, ports, airports, and railroads. The Oregon Resilience Task Force in its October 2014 report to the Oregon Legislature suggested ongoing funding inventory, assessment, and mitigation. These activities would serve to reduce vulnerability to a Cascadia Subduction Zone event.	ODOT, OSSPAC (OEM)	X				There is no funding for OSSPAC to do this. There might be better agencies that could do this. ODOT continues to identify and pursue funding sources for vulnerability assessments, but focus is being placed on actual mitigation projects vs. new assessments. ODOT is working on creating and maintaining a grant application group for the Agency. Pursuing these grants is difficult due to lack of resources, but ODOT is hoping to alleviate those difficulties with the grant application group once it is established (official name to come).
30	Develop probabilistic multi-hazard risk maps for the Oregon Coast. Consider and examine combinations and permutations of multi-hazard risk exposure and maps for the entire Oregon Coast.	DOGAMI			X		DOGAMI published earthquake and tsunami impact analyses for every coastal county and are working on a coastwide update/summary now, to be published later this year. They're based on DOGAMI's tsunami modeling (i.e. XXL, Large, Medium) which are deterministic in nature, not probabilistic. They use FEMA's tsunami and earthquake hazus models in combination with robust population models that account for permanent and temporary visitors to the coast. The reports contain community-specific profiles that summarize a lot of the findings at the city-level for Medium, Large and XXL. Curry: www.oregon.gov/dogami/pubs/Pages/ofr/p-O-23-08.aspx

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							Lane, Douglas, Coos: https://pubs.oregon.gov/dogami/ofr/O-22-06/p-O-22-06.htm Lincoln: https://pubs.oregon.gov/dogami/ofr/p-O-21-02.htm Tillamook: https://pubs.oregon.gov/dogami/ofr/p-O-20-14.htm Clatsop: https://pubs.oregon.gov/dogami/ofr/p-O-20-10.htm Pilot study of 5 coastal communities that did a much deeper dive into population: https://pubs.oregon.gov/dogami/ofr/p-O-20-10.htm DOGAMI has also published a more general multi-hazard analysis for Tillamook County (flood, landslide, coastal erosion, wildfire, EQ and tsunami): https://pubs.oregon.gov/dogami/ofr/O-23-01/p-O-23-01.htm
31	Conduct critical infrastructure vulnerability analysis in "most vulnerable communities" for the hazards to which they are most vulnerable. Most vulnerable communities require analyses and technical support to improve their resilience. A priority region is the coast, and should include critical facilities, specifically hospitals, healthcare facilities and vulnerable populations, and lifeline infrastructure, specifically water and power.	DOGAMI		X			DLCD has contracted with DOGAMI to assess and identify communities vulnerable to natural hazards. Critical infrastructure data is being developed and will be used for risk analysis.
32	Activate the Climate Change Adaptation Work Group. The Climate Change Adaptation Workgroup begins supporting the ~~Carbon Policy~~ Office, Natural Resources Cabinet, and Global Warming Commission.	The Governor's Office Natural Resources and Climate Policy Advisor, DLCD	X				The Global Warming Commission is now the Oregon Climate Action Commission, and although it could address climate adaptation, it has focused on reducing carbon emissions and increasing sequestration. Therefore, no support on climate adaptation has been called for or provided.
33	Formalize the Climate Change Adaptation Work Group. The purpose of the Climate Change Adaptation Work Group is to continue interagency collaboration and lend technical support to the ~~Carbon Policy~~ Governor's Office, Natural Resources Cabinet, and Global Warming Commission. One state agency will be assigned to coordinate the Work Group.	The Governor's Office Natural Resources and Climate Policy Advisor, DLCD		X			DLCD is the agency supporting the Climate Change Adaptation Work Group (now known as the Climate Change Adaptation Framework Implementation Team). Members of this group follow the activities of the Oregon Climate Action Commission and contribute to the Environmental Justice Council's work.

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34	Establish a Multi-agency Climate Change Adaptation Leadership Structure. Establish a climate leadership structure including both a short- and long-term plan for leading, directing, and resourcing coordinated statewide climate change adaptation strategies.	The Governor's Office Natural Resources and Climate Policy Advisor, DLCD	X				This has not been prioritized within the current Governor's Office or the Natural Resources Cabinet. We continue to strive to achieve this. Delete #43 in favor of this action.
35	Develop coastal staging areas to address post-Cascadia disaster damage. Coastal Oregon will be geographically isolated into "islands" after a Cascadia event. Staging areas and equipment should be identified and developed. Pre-disaster planning and mitigation should be conducted factoring in the staging areas and include identifying how to connect islands using various modes of transportation, such as planes and boats, and with use of temporary emergency roads, such as with culverts and gravel.	DOGAMI, DLCD		X			OEM completed "Island Mapping Pilot Project" and subsequent workshops to identify islanding impacts from potential Cascadia events. Results are available for download on RAPTOR Oregon Department of Emergency Management : Cascadia Island Mapping : Hazards and Preparedness : State of Oregon ODHS used Oregon Resilience Plan and transportation assessment to create Oregon Resilience Island Map: Oregon Resilience Island Map (arcgis.com) ODHS mass care service planning for Cascadia event- 31 islands identified, XXL event used, 36% of Hwy101 in non-accessible zone ODHS also tested Oregon's first set of evacuation assembly point equipment in Tillamook in 2023 after identifying Tiillamook as a suitable staging area following a Cascadia event ODHS News Release (oregon.gov).
36	Request seismic and flood information from landlords as part of analyzing potential leased spaces going forward in new leases and potential renewals. Determine flood and earthquake damage and losses expected to occur to the state-owned building inventory including higher education buildings. Produce information to enable development of statewide priorities and strategies to guide mitigation of earthquake risk, to protect lives during an earthquake, and to preserve ongoing operations after an earthquake. Use accepted methods to determine building type, construction and occupancy, to estimate damage and losses due to various earthquake scenarios and probabilities relating to building codes.	DAS-EAM, DOGAMI		X			DOGAMI treats state-owned and –leased buildings similarly in the seismic and flood risk dataset. DOGAMI has requested new leased building information from DAS and will include it in the new 2025 dataset.

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37	Establish funding for climate change adaptation activities. Establish 2023-2025 biennial funding targets for climate change adaptation activities. Continue to fund the Oregon Climate Change Research Institute to provide Oregon state agencies with usable, down-scaled climate change information.	The Governor's Office Natural Resources and Climate Policy Advisor, DLCD		X			Cannot establish biennial funding targets without Governor Office involvement. The Oregon Climate Change Research Institute has continued to be funded for usable, down-scaled climate change information. Break into 2 parts.
38	Use DAS-CFO data and investigation/inventory of seismic and flood risk to DAS-owned/leased buildings in an effective, routine decision-making process for building occupancy, maintenance, use and potential mitigation treatments. This information over time can provide for strategic and responsible voluntary flood and seismic upgrades in areas of greatest need for reasonable cost as a part of broader facilities management.	DAS-CFO		X			DAS is reviewing all the buildings the state leases for potential downsizing, including flood and seismic risks. The data is intended to be used in decision-making processes. Once the data is collected, it will be used as described.
39	Collaborate on a landslide workshop to increase the State's understanding of co-seismic landslides. We believe there will be many co-seismic landslides triggered in the next earthquake. However, we don't understand where and how far inland and the risk. The co-seismic landslides will be a significant portion of the earthquake hazard and understanding it will help with pre and post disaster mitigation.	DOGAMI		X			Started in 2019. DOGAMI has issued some publications regarding dating landslides to determine if they are co-seismic. This is an ongoing priority project until the region experiences a Cascadia earthquake event, and then further studies will be needed.
40	Pursue funding for developing data to support assessments of probability, vulnerability and risk for drought, extreme heat, windstorms, and winter storms. Drought, extreme heat, windstorms, and winter storms are significant hazards in Oregon, but very little data is available to properly assess probability, vulnerability and risk. To better protect the public, Oregon must find funding to develop the necessary data.	DLCD		X			This has not been taken on as a single action in a coordinated fashion, in part due to funding, personnel, and capacity issues. Through the Risk Assessment Upgrade, we are gathering data and using it to better assess these hazards.
41	Conduct a pilot project on two coastal estuaries to develop a framework for modeling sea level rise and to assess the overall impact of sea level rise on the estuaries. Implement sea level rise modeling for the pilot study areas. Study results will be used to guide a future, more comprehensive and coast-wide assessment of sea level rise impacts. Once completed, the results can be used to minimize future damage or loss of property and the environment.	DOGAMI, DLCD		X			DLCD is completing in 2024 an updated version of the Sea Lever Rise Guide for local governments based on this work.

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42	Collaborate on a workshop to increase the State's understanding of co-seismic landslide triggered tsunami. We have a very poor understanding of co-seismic landslides which can cause tsunamis. Some of these can occur underwater. New high resolution bathymetry data would help us understand what has happened in past earthquakes and thus understand the future.	DOGAMI	X				Funding is lacking. Start date will be based on when funding becomes available.
43	Formalize a small Climate Change Adaptation Leadership Team. The CCA Leadership Team would focus on prioritizing actions that optimize use state resources to achieve multiple co-benefits among the most affected communities and ecosystems and have the ability to strategically plan over multi-biennium.	The Governor's ~~Carbon Policy~~ Office Natural Resources and Climate Policy Advisor, DLCD		X			This would be the first step to #25, setting climate change adaptation policy at the state level. Efforts to establish such a leadership team so far not been successful, be we continue to strive to achieve this action. Delete – duplicates #34.
44	Undertake open-coast assessment of the impact of future sea-level rise combined with storm wave erosion assessments. Undertake assessments of future sea level rise change for open coast beaches and shorelines to determine susceptibility and risk from storm-induced erosion, overtopping and flooding.	DOGAMI			X		Dune-backed beach coastal erosion analysis/hazard zone reports cover most if not all dune-backed beaches on the coast. Bluffs included in some reports but not all. Erosion due to storms is always incorporated. Also considered when relevant: large landslides, geology, CSZ subsidence, etc. The newer reports include SLR, the oldest ones do not. Clatsop Plains: https://pubs.oregon.gov/dogami/ofr/O-01-04.pdf Tillamook County (new, but dunes only): https://pubs.oregon.gov/dogami/ofr/p-O-14-02.htm Till Co (old, but includes bluffs): https://pubs.oregon.gov/dogami/ofr/O-01-03.zip South Clatsop County: https://pubs.oregon.gov/dogami/ofr/O-09-06.zip South Lincoln County: https://pubs.oregon.gov/dogami/ofr/O-07-03.zip North Lincoln County: https://pubs.oregon.gov/dogami/ofr/O-04-09.zip Central Curry County: https://pubs.oregon.gov/dogami/ofr/O-04-20.zip

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45	Undertake inner bay total water level modeling. Modeling would incorporate inner bay and outer coast processes, similar to modeling performed in Grays Harbor, WA.	DOGAMI		X			DOGAMI has completed tsunami modeling extending into all the major estuaries: Columbia River, Coos Bay, and Umpqua. They also generated maritime guidance documents for the major ports in the estuaries above as well as Newport/Toledo. A NOAA CRRC grant application has been submitted by the Columbia River Estuary Study Taskforce, Pacific Northwest National Laboratories, DLCD, and Clatsop County to complete modeling for the Columbia Estuary.
46	Develop an improved methodology for gathering data and identifying the communities most vulnerable to drought and related impacts. Although we know that areas in Oregon have suffered from drought, there has not been a coordinated effort to systematically characterize how frequently droughts have occurred, or the impact on Oregonians and ecosystems. Communities are beginning to plan for worst case drought scenarios and need better information about the frequency, duration, and intensity of previous droughts in order to assess the appropriate response. Comprehensive information is not currently available by region, or statewide.	OWRD, OCCRI		X			This is being done through the Risk Assessment Upgrade, but more could be done to improve the data gathering methodology. The Oregon Climate Service and OCCRI characterized historical drought occurrences in Oregon from 1950–2022 on the basis of common indices of meteorological drought (evaporative demand that exceeds precipitation over a long period) and hydrological drought (extended periods of meteorological drought that affect surface water supply or soil moisture). Analyses were conducted at three levels: statewide, six regions delineated on the basis of drought conditions, and counties.
47	Implement the improved methodology for gathering data and identifying the communities most vulnerable to drought and related impacts. Although we know that areas in Oregon have suffered from drought, there has not been a coordinated effort to systematically characterize how frequently droughts have occurred, or the impact on Oregonians and ecosystems. Communities are beginning to plan for worst case drought scenarios and need better information about the frequency, duration, and intensity of previous droughts to assess the appropriate response. Comprehensive information is not currently available by region, or statewide.	OWRD		X			This is being done through the Risk Assessment Upgrade, but more could be done with an improved data gathering methodology. See comments for Action #46.
48	Document the economic, social, cultural, and environmental impacts of drought. Documenting drought conditions, especially its impacts on people and the environment, is an important component of understanding and preparing for future droughts. Oregon does not have the resources to conduct a thorough analysis of drought's impact to various sectors. Today, most impact-related data is collected anecdotally. The state should invest in ways to track and quantify the effects of drought and assist the most vulnerable communities.	OWRD		X			Part of this is being done through the Risk Assessment Upgrade and part will be done through the Oregon NHMP Update for 2025. The Oregon Drought Monitor Advisory Committee issues weekly consensus recommendations on classification of

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	Any drought assessment should also include a summary of drought frequency, distribution, intensity, and duration. Doing so is critical, especially as climate projections indicate that the Pacific Northwest will more regularly experience warmer temperatures.						drought to the U.S. Drought Monitor. Accurate classification of drought severity and extent is essential to determine eligibility for federal drought-assistance programs, such as low-interest loans from the U.S. Department of Agriculture and tax deferrals on livestock sales from the Internal Revenue Service. The Oregon Drought Readiness Council advises the Governor's office on county-level requests for state-issued drought declarations. These declarations affect issuance of emergency water use permits, transfers of water diversions, and other forms of support. Outreach on these subjects to the public, government agencies, and local organizations aids in preparation for changes in water supply. Each year, the Oregon Climate Service, Office of the Washington State Climatologist, Idaho Department of Water Resources, NOAA's National Integrated Drought Information System, and collaborators assess the impacts of the preceding water year on diverse sectors in Oregon, Washington, and Idaho. For example, the assessments address the effects of temperature and precipitation on water supply, irrigation, hydropower generation, forestry, fisheries, recreation, selected agricultural crops, and production of forage for livestock. Some of the data included in the assessment come from an annual Pacific Northwest Water Year Impacts Survey distributed by the University of Washington and from Condition Monitoring Observer Reports submitted to the National Drought Mitigation Center. The former is distributed at the end of the water year to natural resource managers, agency staff, and all registrants for the annual water year recap and outlook meeting. The latter are submitted throughout the year by members of the public. For an example, see https://www.drought.gov/sites/default/files/2024-03/NIDIS_PNW_Water_Year_Impacts_Assessment_2023.pdf.
49	Support and implement the actions in the February 2013 Oregon Resilience Plan and recommended in the Oregon Resilience Plan Task Force's October 2014 report. The Oregon Resilience Task Force was established by Senate Bill 33. It was tasked to facilitate a	OEM			X		2014

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	comprehensive and robust plan to implement the strategic vision and roadmap of the Oregon Resilience Plan for responding to the consequences of naturally occurring seismic events associated with geologic shift along the Cascadia subduction zone. The Task Force's report was delivered to the legislature on October 1, 2014.						
50	Update the Statewide HAZUS analyses for earthquakes. The State requires an updated analysis to understand and improve its resilience. The last analysis was conducted in 1999 and is very outdated. The analyses should include a magnitude 9 Cascadia earthquake and tsunami including soil types, co-seismic landslides and liquefaction. Also, a probabilistic analysis should be completed.	DOGAMI	X				This is a very high priority action and DOGAMI is currently looking for funding. Start date will be based on when funding becomes available.
51	Prioritize mitigation actions of critical State of Oregon infrastructure for Cascadia Continuity of Government (COG) in high-risk communities. Identify vulnerable critical State of Oregon infrastructure for Continuity of Government, including emergency service buildings and other important government buildings, and prioritize mitigation actions starting in high-risk communities. Include state assets in Marion County.	DOGAMI		X			DOGAMI evaluated critical facilities and plans to continue the evaluation, with an update from the 2020 data set.
52	Prioritize mitigation and retrofit projects on seismic lifelines. ODOT Seismic Lifelines Evaluation, Vulnerability Synthesis and Identification Report provides recommended priority corridors but does not provide sufficient detail to actually prioritize retrofit investment packages. Engineering evaluations and cost estimation are ongoing on a funding-available basis and will inform that prioritization process.	ODOT		X			ODOT continues to prioritize mitigation and retrofit projects on seismic lifelines as funding and resources allow.
53	Update Statewide Ground deformation maps. Updated maps of soil amplification and liquefaction should be used to make new maps of the risks of co-seismic liquefaction and landslide ground deformation to be included in an update of 2013 statewide earthquake hazard layers.	DOGAMI			X		Oregon Seismic Hazard Database (OSHD) has been completed (see https://pubs.oregon.gov/dogami/dds/p-OSHD-1.htm).
54	Conduct an earthquake risk analysis that focuses on hazards relating to hazardous materials. The State does not understand the risk that earthquakes pose to sites with hazardous materials and does not have location specific awareness or emergency plans.	DEQ				X	This action should not have been included as a mitigation action in 2020 because the NHMP does not address hazardous materials.

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							However, with the 4/19/23 effective date of the State Mitigation Planning Policy Guide, the NHMP must address hazardous materials (one of the FEMA Lifelines).
55	Conduct seismic mitigation of 5 coastal facilities for the purposes of medical care and sheltering. The coast will experience the strongest shaking and a tsunami from a Cascadia disaster, resulting in injuries and displaced people. Residents and visitors will require medical attention. Tsunami refugees will require sheltering.	Business Oregon, OHA-HSPR, DHS-OREM		X			Progressing but there are barriers to full implementation. The Business Oregon Seismic Rehabilitation Program awarded funds to Samaritan Pacific Communities Hospital in Newport in 2017 and Peace Harbor Medical Center in Florence in 2019. Many of the hospitals on the coast are too small to have inpatient services and space for sheltering; they typically have a small ER or clinic and then transport patients to larger facilities. It is very difficult to retrofit a hospital for $2.5 million, and hospitals may not apply due to need for a local match as the grant program requires a full seismic retrofit and it can be hard to segment off areas of buildings.
56	Update Statewide Liquefaction maps. New highly detailed geologic maps produced with LIDAR should be used to make new maps of soil types which may liquefy due to earthquake shaking to be included in an update of 2013 statewide earthquake hazard layers.	DOGAMI		X	X		Oregon Seismic Hazard Database (OSHD) has been completed (see https://pubs.oregon.gov/dogami/dds/p-OSHD-1.htm). However, this action should be an ongoing action since there is necessary upkeep of the database.
57	Publish new probability of earthquake damage maps. New USGS hazard data should be used to make simple maps showing the probability of experiencing damaging shaking be included in an update of 2013 statewide earthquake hazard layers.	DOGAMI		X	X		Oregon Seismic Hazard Database (OSHD) has been completed (see https://pubs.oregon.gov/dogami/dds/p-OSHD-1.htm). However, this action should be an ongoing action since there is necessary upkeep of the database.
58	DCBS-DFR will teach classes about earthquake insurance in 2020-21. Earthquake insurance is offered by private sector agents, generally as a rider to a standard homeowner or business property insurance policy. Because earthquake insurance is a type of catastrophic coverage, most policies carry a high deductible. Oregon's Department of Consumer and Business Services Division of Financial Regulation offers information about earthquake insurance on its website and provides personal assistance through its insurance hotline. In addition, the Division is active in outreach activities, partnering with other agencies and organizations to bring insurance information to the public.	DCBS-DFR		X			This material is typically included along with related topics; one source utilized is the Earthquake Insurance Guide produced by NAIC; they also do social media work with CREW (including occasionally receiving funding via CREW); also participate in The Great Oregon ShakeOut and utilize that annual event for education.

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59	Update Statewide NEHRP maps. New highly detailed geologic maps produced with LIDAR should be used to make new maps of soil types which may amplify earthquake shaking to be included in an update of 2013 statewide earthquake hazard layers.	DOGAMI		X	X		Oregon Seismic Hazard Database (OSHD) has been completed (see https://pubs.oregon.gov/dogami/dds/p-OSHD-1.htm). However, this action should be an ongoing action since there is necessary upkeep of the database.
60	Publish available information about new faults. DOGAMI has identified dozens of new faults from LIDAR acquired to date, few of which have been described in publications, which is a prerequisite for inclusion in the USGS hazard maps. Summary data about these faults should be published as part of a currently funded update of statewide earthquake data.	DOGAMI		X			Numerous studies have been published regarding new faults. This is an ongoing action until all areas are completed. Funding dependent.
61	Assess hazards associated with active crustal faults newly discovered by statewide lidar program. Particularly in central and eastern Oregon, the major earthquake hazards result from poorly known crustal faults. Lidar has greatly expanded the ability to find these faults, which should be systematically evaluated for their potential to generate damaging earthquakes using trenching, geophysical and field studies. This action would help communities prepare and mitigate for newly defined hazard areas in central and eastern Oregon.	DOGAMI		X			To achieve or start this action, Action #60 needs to occur first. Although several studies have been conducted as indicated above under #60, the hazards have not been assessed. Start date unknown.
62	Create new regulatory authority to address the State's fuel insecurity at the Critical Energy Infrastructure Hub. The State requires new regulatory authority that may be created through new legislation. OSSPAC issued a CEI Hub report with recommendations in Dec 2019.	OEM	X				This was not started under the previous leadership at OEM (the state agency supporting OSSPAC). Once the changes at OEM are settled, OEM's current leadership can coordinate with OSSPAC, IHMT, and ODOE to implement this action.
63	Develop State of Oregon Cascadia Continuity of Government (COG) plan. Develop a response and recovery plan that integrates state assets to ensure State continuity of government at the leadership and agency levels for a Cascadia earthquake. Improve capacity of state agencies to minimize damage and be responsive to urgent post-disaster needs.	DOGAMI		X			Not currently working on a COG plan, however DOGAMI has a completed a continuity of operations plan and is working on an internal disaster response plan. DOGAMI has also been working on a data clearinghouse plan to manage scientific requests for and organization of data after a Cascadia event. Related to action #11.
64	Evaluate earthquake hazards in Bend region. Faults in the Bend-Sisters area should be systematically mapped and evaluated for evidence of recent activity in order to assess the earthquake hazards for Central Oregon communities.	DOGAMI	X				Funding is lacking. Start date will be based on when funding becomes available.
65	Update DOGAMI Rapid Visual Survey database on emergency service buildings. Update the Rapid Visual Survey data for the emergency service buildings in DOGAMI 2007 statewide seismic needs assessment. Include data to assist with conducting benefit cost analyses and for prioritization of mitigation.	DOGAMI		X			DOGAMI will be updating this data for Klamath, Crook, and Yamhill Counties. Planned but the timing is unknown.
66	Lidar survey the State's ROW (rights of way), west of the Cascade Range, to determine where seismic fault potential exists. The acquired information can improve critical	DOGAMI		X			DOGAMI does this determine with each fault mapping project it conducts. This is an ongoing action as funding dictates.

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	infrastructure resilience in the face of seismic events, by providing useful information to planners, design professionals and decision makers prior to delivery system construction.						
67	Rectify state "border" faults with Nevada, Idaho, CA and Washington. The USGS fault database includes numerous discontinuous faults, particularly in Eastern Oregon, so that the probabilistic national seismic hazard maps underestimate the hazard. The continuation of mapped faults needs to be evaluated and descriptions need to be published in order for them to be used by USGS.	DOGAMI	X				Funding is lacking. Start date will be based on when funding becomes available.
68	Plan using Regional Resilience Assessment Program (RRAP) multi-modal transportation report. Develop local and state plans including push solutions to connect islands as discussed in the DHS Regional Resilience Assessment Program (RRAP) report. Integrate emergency transportation routes, including multimodal transportation methods by air, land and water. Include Willamette Valley planning and coastal communities planning.	DOGAMI				X	No funding streams available.
69	Achieve 100% state agency participation in the Great Oregon ShakeOut. Practicing to "drop, cover, and hold" is critical in reducing injury and loss of life in the workplace and home during an earthquake. The more people practice the drill, the better they will respond to a real event. State agencies are setting an example by conducting a drill annually. The State of Oregon will have 100% State agency participation in the Great Oregon ShakeOut and will encourage schools and universities to participate.	OEM		X			Many state agencies participate in the ShakeOut.
70	Increase penetration of air conditioning systems for most vulnerable communities in areas most at risk to extreme heat events. Increasing penetration of air conditioning systems particularly in manufactured homes in Cooling Zone 3 and in multifamily homes/apartments across the state, would help alleviate adverse impacts from extreme heat events.	OHA		X			OHA has dedicated 1 FTE to plan to fund and install air conditioning units in communities most affected by extreme heat, such as manufactured homes and multifamily homes and apartments, among others. Work continues to establish a consistent supply chain of air conditioning units.
71	Map climate and environmental data with demographic and health data. Map climate and environmental data with demographic and health data to help identify most impacted communities for targeted interventions and investment.	OHA		X			OHA has multiple streams to map climate and environmental data with demographic data. OHA has the Oregon Tracking Program, which includes the Oregon Tracking Data Explorer. The Data Explorer provides dynamic maps, graphs, and information about a broad range of environmental and health indicators and measures.
72	Produce new lidar-based flood hazard maps Lidar-based flood hazard maps are produced for counties or watershed as funding is provided. These maps have newly delineated flood zones based on new detailed studies, new coastal analysis, and/or delineation of existing zones based on new topography data (lidar). Lidar-based flood hazard maps are being produced for rivers in Marion, Morrow, Benton, Hood River, Wasco, and Sherman Counties.	DOGAMI		X			DOGAMI and FEMA have recently produced new lidar-based flood depth grids for Tillamook, Washington, Clackamas, Polk, Douglas, Morrow, Wallowa, Marion, Morrow, Benton, Hood River, Wasco, Sherman, and Harney Counties. New maps are in-progress for Linn County to be completed by the end of 2024. New maps are planned and will be completed after 2025

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							for Columbia, Yamhill, Crook, Grant, Gilliam, Umatilla, Klamath, and Malheur Counties.
73	Through FEMA's Risk MAP program, update 1,000 miles of streams with lidar-based flood mapping. FEMA's Risk MAP program funds revisions of Flood Insurance Studies and Flood Insurance Rate Maps. The State should focus on updating these products so they are based on high quality topographic data (e.g., lidar). Lidar-derived streams are a by-product of high-quality topographic data. These more accurately located streams will assist in the improvement of a community's flood maps to more accurately show flood risk to life and property. The State should continue to pursue Risk MAP funds for this purpose.	DOGAMI		X			FEMA has updated Flood Insurance Studies for ~2,300 miles of stream between 2020-2024 and an additional ~300 miles of streams are planned to be updated in 2025. DOGAMI supports these efforts by providing technical assistance to communities across the state, coordinating with other state and federal agencies, and compiling and distributing flood-related datasets. The original intended number of miles were achieved, but this type of work will continue beyond 2025.
74	Install real-time monitoring capabilities on the remaining 51 state-operated stream gages, with the goal of making the network 100% real-time by the year 2020. The availability of timely and accurate data from stream gages is essential for flood forecasting, for prediction of imminent flood hazards, and for response to flood emergencies. Today, 178 of the state's 229 stream gages provide real-time data. Upgrade the state's existing stream gaging network, with the goal of installing real-time capability on all remaining gages.	OWRD		X			248 gages are real-time; 7 remain to be updated.
75	Investigate the impact of climate change on flood conditions in Oregon. Research and Investigations. Flood risk is strongly associated with the dominant form of precipitation in a basin, with mixed rain-snow basins in Oregon already seeing increases in flood risk. Generally, western Oregon basins are projected to experience increased precipitation, and therefore flood risk, in future decades. Federal and state agencies should seek to learn more about the potential impacts of climate change on flood conditions in Oregon and identify mitigation actions that will reduce the potentially increased risk.	DOGAMI		X			DOGAMI's risk assessments have provided qualitative statements about the impacts of climate change on flood conditions in Oregon but do not quantitatively assess these impacts. DOGAMI has incorporated the findings from the Oregon Climate Change Research Institute on future climate conditions into its studies, but additional resources will be needed to produce a detailed understanding of the impact of climate change on floods in Oregon.
76	Add at least five jurisdictions, with emphasis on coastal jurisdictions, to the Community Rating System (CRS) program during the life of each Oregon NHMP. The CRS, part of the NFIP, is a program that rewards communities for going above and beyond the minimum requirements of the NFIP in minimizing potential losses due to flooding. Participating in the CRS benefits the jurisdiction with extra flood protection and benefits property owners by lowering flood insurance rates. See the CRS Information Center at: http://training.fema.gov/EMIWeb/CRS/ for more information. Each year DLCD conducts community assistance visits in an average of five NFIP communities. During this process, qualified jurisdictions will be encouraged to participate in	DLCD		X			Description needs revised. Last sentence needs to be deleted (A regional CRS Users Group hosts quarterly CRS Users group meetings.) No jurisdictions have joined CRS in the last 5 years. Phoenix is currently attempting to become a CRS community. Clatsop County may be interested in becoming a CRS community.

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	CRS or strengthen CRS ratings. DLCD will also create a "pathway to CRS" schedule for each jurisdiction for which it conducts a community assistance visit. The state has also started CRS Users' Groups (#C, Removed and #112, Ongoing) to encourage greater participation in the CRS program.						
77	Update the state's Peak Discharge Estimation Program. Peak discharge estimation tools can help determine the magnitude and frequency of floods. The state's program provides engineers and land managers with the information needed to make informed decisions about development in or near watercourses. The Peak Discharge Estimation Program is based on a modified version of the U.S. Geological Survey's "Bulletin 17b." The U.S. Geological Survey is in the process of updating this bulletin. OWRD's methodology will need to be brought up to date to reflect these recent findings.	OWRD	X				This work has not been prioritized at this time but remains on our list of needed updates.
78	Develop guidance on determination of mudslides triggers and relation to rain or flood events. Work with FEMA Region 10, DOGAMI, and other interested parties to develop scientifically- and legally-based guidance on when mudflows are to be considered part of a rain or flood event pursuant to the NFIP. Address the definition of mudflow, regulatory factors, scientific understanding of mudslides, and implications for flood insurance.	DOGAMI, DLCD			X		Completed June 2023. DLCD now has a FEMA Fact Sheet, Understanding Mudflow and the NFIP.
79	Strengthen the existing Community Rating System (CRS) rating of at least five jurisdictions, with emphasis on coastal jurisdictions, during the life of each Oregon NHMP. The CRS, part of the NFIP, is a program that rewards communities for going above and beyond the minimum requirements of the NFIP in minimizing potential losses due to flooding. There are a number of measures a community can implement to obtain a CRS rating, and most communities do not implement them all. As a community implements more CRS flood protection measures, its CRS rating is strengthened, and the community is rewarded with better flood protection and lower flood insurance rates.	DLCD		X			Salem (4 to 3) and Lane County (7 to 6) improved their CRS ratings.
80	Install High Water Mark (HWM) signs after flood events and co-locate stage crest gages on select HWM signs. HWM signs installed in high visibility areas increase the general public's awareness of flood risk and drive flood mitigation actions in communities. They spark conversations about past floods and are a good entry point for discussions promoting mitigation actions such as elevating buildings, purchasing flood insurance, and participating in FEMA's Community Rating System Program. Stage crest gages co-located with select HWM signs will capture new high-water data when floods occur.	Silver Jackets		X			Albany, Oregon City, Portland, Turner, Vernonia, all have HWM signs (pre-2017). Signs for King Tides were installed in coastal communities w/in last 5 yrs.
81	Develop a statewide strategy to encourage the purchase of flood insurance. It's well-known that well-insured communities recover faster. A strategy will help the state direct information to under-insured areas thereby reducing vulnerability, facilitating recovery, and increasing access to "increased cost of compliance" funding.	DLCD	X				Flood Insurance as a mitigation strategy is regularly recommended as part of public outreach during flood studies.

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82	DCBS-DFR will teach classes about Flood Insurance in 2020-21. While Oregon does not regulate the NFIP, it does regulate the agents who sell it. It also has an interest in leading Oregonians towards financial resiliency. Flood insurance plays an important part of that objective. DFR hosts information about flood insurance on our website and will continue to lead outreach to the public about the value of flood insurance for both homeowners and businesses.	DCBS-DFR, ~~State Lands DLCD~~		X			DFR primarily utilizes its website, including links to related websites; it also utilizes social media; for this row and the three above, they also do in-person events; ODF staff members also noted a post-disaster claims guide and post-event work with the public at in-person opportunities.
83	Create new lidar-based Landslide Inventory and Susceptibility Maps, especially near population centers. DOGAMI will create these maps in cooperation with local jurisdictions. Specific methods and priority locations are still to be determined. The locations will be determined by the Oregon Landslide Workgroup (#6, Priority). These new maps will enable communities to introduce development restrictions or recommend mitigation strategies in areas highly susceptible to landslides.	DOGAMI		X			DOGAMI has issued numerous publications and will continue to inventory population centers until all have been completed. Once completed, DOGAMI will continue to inventory less populated areas until the entire state has been inventoried. This action is dependent on external funding. Estimated completion date unknown.
84	Assist 5 communities with post-fire landslide risk reduction. After a wildfire, there is an increased potential for landslides and specifically debris flows which are potentially life-threatening. We should be assisting communities in understanding where this hazard exists.	DOGAMI		X			This project was started in 2020 with four wildfire areas (multiple communities). DOGAMI is in the middle of this project, including conducting several community meetings. DOGAMI received 1-year extension by FEMA on this project. The expected completion is Fall 2025.
85	Upgrade the Oregon Landslide Warning System. The current warning system needs updating to include rainfall thresholds from local rainfall gauges. A permanent real-time website will be constructed to show the areas under a landslide warning that will include guidance on what people should do to help protect their life and property from a landslide.	DOGAMI		X			In 2021 DOGAMI issued a report evaluating the existing Oregon Landslide Warning System (https://pubs.oregon.gov/dogami/ofr/p-O-21-01.htm). The report included next steps and recommendations on how the existing system could be improved. Since the report was issued, no action has been taken. Continuing this project will be dependent on funding and resolution.
86	Evaluate the impact of climate change on landslides. The precipitation-triggered landslides will increase or decrease with changes in climate. Evaluation of this change will be important for the future of Oregon.	DOGAMI	X				Minimal steps have been made by other agencies or entities regarding climate change, but not specific to landslides. Start date unknown. Action #93 is dependent on this action. Consider combining #86 and #93 actions.
87	Use Lidar along State's ROW (rights of way) in 5 communities to map landslides and model where future landslides may occur. Because most landslides are reactivations, mapping the existing landslides is essential to future landslide prediction and mitigation.	DOGAMI		X			This project is being conducted with each landslide mapping project performed by DOGAMI. This is an ongoing action as funding dictates.
88	Lidar survey the State's ROW (rights of way), west of the Cascade Range, to determine where landslide potential exists. The acquired information can improve critical	DOGAMI		X			This project is being conducted with each landslide mapping project performed by DOGAMI. This is an ongoing action as funding dictates.

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	infrastructure resilience in the face of landslide events, by providing useful information to planners, design professionals and decision makers prior to delivery system construction.						
89	Collect repeat LIDAR in 5 communities and use it to monitor areas of movement. After the landslide inventory has been mapped, additional information about each landslide will assist in understanding the hazard. Specifically, the landslide activity is important and can be determined using repeat LIDAR surveys and differencing of the surveys to detect movement.	DOGAMI		X			DOGAMI is currently working on Eagle Creek and Ecola (State Park) projects. Additionally, a BRIC grant was recently submitted for the Bull Run project. This is an ongoing action with no completion date known and is based on funding availability.
90	Install landslide mitigation measures along transportation corridors that impact 5 most vulnerable communities. Landslide mitigation measures, such as rock bolts, rock nets, catchment basins, benched slopes, horizontal drains, retaining walls, will be installed to reduce the risk of landslide hazards along key corridors. This will improve the reliability of transportation mobility.	ODOT		X			ODOT continues to install landside mitigation measures as time, resources, and funding allows. ODOT hopes to identify more funding sources for these projects once the grant application group has been established and developed.
91	Collaborate on a landslide workshop to increase the State's understanding of post-fire landslide hazards in Oregon. We have a very poor understanding of the post wildfire effect on landslide risk. Understanding this relationship will help us to understand the hazard and how to mitigate.	DOGAMI		X			First workshop conducted in 2023 at the Oregon Post-fire Research and Monitoring Symposium (https://nwfirescience.org/oregon-post-fire-research-and-monitoring-symposium). This should remain as an ongoing action since the information will need to be updated and shared into the future.
92	Evaluate sediment impacts on Oregon's water resources. Oregon has unique water resources, some of which are for drinking water. Landslides can have a great impact on this resource by inputting large amounts of sediment. Evaluation of erosion potential by watershed would help the regulators and providers identify areas for mitigation.	DOGAMI		X			This is not a DOGAMI project, but DOGAMI does assist USGS/DEQ in the task. DEQ might have more information on action status.
93	Collaborate on a landslide workshop to increase the State's understanding of climate change effects on landslide hazards in Oregon. Climate change may have multiple effects on landslides in Oregon including increased post wildfire and intensity/duration rainfall events. Understanding these factors better will help us understand the change to the landslide hazard and how to mitigate.	DOGAMI	X				To achieve or start this action, Action #86 needs to occur first. Consider combining #86 and #93 actions.
94	Implement better way-finding solutions for tsunami evacuation. Create hardened and improved evacuation routes to include elevated safe areas above the level of modeled inundation. After a Cascadia Subduction Zone earthquake, a tsunami could arrive within minutes. It is essential that residents and visitors be able to quickly move to high ground on foot. This requires clearly marked and safe routes that pedestrians are able to navigate even in dark and stormy weather. Where high ground is available, projects should be identified that will enable Oregon to establish new standards and guidelines for methods to harden and mark wayfinding of tsunami evacuation routes to natural high ground. Where natural	OEM, DLCD		X			DOGAMI's Beat the Wave tsunami evacuation analyses have been completed for every community on the Oregon Coast over the past ~10 years (Brookings-Harbor and communities along the Columbia River shoreline upriver from Astoria will be published this fall). Improvements including hardening existing routes, developing new evacuation trails, retrofitting bridges, constructing one or more vertical evacuation structures, where applicable.

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	high ground is not within the expected evacuation time, evaluate the retrofit of existing facilities and/or construction of new facilities that rise above the level of tsunami inundation and can serve as safe haven refuges.						
95	Assist one coastal community per year in considering vertical evacuation structures and improved evacuation routes due to evacuation constraints. Use the anisotropic path modeling to measure the time needed to evacuate all parts of the maximum-considered Cascadia tsunami inundation zone in order to evaluate the need for vertical evacuation structures and improvements in evacuation routes. These actions will provide guidance to communities on the best locations to build vertical evacuation structures that will save lives in a catastrophic tsunami event. The results will also inform communities of priority evacuation routes needing additional signage or way-finding markers. Beat the Wave modeling is currently underway in Port Orford and Manzanita/Nehalem and planned for Gold Beach, Astoria, and Bandon.	DOGAMI, DLCD, OEM			X		DOGAMI's Beat the Wave tsunami evacuation analyses have been completed for every community on the Oregon Coast over the past ~10 years (Brookings-Harbor and communities along the Columbia River shoreline upriver from Astoria will be published this fall). Improvements including hardening existing routes, developing new evacuation trails, retrofitting bridges, constructing one or more vertical evacuation structures, where applicable.
96	Develop evacuation plans for ports and harbors at the rate of one per year. Ports and harbors are havens for commercial and recreational fishing and recreational boating industries. They are often the major centers of economic activity in coastal communities that have bays. To protect the vessels from tsunami damage requires a unique evacuation plan for both distant and local tsunamis. The plans should be integrated with community evacuation plans. The Oregon State University Extension Sea Grant Program has identified this as a major issue in their pilot project in Yaquina Bay. Their project is titled *Reducing Earthquake and Tsunami Hazards in the Pacific Northwest Ports and Harbors.* For distant tsunami events and storm surge events that can occur during any winter, evaluate potential port and harbor mitigation retrofit projects that protect and strengthen floating and anchored infrastructure such as piers, bulkheads and landings.	DOGAMI, DLCD			X		Ports were included in DOGAMI's Beat the Wave analyses, so where appropriate they considered improvements including hardening existing routes, developing new evacuation trails, retrofitting bridges, constructing one or more vertical evacuation structures, where applicable. They have not assisted any ports with their designated evacuation routes.
97	Fund and provide technical assistance for local Gov'ts to engage in evacuation route planning and project implementation. After a Cascadia Subduction Zone earthquake, a tsunami could arrive within minutes. It is essential that residents and visitors be able to quickly move to high ground. Some evacuation planning is already underway. Local Gov'ts need funding and technical assistance to begin or continue to engage in evacuation planning.	DOGAMI, DLCD			X		DLCD published "Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities," designed to assist local jurisdictions with land use planning and resilience strategies for a Cascadia tsunami event. TsunamiLandUseGuide_2015.pdf (oregon.gov) DLCD also worked with Gearhart, Rockaway Beach, Tillamook County, Manzanita, and Lincoln City to implement tsunami resilience planning through maps, evacuation facility

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							improvement plans, comprehensive plan policies, and transportation system plans.
98	Prepare/Publish 5 multi-hazard and risk studies for communities around Cascade Volcanoes, including Newberry (e.g., Burns and others, 2011). To help 5 communities on or near Oregon Volcanoes become more resilient to geologic hazards (volcano, landslide, flood, and earthquake) by providing detailed information about the hazards and the community assets at risk.	DOGAMI				X	No funding streams identified or available.
99	Create LIDAR-based channelized debris flow hazard maps in 5 communities. Models are needed to assess areas of potential channelized debris flow hazards. These areas are potentially life threating.	DOGAMI		X			This action was conducted in conjunction with lidar produced for the post-fire debris flow project noted in action #84. See applicable comments. Consider combining with other PFDF project actions.
100	Develop volcano hazard evacuation maps for 5 communities in the proximal vicinity of Cascade volcanoes. Hazard maps exist for major Cascade Volcanoes, but evacuation maps based on predicted events are not yet available. Develop evacuation maps in 5 most vulnerable communities, and conduct outreach on the maps.	DOGAMI				X	No funding streams identified or available.
101	Update 2 volcano hazard maps. New highly detailed geologic maps produced with LIDAR around Oregon Volcanoes should be used to update at least 2 volcano hazard maps (e.g., current Mount Hood mapping)	DOGAMI				X	No funding streams identified or available.
102	Conduct LIDAR-based geologic mapping targeted around 2 Cascade and other Quaternary volcanoes. There is a continuing need to have detailed geologic maps that portray and thoroughly detail the eruptive histories of all major volcanoes in the Cascade Range, starting with two Quaternary volcanoes that pose hazards to most vulnerable communities.	DOGAMI		X			A new geologic map for Newberry Volcano in central Oregon is currently in progress by USGS as is a new map for Mount Hood Volcano. Need to get a timeline for completion update from USGS.
103	Update statewide volcano inventory database and map. Revise the statewide spatial database/interactive web map of active/dormant/extinct volcanoes in Oregon attributed by type, eruptive history, tectonic setting, and age. Significant data is not shown in the present database.	DOGAMI				X	No funding streams identified or available.
104	Update wildfire risk assessment data every 5 years with more up to date data. In 2019 the Oregon Wildfire Risk Explorer (OWRE) Tool was completed through federal grant funding to make available the most up to date information available on wildfire risk. This tool was created to develop an online portal available to the public to look at current and potential risk and assist in planning and development. Data utilized as a base for this wildfire risk portal was taken from the Quantitative Wildfire Risk assessment developed by the USFS. The purpose of this online tool is to deliver the best wildfire risk information to	ODF		X			The OWRE was established, and updates have occurred. The underlying data will continue to be updated regularly.

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	homeowners, communities, local managers, and planners. It has been utilized in updating CWPP's and provides guidance and educational resources for the public. Beyond the wildfire risk information, this tool is used as an avenue to show current large fire perimeters and where historical fire starts have happened. ODF has goals to improve and add to this mapping tool in collaboration with OSU into the future by adding in a new Wildland Urban Interface layer and a new Communities at Risk layer. Other updates will be implemented as data becomes available to help planners and the public assess wildfire risk.						
105	Add Climate change modeling into Oregon Wildfire Risk Explorer (OWRE). Add Prescribed fire live burns, WUI, and Communities at Risk data into the OWRE. Integrate data and assessment information from OSU Extension projects. In 2019 the Oregon Wildfire Risk Explore (OWRE) Tool was completed through federal grant funding to make available the most up to date information available on wildfire risk. This tool was created to develop an online portal available to the public to look at current and potential risk and assist in planning and development. Data utilized as a base for this wildfire risk portal was taken from the Quantitative Wildfire Risk assessment developed by the USFS. The purpose of this online tool is to deliver the best wildfire risk information to homeowners, communities, local managers, and planners. It has been utilized in updating CWPP's and provides guidance and educational resources for the public. Beyond the wildfire risk information, this tool is used as an avenue to show current large fire perimeters and where historical fire starts have happened. ODF has goals to improve and add to this mapping tool in collaboration with OSU into the future by adding in a new Wildland Urban Interface layer and a new Communities at Risk layer. Other updates will be implemented as data becomes available to help planners and the public assess wildfire risk.	ODF		X			The WUI has been added to OWRE.
106	DFR will teach classes about wildfire coverage in 2020-21. Wildfires are all too common in Oregon and have displaced thousands of Oregonians over the last few years. Homeowners and renters insurance are vital tools to financially withstand the impacts of wildfires. DFR hosts information about insuring against wildfire on its website and will continue to lead outreach classes to the public about the value of homeowners and renters insurance.	DCBS-DFR		X			DFR utilizes social media and publications; the approach is similar to earthquake above.
107	Establish a program for studying winter storms and their impacts statewide. As a part of that program, develop a system for gathering snowfall data statewide. Establish a network of snow accumulation tracking stations at strategic locations throughout the state to provide data tracking of snowfall accumulation over the short term and long term in order to develop statistics for studying snow level trends across the state.	ODOT	X				ODOT is not responsible for collecting snowfall data statewide. This is a function of the National Weather Service and local weather agencies. ODOT continues with their winter weather response operations as normal. This has not started in part due to personnel and structural changes at ODOT.

STATUS: 2020 Oregon NHMP Priority Mitigation Actions							
Priority #	2020 Oregon NHMP Priority Mitigation Action	Lead Agency	Not Started	Progressing	Completed	Not Pursuing	Explanation
DS1	Complete risk assessments for 18 state-regulated high hazard dams in Poor or Unsatisfactory condition (not meeting safety standards). This work is FEMA HHPD grant funded, with state match. The Dam Safety Program has partnered with FEMA to complete these as part of the HHPD grant. All work will be completed by the Dam Safety Program.	OWRD			X		Completed.
DS2	Complete risk assessments for remaining state-regulated high hazard dams. Partial funding for this work had been proposed in SB 1537 (Oregon's 2020 legislative session). The dam safety program will partner with the Governor's Office and the State Resilience Officer to continue to support this project.	OWRD		X			In progress. This action needs to remain in the Oregon NHMP for a while due to resource constraints.
DS3	Complete floodplain management plans for inundation areas below priority dams. The Dam Safety Program has partnered with FEMA to complete these as part of the HHPD grant. All work will be completed by the Dam Safety Program. The Dam Safety Program will partner with the Cities of LaGrande and Newport to complete these plans. Dam Safety staff will complete these assessments.	OWRD		X			This action will eventually be done for the HHPD Grant dams; OWRD will plug away at this over many years.
DS4	Support a task force to develop funding for and prioritize rehabilitation efforts. This task force and funding for it had been proposed as part of SB 1537 in 2020. The 2020 legislative session ended before action could be taken on most bills, including SB 1537. The Dam Safety Program will partner with the Governor's Office and the State Resilience Officer to continue to support this project.	OWRD		X			This may end up not being a task force. OWRD is in the early stages of identifying how best to do this. They are working with the Governor's Office.
DS5	Re-evaluate extreme flood potential and begin to develop new methodologies for determination of inflow design flood for state-regulated high hazard dams. This flood potential analysis and methodology and its funding had been proposed as part of SB 1537 in 2020. The 2020 legislative session ended before action could be taken on most Bills, including SB 1537. The Dam Safety Program will partner with the Governor's Office and the State Resilience Officer to continue to support this project.	OWRD		X			In progress. To be completed by Dec. 2026 at latest.

9.6.2 Status of 2020 Oregon NHMP Ongoing Mitigation Actions

The following table reports the status of the 2020 Oregon NHMP ongoing mitigation actions. DLCD gathered this data in July 2024 in preparation for evaluating the 2024 Oregon NHMP.

Table 9.6.1 Status of 2020 Oregon NHMP Ongoing Mitigation Actions

STATUS: 2020 Oregon NHMP Ongoing Mitigation Actions					
Priority #	**2020 Oregon NHMP Ongoing Mitigation Action**	**Lead Agency**	**Progressing**	**Not Pursuing**	**Explanation**
108	Continue to refine statewide natural hazard identification and characterization. The Oregon NHMP identifies the types of natural hazards affecting Oregon, their geographic extent, history, and probability of occurrence, and as they may be affected by climate change. Throughout the life of the Plan, new and continuing research studies and projects provide new data and analysis, improving our ability to identify and understand Oregon's natural hazards and their probability of occurrence. To advance hazard mitigation in Oregon, it is important for the State to plan, budget, and take advantage of opportunities that arise for continued research and new studies to enhance our knowledge of Oregon's natural hazards.	DOGAMI, ODF, OEM, ODOT, OHA	X		DOGAMI: All DOGAMI publications contribute to this action. Ongoing work in this area with studies. Identifying and characterizing geologic natural hazards is core to DOGAMI's mission. In recent years, DOGAMI has produced dozens of new studies that map the location of existing hazards and areas potentially at future risk from many hazards, including but not limited to landslides, earthquakes, tsunamis, floods, channel migration, and co-seismic hazards such as liquefaction. The agency also produces risk assessments using these hazard maps and coordinates the collection of lidar data. These different types of studies and datasets span the state and provide a critical basis for understanding hazards in Oregon. OWRD: The 2023 Oregon Legislature allocated $188,664 to OHA, with additional resources to DEQ, for the two agencies to jointly establish a state harmful algal bloom surveillance and monitoring program. This new funding will support systematic monitoring of recreational waters for the first time in the state. These investments in surveillance and monitoring will improve our ability to identify lakes and rivers with toxic blooms present in order to protect drinking water sourced from these areas and better inform the public about protecting themselves when recreating in Oregon rivers, lakes and reservoirs. ODF: SB 762 (2021) and SB 80 (2023) directed ODF and OSU to develop a statewide wildfire hazard map which will be used to direct state investments and downstream regulations to mitigate wildfire risk. This mapping is informed by the PNW Quantitative Wildfire Risk Assessment (QWRA). ODF leads the 20-Year Landscape Resiliency Strategy to improve forests and rangelands to reduce wildfire risk. In 2023, ODF developed the plan with private, local, state, and federal partners to target

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					about 13 million high-risk acres. This was also a requirement of SB 762 (2021). ODF has also made investments in and coordinates with other agencies on wildfire detection camera system and wildfire ignition investigation. ODOT: ODOT continues to identify new hazards to the transportation network as they arise. OEM is responsible for conducting hazard identification and characterization for Oregon's NHMP, and ODOT will continue to advise on this for their industry perspective, as necessary.
109	Continue to refine the State's risk assessment methodology and statewide assessments of natural hazard exposure, vulnerability, and potential losses. At the core of the Oregon NHMP is a statewide risk assessment of exposure and vulnerability, and an estimate of potential dollar losses to state-owned/leased buildings, infrastructure, and critical or essential facilities from natural hazard events. Schools, emergency facilities, water and wastewater, dams and levees, transportation, telecommunications, and energy facilities are examples of structures, infrastructure, and facilities that could be exposed and vulnerable to natural hazards. Other examples include populations, businesses, and industries. At this time, the state does not have a standardized risk assessment methodology across all hazards at the state and local levels. To advance hazard mitigation in Oregon, it is important for the State to plan, budget, and take advantage of opportunities that arise for continued enhancement of the risk assessment, better enabling limited mitigation resources to be directed to the areas that most need them.	DLCD	X		This is being done through the Risk Assessment Upgrade Project.
110	Continue to refine statewide identification and prioritization of the greatest risks from and communities most vulnerable to Oregon's natural hazards. Identifying and prioritizing the greatest risks from and communities most vulnerable to natural hazard events will enable the state to leverage its limited mitigation resources in ways that efficiently protect life, property, and the environment from natural hazard events and facilitate recovery.	DLCD	X		This is being done through the Risk Assessment Upgrade Project.
111	Continue to develop and implement resilience initiatives statewide. Natural hazard mitigation is a fundamental element of resilience. It is important for the state to plan, budget, and partner with other public and private entities to alleviate potential damage from natural hazard events before they occur by (a) improving the reliability of critical/essential facilities, services, and infrastructure during and after a natural hazard	DOGAMI, ODF, OWRD, OEM, ODOT, OHA,	X		DOGAMI: All DOGAMI publications contribute to this action. DOGAMI provides information to Oregon communities, state agencies, and federal partners that informs resilience initiatives statewide. This includes, but is not limited to, work to aid in the development within areas safe from geohazards, assessing which critical facilities are at risk, identifying

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	event; (b) developing evacuation routes and facilities; (c) informing the public; (d) planning for long-term recovery; and (e) taking other necessary actions.	OSFM			evacuation routes and safe zones in the event of a natural disaster, ensuring access to safe and reliable drinking water, conducting public outreach and education, and guiding long-term planning. Example may include DOGAMI's work with the Portland Water Bureau to reduce risk and make the Bull Run watershed more resilient. DOGAMI: DOGAMI provides information to Oregon communities, state agencies, and federal partners that informs resilience initiatives statewide. This includes, but is not limited to, work to aid in the development within areas safe from geohazards, assessing which critical facilities are at risk, identifying evacuation routes and safe zones in the event of a natural disaster, ensuring access to safe and reliable drinking water, conducting public outreach and education, and guiding long-term planning. OEM: Many efforts are happening to improve transportation and other critical lifelines, DOGAMI continues to improve tsunami evacuation modeling and outreach, OEM has developed new outreach program, "Be 2 Weeks Ready", OEM has developed a tsunami debris guidance doc. ODF: SB 762 (2021) and subsequent legislation directed the investment of general fund dollars and some downstream regulations to support community wildfire risk reduction and landscape resilience, and wildfire detection. Additionally, this legislation addressed related wildfire mitigation programs related public health, smoke management and mitigation, sheltering, public safety power shut offs, and workforce development. ODOT: ODOT has many ongoing projects to address resiliency of the transportation network. ODOT hopes to improve these efforts with the creation and development of the grant application group.

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Priority #	**2020 Oregon NHMP Ongoing Mitigation Action**	**Lead Agency**	**Progressing**	**Not Pursuing**	**Explanation**
112	Provide support for development and update of local and state hazard mitigation plans. The State of Oregon provides support for development of local NHMPs and the Oregon NHMP by managing federal grant funding in ways that assist the state and local governments with NHMP development and update tasks and processes.	OEM	X		The Oregon Department of Emergency Management utilizes federal Hazard Mitigation Assistance (HMA) grant funding to support the development or update of local NHMPs and the Oregon NHMP. It does this by working with FEMA to award subgrants to local and state entities for work that leads to FEMA approved or reapproved state and local NHMPs. HMA funding sources that can support mitigation planning include HMGP, HMGP-PF, BRIC, and FMA.
113	Improve and sustain public information and education programs aimed at mitigating the damage caused by natural hazards. While ongoing efforts are being made in this area, a strong message conveyed by several State IHMT Reports notes the need to strengthen and sustain public information, education, and training efforts by providing additional resources. Although commonly recognized that interest in reducing losses increases during and after events, there is an ongoing need to provide residents and key stakeholder groups (such as infrastructure operators) with hazard mitigation information. These reports cite the need to have timely seasonal information available, better methods to inform residents of sources of hazard mitigation information, use improved electronic methods (e.g., web sites), and materials oriented toward the intended users. This helps keep awareness levels higher, will stimulate actions by some, and reminds users to consider and include hazard mitigation measures in the contexts of regular activities, such as building a new home, relocating an office, or repairing a business.	OEM, DOGAMI	X		"Be 2 Weeks Ready" is a new public education and outreach program launched in 2024. It trains local community champions to work with their communities to be better prepared for all hazards.
114	Continue to improve inventory of state-owned/leased buildings in all hazard areas. Using DAS's data, DOGAMI developed an inventory of state-owned/leased buildings and identified those in hazard areas for the 2012 Plan and updated the inventory for the 2015 Plan. The data should be continuously updated by DAS-CFO to facilitate DOGAMI's inventory updates in future plan cycles.	DAS-CFO	X		DOGAMI is continuing to utilize and improve the state-owned/leased buildings dataset. DOGAMI is continuing to add or remove buildings as necessary.
115	Encourage citizens to prepare and maintain at least two weeks' worth of emergency supplies. State agencies should work with the American Red Cross and local emergency managers to encourage citizens to be prepared to survive on their own for at least two weeks.	OEM	X		"Be 2 Weeks Ready" is a new public education and outreach program launched in 2024. It trains local community champions to work with their communities to be better prepared for all hazards.
116	Use lidar for statewide analysis of all natural hazards. Lidar is currently the best source of regional topographic data and allows for highly precise and accurate natural hazard mapping (landslide, flooding, volcanic hazards, channel migration zones, tsunami, geologic faults, wildfire, etc.) and infrastructure inventories (buildings, utilities, lifelines,	DOGAMI	X		DOGAMI is continuing to use lidar for studies related to landslides and channel migration, tsunami hazard zones, faulting, as well as building and other infrastructure inventories. Recently DOGAMI provided lidar to ODF for use in

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	etc.). Many Oregon state agencies currently use lidar for natural hazard analyses and will continue to do so where lidar is available.				wildfire response. As the landscape changes and disasters occur, new studies will require lidar. Progressing, no estimated completion date.
117	Support research proposals by PSU, OSU, and UO to improve Oregon's disaster resilience. Support research proposals by PSU, OSU, and UO to improve Oregon's disaster resilience, in particular to federal agencies including the National Science Foundation	DOGAMI	X		DOGAMI has published many studies that support and are used by partners in Oregon's higher education system. This includes, but is not limited to, creating geohazard maps and risk assessments that inform natural hazard mitigation plans written by university staff and direct collaboration with university researchers on projects such as earthquake-induced landslides and tsunami modeling.
118	Evaluate and update mitigation priorities regularly and as otherwise necessary. The current pandemic has created a less-than-optimal situation for full vetting and prioritization of mitigation actions. With the changing revenue, budget, and social landscapes, continuing to review the actions and assess priorities on a regular basis and as otherwise necessary is the most prudent and practical course of action for continuing to advance mitigation in the State of Oregon.	DLCD	X		This is a responsibility of the IHMT which DLCD was anticipated to lead as a follow-up to leading the Oregon NHMP update (2020). With many personnel, structural, and budgetary changes in OEM and the State as a whole, this was discussed and minimally acted upon. OEM did begin to update mitigation actions in 2021 and 2022 but was unable to complete the project.
119	Support awareness and activities on FEMA Community Lifelines, Functional Recovery and BRIC. Support meetings to improve awareness of FEMA Community Lifelines, Functional Recovery and the Building Resilience Infrastructure and Communities (BRIC) to increase awareness, activities, preparedness, mitigation and response and recovery.	DOGAMI		X	No funding streams identified or available.
120	Integrate Climate Change Adaptation throughout Agency Operations. Require that state agencies address climate change adaptation at every budget cycle in their strategic plans. Regularly assess progress towards adaptation objectives.	DLCD	X		The Climate Change Adaptation Framework Implementation Team informally assesses progress toward adaptation objectives. As the current Governor has not prioritized climate adaptation, and there is no leadership structure yet for state policy making on climate adaptation, agencies have not been instructed to address it in their strategic plans. While some agencies have done so on their own, others have not.
121	Enable continued interagency collaboration on climate change adaptation. Provide state agencies with a curated information platform and a means to continue collaborating. This includes access to internal file sharing platforms, electronic meeting space, internal blogs, and other cross-agency communication systems, equipment, and venues.	DLCD		NS	Not Started.

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122	Embrace diversity, equity, and inclusion (DEI) in climate change adaptation planning and investment. Produce and implement a DEI Blueprint that will outline guiding principles and include one or more Equity Lens tools that will assist state agencies in taking the first steps toward integrating DEI best practices into their climate-related work. The DEI Blueprint will draw from the Environmental Justice Task Force (EJTF) Best Practices Handbook and other existing resources.	DLCD	X		Produced DEI Blueprint 2021. Some agencies are implementing it. It is being reviewed for integration into the Climate Change Adaptation Framework which is a part of the Oregon NHMP.
123	Support the Interagency Workgroup on Climate Impacts and Impacted Communities. Many of the agencies involved in the Climate Adaptation Framework (CAF) are also beginning to engage in a new workgroup on climate impacts and impacted communities as directed through Governor Kate Brown's Executive Order 20-04 on Climate Change. This workgroup will intersect with the work of the CAF Climate Equity Workgroup. This work, along with future interagency vulnerability analysis, will further define and identify populations most vulnerable to climate change in Oregon.	DLCD	X		This group has been disbanded and the task is being pursued by the Environmental Justice Council.
124	Fund targets set by the CCA Leadership Team. Foster interagency cooperation to develop and put forth climate change adaptation actions in state agency biennial budget requests according to targets set forth by the CCA Leadership Team.	CCAWG		X	We cannot do this without the Leadership team. See #34.
125	Measure overall state progress toward climate adaptation. Develop baseline metrics against which progress toward adaptation is compared.	Global Warming Commission		NS	Not started. The Climate Action Commission has not yet taken this up.
126	Foster exchange of information about climate adaptation strategies. Sponsor the first annual "state of the climate" conference open to all employees and the public.	DLCD		NS	Not started. There is no funding for this action.
127	Provide materials and opportunities to learn about direct and indirect climate change effects generally and on natural hazards in Oregon. Provide a comprehensive information portal for use by state agencies, local government, businesses, non-governmental organizations (NGOs), and individuals to learn about direct and indirect climate change effects in Oregon. The portal would be scoped with feedback from users during multiple stages in the development process. Involving stakeholders in the scoping process is critical to its success.	DLCD		NS	The Oregon Explorer did provide some of these functions but is no longer being supported. Coordination among state agencies has continued and advanced, but no single portal has been constructed.
128	Incorporate the social cost of carbon into cost-benefit analyses. Develop guidelines on use of social cost of carbon to perform cost-benefit analysis.	Global Warming Commission		X	Not started and not pursued. Not adaptation, but carbon reduction and sequestration. State doesn't design the mitigation BCA formula. Remove.

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Priority #	**2020 Oregon NHMP Ongoing Mitigation Action**	**Lead Agency**	**Progressing**	**Not Pursuing**	**Explanation**
129	Measure progress toward actions prioritized by the Climate Change Adaptation Leadership Team. Report progress toward and challenges with completing projects identified in previous budget requests with each agency budget request.	DLCD		NS	Not started. Cannot do this without a Leadership Team in place.
130	Continue to act upon opportunities to advance the State's lifeline mitigation investment practice. Expand upon the State's mitigation investment practice by (a) supporting efforts by jurisdictions and transportation districts to develop mitigation policy and retrofit plans for lifeline assets and service facilities; (b) continuing to advance design and maintenance standards and requirements for bridges and unstable slopes, transit, rail, ports, and priority lifeline airfields; (c) developing a temporary bridge installation policy and standards; (d) supporting research on retrofit methods and strategies for Cascadia subduction zone earthquake loads and tsunamis.	ODOT	X		ODOT is creating a grant application group to help identify and apply for appropriate grants. Focus will be placed on actual mitigation projects, however, compared to research or assessments. We feel it is necessary to address and remedy the problems and improvements ODOT and the State has already identified before we attempt to find more.
131	Improve reliability and resiliency of critical infrastructure statewide by adopting industry-specific best practices, guidelines, and standards. Lifeline Service Delivery Systems (critical infrastructure), including electric supply, natural gas, telecommunications, water/wastewater, hydraulic structures (e.g., dikes, levees, dams), transportation corridors, pipelines and petroleum fuels storage facilities, are all vital resources for a community's life-safety and economic viability. However, much of Oregon's existing critical infrastructure has not been designed or constructed to withstand the impact of severe natural disasters such as extreme wind & winter storms, major earthquakes, or large landslides. Lifeline Service Delivery Systems (critical infrastructure) should be evaluated statewide, and reliable and measurable performance objectives which insure the region's critical infrastructure can withstand future damage without crippling consequences should be instituted.	OPUC, OWRD, ODOT, DOGAMI	X		ODOT is continuously working to improve the reliability and resiliency of the transportation network by conducting projects already slated and funded for development as well as creating the grant application group to pursue additional funding sources.
132	Acquire statewide lidar coverage for the purpose of improving natural hazard mapping and infrastructure inventories. Lidar is currently the best source of regional topographic data and allows for highly precise and accurate natural hazard mapping (landslide, flooding, volcanic hazards, channel migration zones, tsunami, geologic faults, wildfire, etc.) and infrastructure inventories (buildings, utilities, lifelines, etc.). The state should continue to invest in lidar acquisition for the purpose of understanding risk to natural hazards at a local scale.	DOGAMI	X		DOGAMI has had significant lidar acquisition in the last five years. Within next five years, there will be complete baseline lidar coverage of the state, however the landscape changes through natural and human processes so there is an ongoing need to keep refreshing the lidar in places that are changing to ensure accuracy. DOGAMI focuses on areas with more extensive changes, e.g., post-wildfire or flooding disasters. There is a national goal to have recollection of lidar on an eight-year cycle. DOGAMI would also like to obtain bathymetric data for rivers, estuaries, and other waterbodies.

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133	Provide technical assistance and funding to local governments to evaluate the need and opportunities for inter-tie projects in Local Natural Hazards Mitigation Plans. The capital expense associated with this action needs to be carried mostly by local governments, perhaps with some grant or low-interest loan funding provided by the state or federal governments. The role of the state in this action is to encourage local governments located proximate to one another, yet with separate water systems, to develop the physical capability to send water from one system to the other. Often during drought situations, one local government will have a bit of water to spare while a nearby government is struggling to meet its needs. Transferring water by truck is expensive and inefficient when compared to transferring water via pipeline. Water inter-ties are also effective mitigation for the flood and earthquake hazards where one system can serve as backup for another.	OWRD	X		Addressed in the 2017 Integrated Water Resources Strategy. Water project Grants and Loans or Feasibility Study Grants may be available in some circumstances.
134	Continue to maintain the existing roster of qualified post-earthquake, flood, and wind inspectors with ATC-20 earthquake and ATC-45 flood & wind inspection training. Continue to compile and maintain a list of individuals trained and certified for post-disaster inspection. Support the recruitment and training of qualified ATC-20 post-earthquake inspectors and inspection teams.	BCD	X		The legislature moved this program over to the State Fire Marshal with 2019 House Bill 2206. It's now the Oregon Safety Assessment Program. Rewrite the Statement: Continue the Oregon Safety Assessment Program. Rewrite the Description: The Oregon Safety Assessment Program (OrSAP) provides professional resources to local governments to help with post-disaster building safety evaluations. When disaster strikes a community, numerous facility and infrastructure inspections may be necessary. At the request of local government, OrSAP makes volunteers available to conduct rapid post-disaster building safety evaluations related to structural safety and habitability. OrSAP evaluators also provide recommended posting of placards that denote the condition of each structure evaluated. OrSAP seeks qualified volunteers to provide these services. Volunteers are engineers, architects, building inspectors, general contractors, or people with ICC certifications who want

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					to be certified as a post-disaster safety evaluator and have completed an approved ATC-20 or OrSAP training course.
135	Expand the state's stream gaging network. Seek stable funding for the operation, and maintenance of stream gages. The availability of timely and accurate telemetered data from stream gages is essential for flood forecasting, for prediction of imminent flood hazards, and for response to flood emergencies. Streamflow data also provides basic hydrologic information for floodplain mapping and watershed management by communities throughout the state, and is critical for understanding and forecasting drought conditions. Numerous local, state and federal water management agencies rely on data from stream gages for effective management of projects and resources. The installation and maintenance of stream gages has traditionally been a responsibility of state and federal agencies. State agencies plan to work with their partners, including the United States Geological Survey and Bureau of Reclamation, to ensure adequate funding and support for existing gages and for the installation of new gaging sites where needed. It is recommended that state agencies endeavor to leverage federal funding with state resources and local matching commitments to achieve a reliable network of stream gages around the state. The data from these gages is used to support the RAFT and Raptor tools highlighted in Action #10, Priority.	OWRD	X		We currently run about 255 gages but will be installing about 10-15 new gages this biennium. Funding from GF has fluctuated since 2020.
136	Educate homeowners about choosing ice and windstorm-resistant trees and landscaping practices to reduce tree-related hazards in future ice storms. Trees that don't stand up well to ice and wind, especially when planted near power lines, can cause power outages and other damage. Certain species of trees hold up better to winter's fury than others. Other factors, such as where a tree is planted and use of proper pruning techniques, can also help trees be more resistant to ice storm damage.	ODF	X		ODF has expanded its Urban and Community Forestry Program and has grants that are being implemented over this biennium. There are also tie ins to wildfire mitigation and defensible space. Summer windstorms are also a concern related to wildfires and power outages.
137	Each year, ask the Governor to designate October to be Earthquake and Tsunami Awareness Month. Practicing to "Drop, cover, and hold" is critical in reducing injury and loss of life in the workplace and home during an earthquake. The more people practice the drill, the better they will respond to a real event. A gubernatorial declaration will promote increased participation in the Great Oregon ShakeOut, or other annual earthquake Drop, Cover, and Hold On drill.	OEM	X		In most years, we have used September as "Preparedness month", but with "Be 2 Weeks Ready" launching, we plan to start to introduce this.
138	Continue to facilitate accessibility and use of the Coastal Atlas GIS resources. Make the Coastal Atlas geographic information system (GIS) more useful for a wider audience,	DLCD, OPRD	X		DLCD continues to maintain and update the Coastal Atlas with data and links such as the Ocean Shores Data Viewer, the

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	from local and state staff to interested citizens, by continuing to improve its data and tools, and providing training on how to access and use them.				Estuary Data Viewer, Sea Level Rise maps, and the Coastal Access Inventory.
139	Research the effects of changing ocean water levels and wave dynamics along the central and southern Oregon coast, and use that data to augment the coastal geomorphic database. As recent research has shown, ocean water levels and wave dynamics along the Oregon coast are changing. These will, in turn, affect beach sand budgets and rates of erosion. More research must be done on alternative shore protection methods, effects of hard shore protection structures, near-shore circulation processes and sediment budgets, sea cliff erosion processes, and other hazard processes.	DOGAMI, OSU	X		DLCD has published the "Sea Level Rise Planning Guide for Coastal Oregon" to assist local jurisdictions with implementing resilience and mitigation measures and incorporate sea level rise data and maps into planning regulations. SLR_Planning_Guide_V1.pdf (coastalatlas.net) DLCD also worked with a 2-year NOAA Sea Level Rise Fellow to work with Clatsop County on sea level rise mitigation and a vulnerability assessment by holding public workshops, mapping community assets at risk from sea level rise, and produce a Sea Level Rise Community Engagement Guide to assist other coastal communities in doing similar work.
140	Survey coastline to monitor erosion. Continue to periodically measure and monitor the Oregon coastline in order to document the response of Oregon's beach and bluffs to changes in ocean water levels (sea level rise and storm surges), storms (frequency and intensity), precipitation patterns that may threaten lives and property. Maintain a long-term, permanent Oregon Beach and Shoreline Mapping and Analysis Program (OBSMAP). The program will be a partnership with local, state, and federal agencies that have responsibility over coastal and ocean activities.	DOGAMI	X		Dune-backed beach coastal erosion analysis/hazard zone reports cover most if not all dune-backed beaches on the coast. Bluffs included in some reports but not all. Erosion due to storms is always incorporated. Also considered when relevant: large landslides, geology, CSZ subsidence, etc. The newer reports include SLR, the oldest ones do not. Clatsop Plains: https://pubs.oregon.gov/dogami/ofr/O-01-04.pdf Tillamook County (new, but dunes only): https://pubs.oregon.gov/dogami/ofr/p-O-14-02.htm Till Co (old, but includes bluffs): https://pubs.oregon.gov/dogami/ofr/O-01-03.zip South Clatsop County: https://pubs.oregon.gov/dogami/ofr/O-09-06.zip South Lincoln County: https://pubs.oregon.gov/dogami/ofr/O-07-03.zip North Lincoln County: https://pubs.oregon.gov/dogami/ofr/O-04-09.zip

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					Central Curry County: https://pubs.oregon.gov/dogami/ofr/O-04-20.zip
141	Maintain the updated inventory of shoreline protection structures. Maintain the inventory of existing and new coastal engineering (shore protection) structures on the Oregon Coast in order to provide local governments and applicable agencies an important coastal management tool to address anticipated increasing coastal erosion. It is anticipated that this inventory and information will assist in potential future policy changes to address a changing climate and associated coastal erosion impacts.	OPRD	X		OPRD has hired a Sea Grant Fellow to document and digitize previous permits for shoreline protection structures as well as develop an app for mobile phone use to document structures and violations in the field. This app is currently being tested in situ for the Salishan Spit area of Lincoln County but will be used coastwide by rangers and permitting staff.
142	Provide information and technical assistance to implement mitigation of non-structural hazards in K-12 schools. Provide training to school officials and teachers in reducing non-structural hazards in schools such as unsecured bookcases, filing cabinets, and light fixtures, which can cause injuries and block exits. The program should include a procedure for periodic life safety inspections of non-structural seismic hazards in schools that can be implemented by local fire department inspectors. BCD will have an important role in providing technical assistance in the development of educational materials.	OEM	X		We have offered FEMA NETAP courses in the past, but attendance has not been very high.
143	Each year, ask the Governor to designate the third Thursday of the month of October as the Great Oregon ShakeOut Day by proclamation. Practicing to "drop, cover, and hold" is critical in reducing injury and loss of life in the workplace and home during an earthquake. The more people practice the drill, the better they will respond to a real event. A gubernatorial declaration will promote increased participation in the Great Oregon ShakeOut, or other annual earthquake Drop, Cover, and Hold On drill.	OEM	X		We have done this sporadically, but the plan is to be more regular.
144	Include information about the benefits of purchasing earthquake insurance in public outreach materials and disseminate those materials through appropriate public outreach programs and venues. Unlike flood insurance, which is underwritten by the U.S. Government (through the National Flood Insurance Program), earthquake insurance is offered by private sector agents, generally as a rider to a standard homeowner or business property insurance policy. Because earthquake insurance is a type of catastrophic coverage, most policies carry a high deductible. Oregon's Department of Consumer and Business Services Insurance Division offers information about earthquake insurance on its website and provides personal assistance through its insurance hotline. In addition, the Division is active in outreach activities,	~~DCBS-ID,~~ DCBS-DFR	X		DCBS-DFR continues to do this work and issue PSAs. Consider combining with #58 (Priority).

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	partnering with other agencies and organizations to bring insurance information to the public.				
145	Continue seismic rehabilitation of hospital, fire, and police facilities under the Seismic Rehabilitation Grant Program administered by Business Oregon's Infrastructure Finance Division. Continue to rehabilitate to operational readiness in the event of an earthquake essential hospital buildings, fire, and police stations that pose a threat to occupant safety. Senate Bill 15 of the 2001 Legislative Session requires that rehabilitation or other actions to be completed by January 1, 2022. Senate Bills 2 to 5 (2005) provided the mechanism to accomplish some of these legislatively mandated tasks. Under SB 2, Oregon Department of Geology and Mineral Industries developed a seismic needs assessment database of emergency response facilities buildings. These data are being used by the Seismic Rehabilitation Grant Program to provide funding for seismic rehabilitation of eligible buildings (SB 3). Senate Bill 5 allows the State Treasury to sell Government Obligation Bonds to fund the program.	BusOR-IFA	X		The Oregon Legislature has continued to fund this work.
146	Continue seismic rehabilitation of public school buildings under the Seismic Rehabilitation Grant Program administered by Business Oregon's Infrastructure Finance Division. Continue to rehabilitate to occupant life safety standards certain public school and community college buildings. Senate Bill 14 from the 2001 Session of the Oregon Legislature requires that the State Board of Education examine buildings used for both instructional and non-instructional activities, including libraries, auditoriums, and dining facilities in order to determine which buildings are in most need of additional analysis. Following the identification of high-risk buildings and additional analysis, high-risk buildings must be rehabilitated by January 1, 2032, subject to available funding. SJR 21 and 22 are bond measures (November 2002 election) which would provide funding to implement this proposed action. SB 2 to 5 (2005) provided the mechanism to accomplish some of these legislatively mandated tasks. Under SB 2, Oregon Department of Geology and Mineral Industries developed a seismic needs assessment database of K-12 and Community College public school buildings. These data are being used by the SRGP to administer a grant program for seismic rehabilitation of eligible buildings (SB 3). SB 4 allows the State Treasury to sell Government Obligation Bonds to fund the program.	BusOR-IFA	X		The Oregon Legislature has continued to fund this work.

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147	Track progress on the 2013 Oregon Resilience Plan. In 2013, OSSPAC released the Oregon Resilience Plan with over 100 recommendations. A tracking method is needed to better understand where resilience progress is being made and where more attention is needed. This is in the area of responsibility of the State Resilience Officer in the Governor's Office.	OSSPAC	X		OSSPAC has an effort underway to assess and analyze progress of the 2013 recommendations.
148	Continue implementing the Oregon Community Rating System (CRS) Users Group Program. DLCD will continue to coordinate Oregon's two NFIP CRS Users' Groups. Each group will meet a minimum of three times per year to share floodplain best management practices and to receive technical support from the State, FEMA's Insurance Support Organization, and others as needed. The State anticipates that the support provided through the CRS Users' Groups will encourage more communities to participate in the CRS program and participating communities to strengthen their CRS ratings, resulting in greater protection from flood damage at lower cost to property owners.	~~DLCD~~		X	This is now being implemented by a contractor to FEMA.
149	Monitor the effectiveness of the statewide strategy to encourage the purchase of flood insurance by demonstrating that the number of flood insurance policies held throughout the state continues to increase. Despite the statewide availability of flood insurance, coverage in place in most communities in Oregon varies from 10% to 20% of the homes and businesses located in the Special Flood Hazard Area (100-year floodplain). Not only does flood insurance reduce the financial vulnerability of individuals, families, businesses, government agencies, other organizations, and the community to the costs posed by flooding, but through the "increased cost of compliance" provision of flood insurance, it also provides funding for the elevation, flood-proofing, demolition, or relocation of homes and businesses when required due to "substantial damage" to the structure.	DLCD	x		DLCD engages in ongoing communication with Department of Insurance on flood insurance outreach and training. DLCD shares NFIP informational materials during floodplain trainings and Community Assistance Visits (CAVs). Note: this action and description need revised due to trending purchase of private flood insurance policies which are not tracked. Need baseline data and revised strategy.
150	Maintain the Riparian Lands Tax Incentive Program. This program is administered by the ODFW. This program involves the preparation of a plan and agreement between the landowner and the ODFW. The plan details measures the landowner will implement to preserve, enhance, or restore the riparian areas. Landowners receive a complete property tax exemption for the riparian property (up to 100 feet from the top of stream bank or the edge of non-aquatic vegetation). This program helps reduce sediment and protect stream banks which helps reduce the filling of river and stream channels.	ODFW	X		ODFW continues to receive inquiries on this program, so they continue to educate and continue to check on compliance.

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151	Provide information and potentially resources to local governments for developing "flood fight" plans and protocols. Several post-disaster mitigation strategy reports call for the development of flood fight plans and protocols in advance of flood emergencies. In addition to the state agencies potentially involved in flood fighting such as OEM and OWRD, environmental protection and habitat conservation agencies such as DEQ and ODFW should be involved in flood fight planning. At the federal level, the U.S. Army Corps of Engineers is a key partner. These plans and protocols might include improving emergency warnings, strengthening communications systems, stockpiling needed materials, preparing procedures for emergency vehicle access to flooded areas, and other related subjects, including ongoing public education efforts.	OEM, DLCD	X		No progress due to pursuing other activities.
152	Continue the State's active Floodplain Management Outreach Program. DLCD has an active floodplain and natural hazards outreach program. The department publishes and distributes newsletters and other outreach information to local governments and other interested parties. DLCD also maintains a website which includes a link to this NHMP. The natural hazards website (https://www.oregon.gov/lcd/NH/Pages/Mitigation-Planning.aspx) contains information and links to floodplain management information including many of the documents and booklets prepared by FEMA. DLCD uses an email distribution service for its Natural Hazard Newsletter and other correspondence. The email distribution service affords interested subscribers a greater opportunity to obtain flood management and natural hazards information from DLCD in a timely manner and for DLCD to more readily share information from a variety of sources.	DLCD	X		DLCD updates and maintains the DLCD – NFIP webpage (Department of Land Conservation and Development : National Flood Insurance Program (NFIP) in Oregon : Natural Hazards : State of Oregon). DLCD began using GovDelivery in 2024 for floodplain newsletter and other correspondence, and continues to add local floodplain staff to this distribution list. DLCD supports Oregon Floodplain Managers Group offering trainings, answering technical inquiries, and helping increase awareness of participation in this new group which started in 2024.
153	Continue the State's active Floodplain Management Training Program. DLCD and other State IHMT participants conduct or sponsor training sessions and meetings throughout the year focused on up-to-date floodplain management practices and projects. DLCD will continue to deliver focused training to surveyors, building officials, real estate agents and planners as well as local floodplain managers. The interdependent relationships among these key players in providing comprehensive floodplain management will also be highlighted during trainings.	DLCD	X		DLCD holds regular trainings with staff and professionals on floodplain management and permitting
154	Prepare text for local broadcast of one Public Service Announcement (PSA) each year on a seasonal topic. PSAs are an effective method for disseminating pertinent seasonal information about hazard preparedness and mitigation.	DLCD	X		DLCD sends annual PSA on preparation for flood season in collaboration with Silver Jackets
155	Assist local communities in securing funding to mitigate damage to repetitive flood loss properties or those substantially damaged by flooding. The state maintains an inventory of high priority repetitively damaged buildings located in floodplains. DLCD and OEM	OEM, DLCD	X		The state assisted with acquisitions of three Tribal and residential buildings funded through HMGP and one residential building funded through FMA since January 1, 2020.

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	have worked closely with communities to secure funding to mitigate buildings located in the flood hazard zone and to buyout properties located in the floodway. These agencies will continue to provide such expertise statewide where needed.				
156	Continue developing Emergency Action Plans for all remaining high hazard dams in Oregon. In Oregon, money from FEMA grants and state funds is used to help dam owners create Emergency Action Plans (EAP). An EAP helps identify situations where a dam failure might occur, actions to take that could save the dam, if possible, and evacuation routes for a dam failure situation. There is an Oregon-specific EAP template available, designed for owners of remote dams that have limited personnel. Approximately 75% of state-regulated high hazard dams have or are currently developing EAPs. There are 67 state-regulated high hazard dams, and another 65 federal high hazard dams in which OWRD plays a coordinating role.	OWRD	X		For all the currently designated HHD dams, EAPs exist. OWRD is revaluating approximately 20 dams, which may ultimately become HHPD-designated due to that reevaluation.
157	Acquire existing homes and businesses seriously threatened or damaged by landslide hazards. When opportunities and funding become available (pre- and/or post-disaster) explore options for the acquisition of developed property, particularly homes, in areas of repetitive or ongoing landslide hazards. Acquired properties will be maintained as open space in perpetuity and may also provide a buffer for landslide movements and debris that could otherwise impact improvements such as transportation routes.	OEM		X	The state has not acquired any homes or businesses seriously threatened or damaged by landslide hazards since January 1, 2020. This situation has not been researched and no one has made any requests for such assistance.
158	Assist local governments in implementing the tsunami land use guidance. The risk of tsunami hazard for Oregon's coastal communities is well-documented with the completion of comprehensive tsunami inundation maps developed by DOGAMI. The State of Oregon can assist affected communities with its implementation, leading to better protection of life and property from tsunamis.	DLCD	X		DLCD published "Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities," designed to assist local jurisdictions with land use planning and resilience strategies for a Cascadia tsunami event. TsunamiLandUseGuide_2015.pdf (oregon.gov)
159	Monitor implementation of the tsunami land use guidance by tracking the number of jurisdictions that have used it. The risk of tsunami hazard for Oregon's coastal communities is well-documented with the completion of comprehensive tsunami inundation maps developed by DOGAMI. Monitoring success of the guidance will allow the State to adjust its approach and update the guidance as necessary, leading to better protection of life and property.	DLCD	X		DLCD worked with Gearhart, Rockaway Beach, Tillamook County, Manzanita, and Lincoln City to implement tsunami resilience planning through maps, evacuation facility improvement plans, comprehensive plan policies, and transportation system plans.

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160	Continue to renew coastal communities' enrollments in the Tsunami Ready Program. The Tsunami Ready Program is a program sponsored by the National Weather Service that is designed to provide communities with incentives to reduce their tsunami risk. Cannon Beach was the first community for Oregon. Under a proposed plan through the NTHMP, additional communities will be added until there is full participation. This program is currently evolving through a review process being carried out by the NTHMP National Coordinating Committee. OEM is the primary point of contact for more information about the Tsunami Ready Program.	OEM	X		Oregon has added five counties and 19 communities, and eight supporters since Cannon Beach joined the program. A supporter is an organization, business, facility or local government entity that is actively engaged in tsunami planning and preparedness but does not have the ability to meet all the formal recognition guidelines. Full participation is difficult to assess because the definition of a TsunamiReady Community is very broad. The program is still evolving and the criteria for becoming a Tsunami Ready Community are changing. The new criteria may be adopted within the next few months.
161	Continue supporting school participation in annual tsunami evacuation drills. Increase the ability of Oregonians to prepare for and recover from earthquakes and tsunamis on the Oregon Coast.	OEM, DOGAMI	X		"Be 2 Weeks Ready" is a new public education and outreach program launched in 2024. It trains local community champions to work with their communities to be better prepared for all hazards.
162	Continue supporting local agencies and local non-profits, such as CERT, in participating in educational efforts such as door-to-door campaigns to educate those living or working in the inundation zone on how to respond to an earthquake and tsunami. Increase the ability of Oregonians to prepare for and recover from earthquakes and tsunamis on the Oregon Coast.	OEM, DOGAMI	X		OEM has hired a Community Preparedness Coordinator who has increased CERT activity and outreach efforts.

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163	Continue innovative outreach activities, such as tsunami evacuation route fun runs. Increase the ability of Oregonians to prepare for and recover from earthquakes and tsunamis on the Oregon Coast.	OEM, DOGAMI	X		COVID slowed OEM efforts down, but we are starting to resume.
164	Continue to develop training and information packets and articles for local building officials informing them of their responsibilities and authority under ORS 455.446 and 455.447 and the State Building Code. Statutes and the State Building Code limit construction of new essential facilities and special occupancy structures in the mapped tsunami inundation zone. Definitions of essential and special occupancy structures are in the Oregon State Structural Specialty Code. As personnel change and time passes, additional training and information for officials will be provided.	BCD, DLCD	X		DLCD published "Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities," designed to assist local jurisdictions with land use planning and resilience strategies for a Cascadia tsunami event. TsunamiLandUseGuide_2015.pdf (oregon.gov) This land use guide includes guidance, sample policies, and model language for local jurisdictions to use in updating or strengthening their tsunami planning and building regulations.
165	Work with ODOT to replace or move existing Entering/Leaving Tsunami Hazard Zone signs to correspond with the XXL inundation line developed by DOGAMI. Existing tsunami hazard zone signs are considered inadequate for placement along stretches of US-101, or on any roads, that are within the tsunami hazard zone. A single tsunami hazard zone sign will not indicate the boundaries of the inundation zone. Tsunami Hazard Zone signs should be located to correspond with the XXL inundation line developed by DOGAMI.	OEM		C	This action has been completed by DOGAMI.

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166	Develop volcanic hazard evacuation maps. Volcanic eruptions often produce lahars that travel down river valleys. Evacuation maps should include the hazard area as well as preferred evacuation routes and evacuation sites. USGS staff should support local and state agencies in this effort.	DOGAMI		X	No funding streams identified or available.
167	Each year, ask the Governor to designate May to be Volcano Awareness Month by proclamation. Working with federal partners, such as the USGS Cascades Volcano Observatory, the state of Oregon will increase the ability for citizens to respond to volcanic eruptions by increasing the level of awareness and preparedness in the public and governmental agencies.	OEM	X		We have done this occasionally, but starting in 2025, there will be a more concerted effort to promote volcano awareness.
168	Support development, enhancement and implementation of local education programs designed to mitigate the wildfire hazard and to reduce wildfire losses, such as the Firewise Communities/NFPA Program and the annual Wildfire Awareness Week Campaign. As part of its statewide fire prevention program, the Oregon Department of Forestry actively encourages and promotes local education and awareness programs that are designed to mitigate or reduce the impacts of wildfires. This action reflects ODF's ongoing intentions to: (a) collaborate with agencies and organizations to promote consistency in the development and application of fire prevention standards, (b) work to make individuals aware of their personal accountability and responsibility for wildfire safety, (c) determine local resources and capacity, and (d) define needs and solutions required to increase capacity.	ODF	X		ODF coordinates with OSFM and other agencies and organizations to deliver fire prevention and wildfire risk reduction education programs. OSFM has launched a robust defensible space education and assessment program in coordination with local fire agencies.

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169	Continue to increase the number of local governments using the Wildfire Hazard Zone process to mitigate wildfire risk and losses. The Wildfire Hazard Zone (WHZ) process allows local governments to require the use of fire-resistant roofing materials in jurisdictions assessed to be at a high risk of wildland fire. Currently, only a few eligible entities have used the WHZ process. To promote additional use, an assessment will be made of the portions of the state where it appears the WHZ process will have the greatest benefit. Following this assessment, local governments in the areas identified will be educated on the desirability of implementing the process. Those governments that express an interest in applying the process will be assisted in completing the required analysis work.	ODF, BCD	X		Two jurisdictions have adopted WHZs locally. In 2021, legislation (SB 762, refined by SB 80 in 2023) passed requiring the state to develop a statewide wildfire hazard map identifying wildfire areas (low, medium, and high) and the wildland urban interface (WUI), with home hardening building codes (ORSC, R327) and defensible space standards applying to development in areas identified as high hazard and in the WUI. The BCD will finalize the updated R327 building code after the wildfire hazard map is finalized (anticipated late 2024). After the statewide wildfire hazard map is finalized and the new building code is effective, the WHZ process will no longer be available to local governments. WHZ program will be phased out in 2025 when R327 requirements are in place in conjunction with the statewide wildfire hazard map. BCD developed an educational video on R327 and offers rebuilding grants for voluntary fire-hardening for homes lost in the Labor Day fires. These financial incentives have been popular, and the program was extended to apply to subsequent fire years. BCD is currently evaluating the feasibility of a proactive home hardening grant program.
170	Continue to develop and increase the number of updated Community Wildfire Protection Plans (CWPPs) with the goal of aligning CWPP updates with 5-year NHMP updates, where possible. The federal Healthy Forests Restoration Act (HFRA) includes statutory incentives for federal agencies to give consideration to the priorities of local communities as they develop and implement wildfire hazard mitigation projects. To become eligible for priority consideration under HFRA, a community must first prepare a Community Wildfire Protection Plan (CWPP). Most Oregon counties and many Oregon communities have completed CWPPs. To encourage the completion of additional CWPPs, as well as future updates of CWPP's counties and communities will be informed of the benefits to be gained from maintaining a CWPP and assistance will be offered to help facilitate the development and/or update of the plans. Because the majority of Counties	ODF	X		ODF continues to support and encourage the development and update of CWPPs. The department will be working on requirements for modernization updates to CWPPs. ODF participated last year with DLCD, OEM, OSFM, and other entities in conversations regarding the alignment and integration of CWPPs and NHMPs.

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	refer to CWPP's as their Wildfire Chapters, aligning CWPP updates with NHMP updates will ensure consistency and promote efficiencies in planning processes.				
171	Continue to provide technical assistance in accessing funding for fire prevention or wildfire mitigation projects through Title III, the National Fire Plan, or other funding mechanisms. Under the federal Secure Rural Schools and Community Self-Determination Act of 2000 (Title III, Section 301(5) of PL 106-393, commonly known as Title III), counties have the ability to receive and spend federal funds for projects that educate homeowners about wildfire mitigation efforts they can apply on their property and for planning projects that increase the protection of people and property from wildfires. National Fire Plan and other funding mechanisms may also be available for assisting communities in preventing wildfires and implementing wildfire mitigation projects.	ODF	X		ODF continues to provide technical assistance to counties to access funding, including access to additional federal funding through the Community Wildfire Defense Grant, which has a five-year federal appropriation (2022-2027).
172	Implement the Oregon Forestland-Urban Interface Fire Protection Act ("Senate Bill 360") in all Oregon counties that meet criteria under the law. The Oregon Forestland-Urban Interface Fire Protection Act, more commonly known as "Senate Bill 360," was enacted by the Oregon Legislature in response to the growing incidence of wildfire destroying homes and communities in Oregon's wildland-urban interface. The Act recognizes that individual property owners are in the best position to take mitigation actions which will have the most direct impact on whether or not a structure will survive a wildfire. Under this action item, the Act will be implemented county by county in those portions of the state, based on weather, fire incidence, fuels, or on the number of structures at risk. It has been Legislature's stated preference that implementation be accomplished with federal grant funds.	ODF		C	This action has been completed and the legislation is no longer in affect. SB 762 essentially replaced SB 360.
173	Analyze wildfire ignition probability statistics to better target prevention efforts at the leading causes of fires. There is currently no single database or common method of collecting fire cause information for wildfires occurring in Oregon. This results in different entities focusing their prevention and mitigation efforts on those causes which may not be the state's leading causes of fires. This likelihood can be lessened by developing a process to compare fire cause data collected by the Oregon Department of Forestry, the Office of the Oregon State Fire Marshal, and federal wildfire agencies. It is also important to understand the ignition probability from homes within and adjacent to the wildland interface because of the ignition risk to nearby wildlands.	ODF	X		ODF is continuing this work in partnership with state and federal partners.

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	While there is no centralized database, wildland and structural fire agencies will continue to work collaboratively to determine leading fire causes and focus efforts statewide and locally to prevent future ignitions.				
174	Collaborate through work groups within the Pacific Northwest Coordination Group (PNWCG) to continue collecting and analyzing wildfire occurrence data using the standardized statewide method and report to the state legislature as required. Previously, data concerning the causes of wildfire incidents was collected and analyzed by at least two state agencies, five federal agencies, and numerous local fire departments. These agencies had no database standardization or common reporting requirements. A standardized data collection system has been developed, and data collection and reporting continue collaboratively through work groups within the Pacific Northwest Coordination Group (PNWCG). The new system allows rapid identification of fire ignition trends and permits timely design and delivery of targeted prevention programs and activities.	ODF	X		ODF is continuing this work in partnership with state and federal partners.
175	Develop a single, comprehensive statewide method or process to collect and analyze wildfire occurrence data in a timely manner. Currently, data concerning the causes of wildfire incidents is collected and analyzed by at least two state agencies, five federal agencies, and numerous local fire departments. These agencies have no database standardization or common reporting requirements. This results in great difficulty, when attempting to determine the number of wildfires that occur in Oregon, when identifying fire cause trends, and generally in obtaining information concerning wildfire trends in a timely manner. Under this action item, all agencies responsible for suppressing wildfires will be requested to report incident occurrence information to a central data repository, in a standard format, and within prescribed reporting time limits. Such a system would allow for the rapid identification of fire ignition trends and would permit the timely design and delivery of targeted prevention programs and activities. The State Fire Marshal's Oregon All Incident Reporting System (OAIRS) may be a key component in the solution.	OSFM ODF	X		There has been statewide progress, but it is still bifurcated. ODF collects on the wildland fire side and OSFM collects on the structural fire side using NFIRS. Synthesizing the NFIRS data is challenging, information is not always complete. ODF's information is far more specific as to cause and origin. OSFM is still interested in a central data repository, however they are moving to a new national system (NEIRS) at the end of this year and once they know how the system works, can work with ODF and federal partners. OSFM has internal capacity to analyze data and outputs.
176	Upload the newest available data into the Oregon Wildfire Explorer portal as available. In 2019 the Oregon Wildfire Risk Explorer (OWRE) Tool was completed through federal grant funding to make available the most up to date information available on wildfire risk. This tool was created to develop an online portal available to	ODF	X		ODF works with state and federal partners to update the OWRE tool and underlying data on a regular basis.

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	the public to look at current and potential risk and assist in planning and development. Data utilized as a base for this wildfire risk portal was taken from the Quantitative Wildfire Risk assessment developed by the USFS. The purpose of this online tool is to deliver the best wildfire risk information to homeowners, communities, local managers, and planners. It has been utilized in updating CWPP's and provides guidance and educational resources for the public. Beyond the wildfire risk information, this tool is used as an avenue to show current large fire perimeters and where historical fire starts have happened. ODF has goals to improve and add to this mapping tool in collaboration with OSU into the future by adding in a new Wildland Urban Interface layer and a new Communities at Risk layer. Other updates will be implemented as data becomes available to help planners and the public assess wildfire risk.				
177	Continue to educate communities, workers, and the public about the role of proper tree pruning and care in preventing damage during windstorms. Arboricultural groups, public agencies, and utilities should cooperate in promoting proper tree pruning and care practices that can reduce the risk of tree failure and property damage. Common messages refined by state level entities such as the Oregon Department of Forestry (ODF) and OSU Extension can help provide continuity and efficiency across the state. While implementation of this action largely takes place at the local government level, the state has a role in encouraging and providing incentives for best management practices. ODF maintains and implements a communication plan that includes educational initiatives aimed at improving tree health in cities. This includes a variety of products, including a bimonthly newsletter, a website, and brochures that help convey these messages. OSHA requires utilities to: • Provide training to crews working on power lines in worker safety and the identification of trees to prune or remove; and • Review regulations and standards for easement and right of way maintenance, and provide training to foresters and logging crews. Utilities should instruct homeowners in pruning of vegetation, tree care safety, and proper tree care for trees bordering utility corridors and public rights of way.	ODF	X		ODF has a robust Community and Urban Forestry Program and works in coordination with other entities to promote proper tree care to reduce risks.

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178	Use industry best practices to minimize impact and outages to service delivery system of overhead line operators, during windstorm events. Implement outreach efforts through existing safety-related programs managed by the PUC in coordination with private and public utilities. Compliance with PUC administrative rules includes safety codes and vegetation management. The PUC provides administrative to support to the Oregon Utility Safety Committee where all utility operators (electric, natural gas, telecommunication & water) discuss safety issues and best practices.	PUC	X		PUC conducted investigation UM2225 into resiliency standards, has continued to evaluate reliability of investor-owned utilities and review major event actions and lessons learned and continues to support ESF-12 functions in the midst of emergencies, whether they reach designated status or are just localized.
179	Educate citizens about safe emergency heating equipment. Improper use of alternate heat sources during winter storms can cause fires. Ongoing efforts of the Office of Oregon State Fire Marshal and its work with local fire departments through the Oregon Life Safety Team (http://www.oregon.gov/OSP/SFM/Pages/CommEd_OLST.aspx). In addition, people can be killed by carbon monoxide emitted by fuels such as charcoal briquettes when used for heating homes. To reduce the threat of carbon monoxide poisoning, known as the silent killer, the 2009 Legislature passed HB 3450a requiring landlords to install carbon monoxide alarms in rentals with a carbon monoxide source and homeowners must ensure they are installed in homes at the time of sale, if the home has a source. Sources include gas heating or fireplaces, wood-burning fireplaces or stoves and attached garages. Partnerships for consistent public education messages and outreach are underway and will include information on the dangers of introducing a carbon monoxide risk.	OSFM	X		OSFM is continuing to implement and expand the smoke and carbon monoxide alarms program. This includes new tools and resources on the new OSFM website (https://www.oregon.gov/osfm/education/fire-safe/pages/smoke-co-alarms.aspx#RE_SOURCES) and through the Oregon Life Safety Team (https://www.oregon.gov/osfm/about-us/pages/oregon-life-safety-team.aspx) as well as the smoke alarm installation program through the Oregon fire service at the local level. OSFM is currently ramping up a new program for the distribution of carbon monoxide alarms modeled on the smoke alarm installation program.
180	Continue educating motorists on safe winter driving, including how to be prepared for traveling over snowy and icy mountain passes. Actions such as sanding, applying de-icing chemicals, and snowplowing do not make the road safe. Motorists must drive at speeds appropriate for the weather and road conditions and be prepared to handle adverse conditions. Many drivers do not carry chains and do not know how or simply do not install them when conditions warrant. Also, many drivers are not prepared for a long wait in their car. Education programs would help save lives on snowy and icy roads.	ODOT	X		This is normal operations for ODOT. In preparation for each winter, weather education and information are provided to the public for traveling on snowy or icy roadways. ODOT will continue to do this, as necessary, and will make changes to their methods, when required.

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