Chapter 5 Mitigation Strategy

5.1 Introduction

This chapter includes Oregon's goals for mitigating natural hazards, a prioritized list of mitigation actions supporting those goals, and criteria for prioritizing application for mitigation grants.

The goals are purposefully aspirational, providing the foundation for Oregon's overall mitigation strategy. Oregon has often led in developing innovative and progressive strategies to address issues that impact our residents, economy, natural environment, and built environment. The Oregon Beach Bill (1967), the Oregon Bottle Bill (1971) and the Oregon Land Use Program (1973) are but three historical examples of Oregon's visionary spirit.

Oregon is no less visionary in natural hazard mitigation. The state adopted its first natural hazards mitigation plan in 1992, then updated the plan in 2000, 2004, 2006, 2009, 2012, 2015, 2020, and now 2025. Hazard mitigation planning is a foundation for risk reduction projects and is a high priority for Oregon for state funding, post-disaster FEMA mitigation grants, and non-disaster FEMA grants. Oregon will continue planning for mitigation and implementing mitigation projects to reduce losses from natural disasters.

5.2 Mitigation Goals

The FEMA requirement for mitigation goals is in 44 CFR §201.4(c):

> "To be effective the plan must include the following elements: …
>
> (3) A Mitigation Strategy that provides the State's blueprint for reducing the losses identified in the risk assessment. This section shall include: (i) A description of State goals to guide the selection of activities to mitigate and reduce potential losses."

The natural hazard mitigation goals listed below link the risk assessment and mitigation actions, guiding the direction of future natural hazard risk reduction and loss prevention activities.

1. Develop and implement a comprehensive, statewide natural hazards mitigation program and strategy.
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.

4. Minimize loss of life and reduce injuries resulting from natural hazards or high hazard potential dams.[1]
5. Minimize property damage from natural hazards and significant or high hazard potential dams.
6. Minimize damage to historic and cultural resources from natural hazards.
7. Reduce "repetitive" and "severe repetitive" flood losses as defined by the National Flood Insurance Program (NFIP).[2,3]
8. Eliminate development within mapped hazardous areas where the risks to people and property cannot be practicably mitigated.
9. Minimize mitigation project impacts to the environment.
10. Facilitate adoption of the most informative, reliable natural hazards mapping and other information available into local and tribal government planning policy.
11. Increase the resilience of critical or essential conventional (gray) and green infrastructure and services, whether publicly, privately, or investor-owned or non-profit, from natural hazards.
12. Integrate natural features and processes into natural hazard risk reduction actions where possible and practicable to protect people, property, and the environment from natural hazards.
13. Assist local and tribal governments to diversify and strengthen their economies in ways that will make their communities more resilient to natural hazards.
14. Develop and strengthen relationships among governments, community-based organizations, businesses, and others to ensure that people, especially those most vulnerable, can access goods and services during and after natural hazard events.
15. Motivate the whole community[4] to build resilience and mitigate against the effects of natural hazards through engagement, listening, learning, information-sharing, and funding opportunities. Use engagement tools and best practices to reach the people and communities indicated by the risk assessment to be the most vulnerable.
16. Enhance communication, collaboration, and coordination among agencies at all levels of government, sovereign tribal nations, the private sector, community-based organizations, and non-profits to mitigate natural hazards in the communities indicated by the risk assessment to be the most vulnerable.

[1]"Dams assigned the **high hazard potential classification** are those where failure or mis-operation will probably cause loss of human life." (Federal Guidelines for Dam Safety: Hazard Potential Classification System for Dams, FEMA and Interagency Committee on Dam Safety, 2024)

[2]"**Repetitive loss structure** means a structure covered under an NFIP flood insurance policy that (1) has incurred flood-related damage on two occasions, in which the cost of repair, on average, equaled or exceeded d25% of the value of the structure at the time of each such flood event; and (2) at the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage. (44 CFR 77.2, Definitions)." (State Mitigation Planning Policy Guide, FEMA. (2022, eff. 04/19/2023)

[3]"**Severe repetitive loss structure** means a structure covered under an NFIP flood insurance policy and has incurred flood-related damage (1) for which four or more separate claims have been made under flood insurance coverage, with the amount of each claim (including building and contents payments) exceeding $5,000 and with the cumulative amount of such claims payments exceeding $20,000; or (2) for which at least two separate flood insurance claims payments (building payments only) have been made, with the cumulative amount of such claims exceeding the value of the insured structure (44 CFR 77.2, Definitions)." (State Mitigation Planning Policy Guide, FEMA. (2022, eff. 04/19/2023).

[4]FEMA defines "**whole community**" as: "[A] focus on enabling the participation in national preparedness activities of a wider range of players from the private and nonprofit sectors, including nongovernmental organizations and the general public, in conjunction with the participation of all levels of government in order to foster better coordination and working relationships." (State Mitigation Planning Policy Guide, FEMA. (2022, eff. 04/19/2023).

5.3 Prioritized Mitigation Actions

The State Interagency Hazard Mitigation Team (IHMT) updated the status of the mitigation actions in the 2020 Oregon NHMP, retaining actions that are in progress or intended for completion. This constituted the initial list of mitigation actions for the 2025 Oregon NHMP. DLCD invited a large group of people – those who indicated interest or participated in the Risk Assessment Upgrade project, IHMT members, tribal representatives, and others – to participate in meetings to review and revise the initial list. The group subjected the list to a number of criteria to yield a final list that meets FEMA requirements and could potentially be accomplished within the five-year life of the Plan. DLCD invited the same large group to prioritize the final list of actions. The result is the following table of prioritized mitigation actions and the hazards they address.

These actions would help mitigate the statewide risk from natural hazards. They focus on actions that would benefit the entire state, a large region, or areas throughout the state. They do not include specific local actions listed in natural hazard mitigation plans adopted by tribes, counties, cities, and special districts. The priority ranking in this list does not preclude an agency from implementing a lower ranked project based on available funding, agency mission, or updated information.

See Chapter 7, Planning Process for further detail about the process of developing the following mitigation action table. See Chapter 3, Risk Assessment for descriptions of each hazard.

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
1	Conduct an earthquake risk analysis that focuses on natural hazards' impacts on sites containing hazardous materials. The state does not understand the risks that earthquakes, whether originating inside or outside of Oregon's boundaries, pose to sites with hazardous materials, and the state does not have location specific awareness or emergency plans. The State Mitigation Planning Policy Guide, effective 4/19/23, indicates that the NHMP must address hazardous materials (one of the Federal Emergency Management Agency (FEMA) Lifelines). Integration through Oregon Resilience Plan (ORP).				X								
2	Prioritize mitigation and retrofit projects on seismic lifelines. Oregon Department of Transportation (ODOT) Seismic Lifelines Evaluation, Vulnerability Synthesis and Identification Report provides recommended priority corridors but does not provide sufficient detail to prioritize retrofit investment packages. Engineering evaluations and cost estimation are ongoing on a funding-available basis and will inform that prioritization process. Initiatives for integration include the Oregon Highway Plan (OHP) and the Oregon Resilience Plan (ORP).				X								
3	Update the Statewide Hazards-United States (HazUS or HAZUS) analyses for earthquakes. The state needs an updated analysis to understand and improve its resilience. The state conducted the last analysis in 2013 for the Oregon Resilience Plan. Conduct a probabilistic analysis and a magnitude 9 Cascadia Subduction Zone (CSZ) earthquake and tsunami analysis that includes soil types, co-seismic landslides, and liquefaction.				X								

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
4	Identify funding to support public transportation providers, counties, cities, special districts, and Tribes in conducting comprehensive vulnerability assessments of their transportation facilities and services. In the 2013 Oregon Resilience Plan, the Oregon Seismic Safety Policy Advisory Council (OSSPAC) identified a 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 reduce vulnerability to a CSZ event. Integration through the Oregon Highway Plan (OHP) and Oregon Resilience Plan. DLCD's Wildfire Adapted Communities Recommendations Report to the legislature (SB 762, 2021) includes an action related to inventory of transportation infrastructure for safe and efficient evacuation and response.				X				X				
5	Create lidar-based channelized debris flow hazard maps in five communities and assist those communities with post-fire landslide risk reduction. After a wildfire there is an increased potential for landslides, especially life-threatening debris flows. The Oregon Department of Geology and Mineral Industries (DOGAMI) is modeling areas of potential channelized debris flow hazards. The Oregon Department of Land Conservation and Development (DLCD) is assisting the communities with using the mapping to determine mitigation actions they can take to reduce risk.							X					
6	Provide technical assistance to tribes, counties and cities to integrate hazard mitigation plans with comprehensive plans. Counties and cities often adopt NHMPs separately or as an appendix to the comprehensive plan and therefore in practice do not use the NHMPs to their full potential. By integrating the two plans, hazard mitigation will be more easily and meaningfully implemented in local land use planning under Statewide Planning Goal 7.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
7	Evaluate the impact of climate change on landslides. Climate change may have multiple effects on landslides in Oregon including increased probability after wildfire and increased intensity and duration of rainfall. Understanding these factors better will help understand the change to the landslide hazard and how to mitigate. Precipitation-triggered landslides will increase or decrease with changes in climate. Evaluation of this change will be important for the future of Oregon. Integration may be through the Climate Change Adaptation Framework and the Oregon Climate Change Research Institute.							X					
8	Update DOGAMI's 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. Integration through Oregon Resilience Plan.				X								
9	Assess hazards associated with active crustal faults newly discovered by the 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; the state should systematically evaluate them using trenching, geophysical and field studies for their potential to generate damaging earthquakes. This action would help communities prepare and mitigate for newly defined hazard areas in central and eastern Oregon. Integration through Oregon Resilience Plan.				X								
10	Provide technical assistance, funding, and alternative pathways and mechanisms to facilitate county, city, special district, and tribal adoption of new hazards mapping and other products and information into their planning policies.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
11	Create a clearinghouse for storing and sharing perishable data collected during natural hazard events according to the state's Perishable Data Plan. Emergency responders and community planners alike need access to the best and most current natural hazards data. This project would be a cooperative effort between authoritative data collection and analysis agencies — DLCD, DOGAMI, Oregon Department of Emergency Management (ODEM or OEM), Oregon Department of Water Resources (OWRD), and federal partners (FEMA, US Army Corps of Engineers, National Weather Service, US Geological Survey) — and would include: • Establishing a single point of online access to reliable data, maps, and information about natural hazards. • Developing, in conjunction with Oregon Department of Administrative Services-Geospatial Enterprise Office (DAS-GEO), a portal to distribute these data. • Developing a multi-agency State of Oregon flood hazard website. • Providing an ongoing inventory and assessment of existing natural hazards data. Integration may be through Risk Mapping, Analysis, and Planning (Risk MAP), Risk Plan, Framework Implementation Teams, OEM's Master Data Set, county city, special district, and Tribal NHMPs, Governor's interagency collaboration initiative, Goal 7 implementation, National Flood Insurance Program (NFIP), Oregon Department of Environmental Quality's (DEQ's) IRIS database, etc.	X	X	X	X	X	X	X	X	X	X	X	X
12	Evaluate earthquake hazards in Bend region and in other major population centers statewide as resources allow. Systematically map and evaluate faults in the Bend-Sisters area for evidence of recent activity to assess the earthquake hazards for Central Oregon communities. Consider the intersecting hazards associated with both earthquakes and volcanic processes when carrying out these studies. Integration through Oregon Resilience Plan.				X					X			

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
13	Add and support community participation in the National Flood Insurance Program (NFIP) and encourage existing Community Rating System (CRS) communities to improve their programs, with emphasis on coastal cities and counties, during the life of each Oregon NHMP. See the CRS Information Center at: http://training.fema.gov/EMIWeb/CRS/ for more information. Each year, DLCD encourages qualified jurisdictions to participate in the CRS program or strengthen their CRS ratings. Integration through the Silver Jackets and Risk MAP programs.						X						
14	Upgrade the Oregon Landslide Warning System consistent with next steps and recommendations in the 2021 Oregon Landslide Warning System report. Upgrades should include rainfall thresholds from local rain gauges and a permanent real-time website showing areas under a landslide warning, and providing guidance on what people can do to protect their lives and property from a landslide.							X					
15	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 rainfall events of increased intensity or duration, some of which will occur not long after wildfires. Understanding these factors better will increase understanding of changes to the landslide hazard and how to mitigate the hazard. Workshops are productive and efficient venues for exchanging information among professionals in the field.							X					
16	Increase availability and distribution of air conditioning systems for the most vulnerable people in areas most at risk to extreme heat events. Continuing efforts to increase availability and distribution of air conditioning systems, particularly in manufactured homes in Cooling Zone 3 and in multifamily homes and apartments across the state, would help alleviate adverse impacts from extreme heat events. OHA has dedicated staff who plan to fund and install air conditioning units in communities most affected by extreme heat, such as manufactured homes and multifamily homes and apartments. Work continues to establish a consistent supply chain of air conditioning units.					X							

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
17	Add climate change modeling, prescribed fire, and Communities at Risk data into Oregon Wildfire Risk Explorer (OWRE). Integrate data and assessment information from OSU Extension projects. In 2019 ODF and Oregon State University (OSU) completed the Oregon Wildfire Risk Explore (OWRE) through federal grant funding to make the most up-to-date information on wildfire risk available to homeowners, communities, local managers, and planners. The OWRE shows current large fire perimeters and where historical ignitions have occurred. The Quantitative Wildfire Risk assessment developed by the US Forest Service provided the base data for the OWRE. Local governments have used the assessment in updating Community Wildfire Protection Plans (CWPPs), and it provides guidance and educational resources for the public. Since its roll-out, ODF has added a Wildland Urban Interface (WUI) layer to the OWRE and plans to add a new Communities at Risk layer. ODF and OSU will make other updates as data becomes available. Integration through Climate Change Adaptation Framework.										X		
18	Create new lidar-based Landslide Inventory and Susceptibility Maps, especially near population centers. DOGAMI has issued numerous publications and will continue to inventory population centers until all have inventoried. DOGAMI will create these maps in cooperation with local jurisdictions. Specific methods and priority locations are still to be determined. The Oregon Landslide Workgroup will determine the locations. These new maps will enable communities to introduce development restrictions or recommend mitigation strategies in areas highly susceptible to landslides. Once completed, DOGAMI will continue to inventory less populated areas to cover the entire state. Integration may be through Statewide Planning Goal 7.							X					
19	Coordinate with the Emergency Coordination Center and other state and federal agencies, higher education, and associations immediately after a hazard event to organize collection of perishable data according to the state's established Perishable Data Plan. 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 coordination of their efforts to put them to use in the most efficient and effective way possible. Other initiatives may include the Silver Jackets.	X	X	X	X	X	X	X	X	X	X	X	X

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20	Develop guidance for local cities and counties on how to use Goal 7, Areas Subject to Natural Hazards, 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. Integration is through Statewide Planning Goals including the following. Goal 7, Areas Subject to Natural Hazards discourages new development in areas subject to natural hazards. Goal 14, Urbanization, and other Statewide Land Use Planning Goals encourage development within urban growth boundaries. Cities and counties 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 help cities and counties integrate local natural hazards mitigation plans with comprehensive plans.	X	X	X	X	X	X	X	X	X	X	X	X
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.	X											
22	Fund climate change adaptation and resilience-building activities. Local and Tribal governments are best positioned to develop and implement projects that promote climate change adaptation and build local resilience to climate change. The state can contribute to these efforts by establishing grant programs, and by facilitating local ability to learn about and apply for federal and philanthropic grants.	X		X		X	X	X			X	X	X

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
23	Provide technical assistance to the counties, cities, and Tribes greatest vulnerabilities identified by the risk assessment to undertake resilience activities for the hazards to which they are most vulnerable. Many of the most vulnerable jurisdictions require technical support to understand how to best improve their resilience. A priority region for mitigation against a Cascadia Subduction Zone event is the coast, and should include critical facilities, such as hospitals, healthcare facilities, vulnerable populations, and lifeline infrastructure, such as water and power.	X	X	X	X	X	X	X	X	X	X	X	X
24	Install real-time capability on the remaining 7 state-operated stream gauges to make the state's stream gauge network 100% real-time in the year 2025. The availability of timely and accurate data from stream gauges is essential for flood forecasting, for prediction of imminent flood hazards, and for response to flood emergencies. Today, 248 gages provide real-time data; 7 remain to be updated. Other initiatives for integration include the Oregon Integrated Water Resource Strategy and Silver Jackets.						X						
25	Provide outreach to county, city, special district, and tribal governments so they can help residents understand hazards and how to better prepare for the hazard events to which they are most vulnerable. Most of these governments require educational and learning opportunities to understand how to best improve their resilience. Use engagement tools and best practices to equitably engage Oregonians about natural hazard risks. Through the Risk Assessment Upgrade project, a risk assessment tool in a geospatial environment was developed that uses a multiple-criteria decision analysis technique called PROMETHEE. The results of this study will be used to identify most vulnerable areas throughout the state and develop dedicated outreach and technical assistance strategies.	X	X	X	X	X	X	X	X	X	X	X	X
26	Undertake inner bay total water level modeling to assess flooding impacts from sea level rise, tides, and storms. Modeling would incorporate inner bay and outer coast processes, similar to modeling performed in Grays Harbor, WA.	X											

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Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
27	Conduct research on the impact of climate change on flood conditions in Oregon. 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. Precipitation amount and intensity both impact the type of flooding. Generally, western Oregon basins are projected to experience increased precipitation, and therefore flood risk, in future decades. Increased access to information about the potential impacts of climate change on flood conditions in Oregon by federal and state agencies will help counties, cities, special districts, and Tribes identify mitigation actions that will reduce the potentially increased risk. DOGAMI's risk assessments have provided qualitative statements about the impacts of climate change on flood conditions but do not quantitatively assess these impacts. DOGAMI has incorporated the findings from the Oregon Climate Change Research Institute (OCCRI) on future climate conditions into its studies but will need additional resources to produce a detailed understanding of the impact of climate change on floods in Oregon. Integration through Oregon Climate Change Research Institute and Climate Change Adaptation Framework.						X						
28	Adopt implementing rules for Statewide Planning Goal 7 that require counties and cities to adopt new or updated hazard mapping. Such rules will help protect people and property from the impacts of natural hazards. They also will provide more certainty for developers, especially with respect to housing production and needed infrastructure development or redevelopment.	X	X	X	X	X	X	X	X	X	X	X	X
29	Establish a climate adaptation and resilience workgroup within the Oregon Climate Action Commission. The 2025 Oregon Climate Action Commission's workplan recommends that a climate change adaptation and resilience work group be established to produce recommendations to improve resilience and to produce materials to help agencies consider how their programs and projects might contribute to or reduce carbon emissions or increase resilience to climate change. This recommendation came from the informal Climate Change Adaptation Framework Implementation Team, a group of 25 state agencies that developed the Climate Change Adaptation Framework (DLCD, 2021)	X		X		X	X	X			X	X	X

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
30	Mitigate risks at the Critical Energy Infrastructure (CEI) hub. Align with mitigation occurring under the Oregon Department of Environmental Quality's (DEQ's) Fuel Tank Seismic Stability Program.				X				X				
31	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 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. DLCD Technical Assistance Grants, US Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG), and FEMA's Safeguarding Tomorrow through Ongoing Risk Mitigation (STORM) Act may be initiatives for integration.	X	X	X	X	X	X	X	X	X	X	X	X
32	Develop a proposal to the United States Geological Survey (USGS) to rectify mapping of faults along Oregon's borders with Nevada, Idaho, California 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. DOGAMI is proposing to create an Oregon-specific Quaternary Faults Database (ORQ-Faults). Part of the ORQ-Faults development would include collaboration with Nevada, Idaho, California and Washington to ensure that faults align across state boundaries. Once that is done, the USGS will be able to use this information.				X								
33	Add Snow Telemetry (SNOTEL) gauges in Zig Zag near Mt. Hood and in Douglas County. SNOTEL is an automated near real-time data collection network that provides mid- to high-elevation hydroclimatic data from mountainous regions of the western United States. A standard SNOTEL station provides snow water equivalent, snow depth, precipitation, and temperature data. The SNOTEL network is maintained by the United States Department of Agriculture (USDA) Natural Resources Conservation Service Snow Survey and Water Supply Forecasting Program. (NRCS SNOTEL and Snow Course Data | Drought.gov) This information provides data about precipitation and Oregon's water regime that is important for climate assessments, drought, and flood mitigation.						X						X

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
34	Complete a hazard mitigation policy legislative needs assessment in collaboration with IHMT agencies. The Oregon NHMP contains specific policy recommendations. In addition, the state of Oregon maintains policies related to natural hazards and the mitigation thereof. It is unclear at this time what legislative action would be needed 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. Integration may be through Statewide Planning Goal 7 and the National Flood Insurance Program (NFIP).	X	X	X	X	X	X	X	X	X	X	X	X
35	Develop an improved methodology for gathering data on drought and related impacts in the areas most vulnerable to drought as identified through the risk assessment. Include tests of the robustness of drought indicators across future climate scenarios and the frequency of re-evaluation. Although there are areas in Oregon that have suffered from drought, there has not been a coordinated effort to systematically characterize the impact of droughts 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.			X									
36	Inventory and evaluate state owned buildings most important to state function (excluding schools, hospitals, and fire stations identified in DOGAMI's 2007 analysis.). Because the state does not have a policy standard for collecting this data, complete information with which to assess the potential for damage to state buildings and critical facilities is not available.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
37	Conduct seismic mitigation of five coastal facilities that provide medical care and shelter. The coast will experience the strongest shaking and a tsunami from a Cascadia Subduction Zone event, resulting in injuries and displaced people. Residents and visitors will require medical attention. Tsunami refugees will require sheltering. Many of the hospitals on the coast are too small to have inpatient services and space for sheltering; they typically have a small emergency room or clinic and then transport patients to larger facilities. It is very difficult to financially to retrofit a hospital. 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. Hospitals may not apply due to need for a local match; the grant program requires a full seismic retrofit and it can be hard to segment off areas of buildings. Integration through Oregon Resilience Plan.				X				X				
38	For each hazard addressed in the Oregon NHMP, develop guidance that includes example comprehensive plan policy and code language to assist local and tribal governments in planning effectively for resilience to natural hazards. County, city, and Tribal governments often lack up-to-date policies and codes to ensure public safety and increase resilience to natural hazard events, as well as staff capacity and expertise to take on these issues. Such guidance is often requested but the state has not provided funding to support this type of technical assistance for county, city, and tribal governments.	X	X	X	X	X	X	X	X	X	X	X	X
39	Standardize data sources used by the risk assessment tool to create authoritative data layers maintained by the Oregon Geospatial Enterprise Office's Framework Implementation Team (FIT) program. Rather than data being privately held by state agencies, the FIT will make the data available to other state agencies, counties, cities, special districts, Tribes, and the public.	X	X	X	X	X	X	X	X	X	X	X	X
40	Collaborate on a landslide workshop to increase the state's understanding of co-seismic landslides. Many co-seismic landslides will likely be triggered in the next major earthquake. However, the most likely locations and magnitude of risk are unclear. The co-seismic landslides will be a significant portion of the earthquake hazard and understanding them will help with disaster mitigation both in the absence of and after a disaster.				X			X					

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41	Re-evaluate extreme precipitation potential. Two studies to evaluate the magnitude of extreme precipitation events in Oregon are in progress and will be complete by the end of 2026. The state will use this information to evaluate extreme flooding in Oregon.					X							
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.		X		X		X		X			X	X
43	Track loss of life during and after natural hazard events.	X	X	X	X	X	X	X	X	X	X	X	X
44	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. The Oregon Department of Emergency Management (ODEM or OEM) has recommended that the State IHMT be formally and officially established as an advisory body. Integration initiatives may be through the Governor's Office and the Oregon Seismic Safety Policy Advisory Council (OSSPAC).	X	X	X	X	X	X	X	X	X	X	X	X
45	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 (https://water.usgs.gov/osw/bulletin17b/dl_flow.pdf). The U.S. Geological Survey (USGS) has updated this bulletin to 17c (tm4b5.pdf - Guidelines for Determining Flood Flow Frequency—Bulletin 17C). The Oregon Water Resources Department (OWRD) needs to update its methodology to reflect the more recent guidelines. Initiatives for integration are through the Oregon Integrated Water Resources Strategy. Other actions involve education about flood frequency, especially in the aftermath of a flood.						X						

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
46	Fund the Oregon Climate Change Research Institute (OCCRI) and the Oregon Climate Service (OCS) to provide state agencies with the data and technical support necessary to increase resilience, promote adaptation to, and reduce risk from climate-related natural hazards. OCCRI and OCS are Oregon's premier agencies producing climate science. The work they do is important not only for managing the state's farms, forests, and fish and wildlife habitats, but also for understanding and mitigating climate-related natural hazards. Their work is foundational to providing for public health, safety, and welfare.	X		X		X	X	X			X	X	X
47	Evaluate sediment impacts to 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 delivering large amounts of sediment to surface waters. Evaluation of erosion potential by watershed will help water regulators and providers identify areas for mitigation. Initiatives for integration include the Oregon Department of Environmental Quality (DEQ) and the Oregon Department of Forestry (ODF).							X					
48	Pursue Enhanced Plan status as a collaborative statewide strategy led by the State Interagency Hazard Mitigation Team (State IHMT) and others. Oregon lost enhanced plan status in September 2020 due in large measure to budget and capacity issues. Studies have definitively demonstrated that investing in mitigation generates a significant return on investment (ROI) and reduces the need for costly response and recovery activities. ODEM and State 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 county, city, special district and Tribal programs; and technical assistance, both financial and non-financial, for counties, cities, special districts, and tribes. Other initiatives may involve Business Oregon-IFA, NFIP, Climate Change Adaptation Framework, and DCBS-DFR.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
49	Use LIDAR to assess landslide hazards along rights of way. Such data will improve critical infrastructure resilience in the face of landslide events by providing useful information to planners, design professionals and decision makers prior to delivery system construction. Integration may be through Statewide Planning Goal 7.							X					
50	Strengthen fuel resilience including: 1) geographic diversification of fuel storage and strategic fuel storage facilities and 2) backup power at fuel stations. See the Oregon Energy Security Plan for further background.				X		X		X				
51	Improve instrumentation and methods for identifying and projecting different aspects of drought and identifying the communities most vulnerable to drought and its impacts. The Oregon Climate Change Research Institute (OCCRI) assessed drought frequency, duration, intensity, etc., in Oregon as part of the seventh Oregon Climate Assessment. Impacts and vulnerability can be assessed to some extent if objective, quantitative metrics of impact and vulnerability are identified. The Risk Assessment Upgrade is evaluating vulnerability, but more could be done to improve the area covered by ground observations and to incorporate climate instability into drought projections. Other initiatives for integration include the Oregon Integrated Water Resources Strategy.			X									
52	Install landslide mitigation measures along transportation corridors that impact five most vulnerable areas. ODOT will install landslide mitigation measures, such as rock bolts, rock nets, catchment basins, benched slopes, horizontal drains, and retaining walls along key corridors as time, funding, and resources allow to reduce the risk of landslide hazards and improve transportation reliability.							X					
53	Implement actions recommended in the Oregon Resilience Plan that OSSPAC identifies as highest priority and that the state can accomplish within the five-year life of this plan to prepare Oregon's residents to survive and recover from a Cascadia Subduction Zone earthquake and ensuing tsunami.				X								

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
54	Implement climate change adaptation policies and priorities as set forth in the Climate Change Adaptation Framework (DLCD, 2021). The Climate Change Adaptation Framework, developed in consultation with 25 state agencies, outlines strategic climate change adaptation actions. A Climate Change Adaptation Framework Implementation Team reviews progress toward implementing the strategies. Changes, if any, will be made to the Framework roughly every five years.	X		X		X	X	X			X	X	X
55	Develop a plan 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 Subduction Zone event. Currently, power and water infrastructure is extremely vulnerable. The coast urgently needs cost-effective methods to ensure reliable power and water. The Oregon Department of Geology and Mineral Industries developed the Coastal Hospital Resilience Project (DOGAMI, 2019) to improve disaster resilience to a Cascadia Subduction Zone earthquake. It includes guidance to be locally self-sufficient for three weeks; evaluates seismic vulnerabilities of hospitals and identifies alternate care sites; and develops a hospital resilience plan. Integration through Oregon Resilience Plan.				X				X				
56	Provide ongoing funding for the expansion of the Oregon Resilience Hubs and Networks Initiative. Resilience Hubs provide shelter, technical support, supplies, and education for all four elements of the disaster cycle: preparation, mitigation, response and recovery. Their presence, access, and activities build community cohesion, establishing and advancing community resilience. Resilience Networks provide the active foundation of the resilience hubs. The Network groups collaborate to support the purposes and activities of a resilience hub.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
57	Pursue funding for developing data to support assessments of probability, vulnerability, and risk for drought, windstorms, and winter storms. Drought, windstorms, and winter storms are significant hazards in Oregon. Projections of future drought and, depending on the definition or metric, winter storms are available. Projections of high winds are available but have considerable uncertainty. To better protect the public, Oregon must find funding to develop additional necessary data. Through the Risk Assessment Upgrade, the state continues to gather and use data to better assess these hazards. Other initiatives for integration include United States Department of Agriculture's Natural Resources Conservation Service.			X								X	X
58	Install High Water Mark (HWM) signs after flood events and co-locate stage crest gauges 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 (CRS) program. Stage crest gauges co-located with select HWM signs will capture new high-water data when floods occur. Collection of HWM is essential to continued education around flood risk. Use the Silver Jackets perishable data plan as a framework for collecting data across state and federal agencies. Develop a framework to collect HWM data at a community level, which allows for collection of additional flood information. The Silver Jackets team will also provide a collaborative approach to providing flood outreach for flood education from this database of collected high water marks. This action will also require integration through the National Flood Insurance (NFIP) within DLCD's program.						X						
59	DFR will teach classes about wildfire insurance coverage between 2025 and 2030. Wildfires have displaced thousands of Oregonians over the last few years. Homeowner's and renter's insurance is a vital tool 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 homeowner's and renter's insurance. DFR utilizes social media and publications.										X		

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
60	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) 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 move to high ground quickly on foot. This requires clearly marked evacuation routes that pedestrians can navigate even in dark and stormy weather. Where high ground is available, the state should identify projects 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 high ground is unavailable within the expected evacuation time, evaluate the retrofitting existing facilities or constructing new vertical evacuation structures that rise above the level of tsunami inundation and can serve as safe refuges. DOGAMI has completed Beat the Wave tsunami evacuation analyses for every community on the Oregon Coast over the past 10 years. Improvements include hardening existing routes, developing new evacuation trails, retrofitting bridges, and constructing one or more vertical evacuation structures, where applicable. Integration through the Oregon Resilience Plan.	X							X				
61	Strengthen wildfire and winter storm resilience of electrical transmission and distribution systems focusing on small utilities and energy providers without internal or other resources to build resilience features into systems (before and after disasters). See the Oregon Energy Security Plan for further background.										X		X
62	Develop an improved methodology for gathering data on channel migration and related impacts in the communities most vulnerable to channel migration. The methodology would include collecting data during and after major storm events. Although areas in Oregon have been impacted by channel erosion and migration, there has not been a coordinated effort to systematically characterize how frequently, where, or how much this hazard has cost Oregonians. Individual communities respond to this hazard, but a statewide understanding is needed to plan for future channel migration and develop outreach materials and a coordinated response.						X						
63	Identify metrics for measuring community resilience.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
64	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, protect lives during an earthquake, and preserve ongoing operations after an earthquake. Use accepted methods to determine building type, construction methods, and occupancy to estimate damage and losses due to various earthquake scenarios and probabilities relating to building codes. Other initiatives include Oregon Resilience Plan and the National Flood Insurance Program (NFIP).				X		X						
65	Develop a statewide strategy to encourage the purchase of flood insurance. The state regularly recommends flood Insurance as a mitigation strategy as part of public outreach during flood studies and individual NFIP community outreach. Well-insured communities recover faster. A strategy will help the state direct information to underinsured areas thereby reducing vulnerability, facilitating recovery, and increasing access to "increased cost of compliance" funding. Studies indicate the number of private flood insurance policies in Oregon (and nationwide) is growing and estimate that they currently comprise approximately 20% of the market share in Oregon. Integration is through the National Flood Insurance Program (NFIP) and Community Rating System (CRS).					X							
66	Update hazard probabilities in Oregon NHMP for all hazards. The Risk Assessment Upgrade for the 2025 NHMP included updating hazard probabilities. Continue to incorporate the best scientific methods available to develop hazard probabilities in the 2030 NHMP.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
67	Establish an online platform and procedure for collecting and sharing mitigation actions from state, county, city, special district, and Tribal NHMPs. Currently there is no easy way for governments to research and share mitigation actions. Having an online mitigation action tracking system would facilitate communication, cooperation, collaboration among state, county, city, special district, and Tribal governments, enhancing mitigation planning statewide. Initiatives for integration include counties', cities', special districts' and Tribes' natural hazards mitigation programs, and FEMA Region 10's Mitigation Division.	X	X	X	X	X	X	X	X	X	X	X	X
68	Provide funding and technical assistance to cities to use the new guidance on classifying lands subject to natural hazards in their buildable lands inventories and adjusting urban growth boundaries. Cities 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 amendments are likely to result. This funding and technical assistance will promote integration through the Statewide Planning Goals and local natural hazards mitigation plans with comprehensive plans.	X	X	X	X	X	X	X	X	X	X	X	X
69	Establish an online repository and procedure for storing finalized, FEMA-approved county, city, special district, and Tribal NHMPs as well as the Oregon NHMP. Currently there is no single repository and very few can be found online in their final format. Helping counties, cities, special districts, and Tribes with finalizing their NHMPs after FEMA's final approval (inserting FEMA's final approval letter and effective dates) and uploading them to a single, online repository in a timely manner will provide opportunities for collaboration and improving state, county, city, special district, and Tribal coordination in mitigation planning. The Climate Change Adaptation Framework and Oregon Explorer are other integration initiatives.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
70	Establish the Oregon NHMP as a living document for internal updating during the plan maintenance period. Establish a platform for housing the living Oregon NHMP and a procedure for continually updating and enhancing it. Other initiatives for integration include the Climate Change Adaptation Framework, Integrated Water Resources Strategy, Oregon Energy Security Plan, and a mitigation action tracking system.	X	X	X	X	X	X	X	X	X	X	X	X
71	Improve state agency procedures for tracking data on state-owned and state-leased buildings and critical or essential facilities. Create a policy standard requiring facilities data collection from state agencies on an annual basis. Develop a facilities data framework standard that best enables hazard mitigation analysis; incorporate data into Oregon Department of Administrative Services-Chief Financial Office (DAS-CFO) DataMart and make available to partner agencies at will. Continue to pursue this through the Risk Assessment Upgrade. Integration through the Oregon Resilience Plan and the State Interagency Hazards Mitigation Team.	X	X	X	X	X	X	X	X	X	X	X	X
72	Develop a database of non-state-owned critical and essential facilities and their property values. FEMA requires the state's NHMP 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 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. These data were developed for previous versions of the Oregon NHMP and have been updated not as a database, but as a data layer to be used in the tool developed through the Risk Assessment Upgrade project. Integration may be through The Oregon Resilience Plan.	X	X	X	X	X	X	X	X	X	X	X	X
73	Conduct critical infrastructure vulnerability analysis in areas identified as most vulnerable by the risk assessment for the hazards to which they are most vulnerable. These areas require analyses and technical support to improve their resilience.	X	X	X	X	X	X	X	X	X	X	X	X
74	Identify metrics for tracking whether infrastructure is being built or upgraded to withstand hazard events.	X	X	X	X	X	X	X	X	X	X	X	X

Prioritized Mitigation Actions		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
75	Institutionalize interagency bodies that work to advance natural hazards mitigation and climate change adaptation and mitigation.	X	X	X	X	X	X	X	X	X	X	X	X
76	Fill risk assessment data gaps. Some indicators that would have been informative for the risk assessment upgrade could not be used because the data were unavailable or required expensive subscriptions. State agencies need ongoing funding to access the most up-to-date data necessary for county, city, special district, Tribal, and state risk assessment updates into the future.	X	X	X	X	X	X	X	X	X	X	X	X
77	Create a plan to ensure communication continues during public safety power shutoffs and other power loss events. Currently there is no plan for continuing communication via systems requiring power during natural hazard events.					X					X	X	X
78	Request seismic and flood information from landlords of state-leased spaces as part of analyzing potential new leases and potential renewals. Determine flood and earthquake damage and losses expected to occur to the state-owned and state-leased building inventory including higher education buildings. Produce information to enable development of statewide priorities and strategies to guide mitigation of earthquake risk, protect lives during an earthquake, and 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. Other Initiatives for integration include Oregon Resilience Plan and National Flood Insurance Program.				X		X						
79	Use Oregon Department of Administrative Services-Chief Financial Office (DAS-CFO) data and investigation of seismic and flood risk to DAS-owned and -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. Other Initiatives for integration include Oregon Resilience Plan and National Flood Insurance Program.				X		X						

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
80	Collaborate and workshop with other professionals to increase understanding of co-seismic landslides that can cause tsunamis. Some of these can occur underwater. New high resolution bathymetry data would increase understanding of what happened in past earthquakes and thus better understand possible future events. Initiatives for integration include Oregon Resilience Plan.				X			X					
81	Document the economic, social, cultural, and environmental impacts of drought, especially in the most vulnerable jurisdictions identified through the risk assessment. Documenting past drought conditions and effects, especially impacts on people and the environment, is one 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 are anecdotes. Include in the drought assessments summaries of past drought frequency, distribution, intensity, and duration and projections of future drought conditions. Doing so is critical, especially as climate projections indicate that the Pacific Northwest will more regularly experience warmer temperatures and population projections suggest that human needs for water will increase. Other initiatives for integration include USDA Natural Resources Conservation Service.			X									
82	Support Risk Mapping, Analysis, and Planning (Risk MAP) flood hazard map update initiatives throughout the state. FEMA produces new flood hazard maps through the Risk MAP program with support from the Oregon Department of Geology and Mineral Industries (DOGAMI), United States Geological Survey (USGS), the United States Army Corps of Engineers (USACE). The Risk MAP program operates out of the Oregon Department of Emergency Management (ODEM or OEM). The Risk MAP program prioritizes studies in areas have older data, updated Light Detection and Ranging (LiDAR) data, and an interest in new hazard information, resilience and mitigation conversations. The Oregon Department of Land Conservation and Development (DLCD) will support the Risk MAP process by helping communities update local floodplain ordinances, and the Risk MAP program will remain responsive to natural hazard mapping and mitigation needs through integration with Silver Jackets and partner outreach.						X						

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
83	Provide education on use of state-of-the-art atmospheric river classification and science in flood resilience. Recent years have seen an increase in understanding of and the science around atmospheric rivers. The Center for Western Weather and Weather Extremes (CWWWE) developed an extensive library of outreach material around these impactful climatic phenomena. The intent of CWWWE's work is to provide practitioners with the necessary tools to be aware and prepared for flood. This work by the CWWWE is meant to supplement the National Weather Service's forecasts in a way that provides a longer window of potentially impactful weather patterns. Since atmospheric rivers are a major component of Oregon's flood risk, it is important to educate communities on available information that can supplement existing monitoring activities. Because much of this science is new, the state needs to educate practitioners on these new tools that are meant to build resilience throughout the State.						X						
84	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. Where feasible, expand the network of snow observation stations at strategic locations throughout the state to provide data on snow water content, snow depth, and snowmelt throughout winter and spring across major environmental gradients. Integration through Climate Change Adaptation Framework and the Oregon Climate Change Research Institute.												X
88	Undertake needed updates to coastal erosion hazard zones developed for the Oregon Coast. Existing erosion hazard maps were developed between 2001 and 2007 and in many places on the coast, are now being exceeded by contemporary coastal processes. In some cases, no mapping has been produced.	X											

Prioritized Mitigation Actions		Hazards												
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter Strom
89	Implement probabilistic tsunami hazard analyses (PTHA) inundation modeling on the Oregon Coast to enable the development of the next generation of tsunami products for coastal communities. Previous Oregon Department of Geology and Mineral Resources (DOGAMI) tsunami modeling relied on deterministic (scenario-based) Cascadia earthquake rupture processes, and further did not consider friction in the modeling. PTHA allows for consideration of potentially many thousands of scenarios, which helps to better constrain uncertainty levels (e.g., understanding of the rupture process, and short paleoseismic history). Furthermore, PTHA enables the production of inundation products that are risk-based that reflect a range of commonly used average return periods (ARPs), such as the 100, 475, 975, 2,475-year, and either the 4,975-year or potentially an even lower probability event. Such data are critically important in the design of vertical evacuation structures, highway bridges on the coast, and evacuation zones.								X				
90	Fund coastal change monitoring. DOGAMI initiated a coastal monitoring program in 2004 and currently re-surveys core sentinel sites on a seasonal basis. The data generated from this effort have been used in coastal flood risk modeling, in the development of coastal erosion hazard zones, and site-specific geotechnical applications. Furthermore, state agencies use the data produced to support decision making (e.g., the Oregon Parks and Recreation Department (OPRD)). These data are essential for understanding existing and future coastal hazards, and are thus essential for increasing community resilience, promoting adaptation to, and reducing risk from coastal-related hazards (erosion and flooding).												

Prioritized Mitigation Actions for High Hazard Potential Dams		Hazards											
Priority		Coastal	Dam Failure	Drought	Earthquake	Extreme	Flood	Landslide	Tsunami	Volcanic	Wildfire	Windstorm	Winter
HHPD-1	Continue assessing risk for state-regulated HHPDs.		X										
HHPD-2	Support an initiative to develop funding for rehabilitation efforts.		X										
HHPD-3	Complete floodplain management plans for inundation areas below priority High Hazard dams.		X										
HHPD-4	Re-evaluate extreme precipitation potential.		X										